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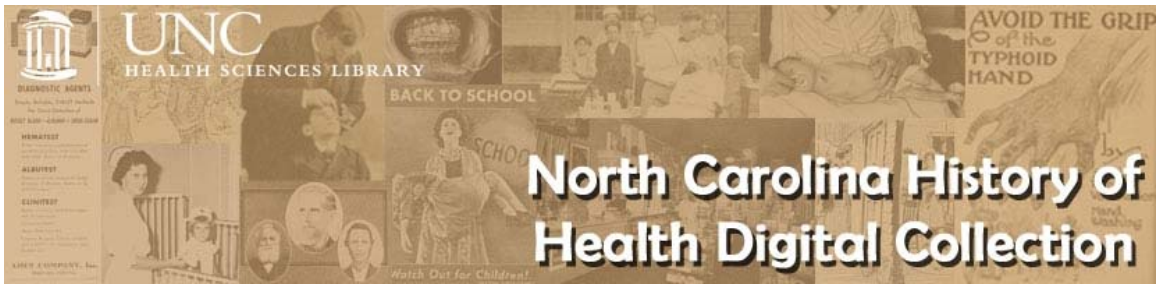

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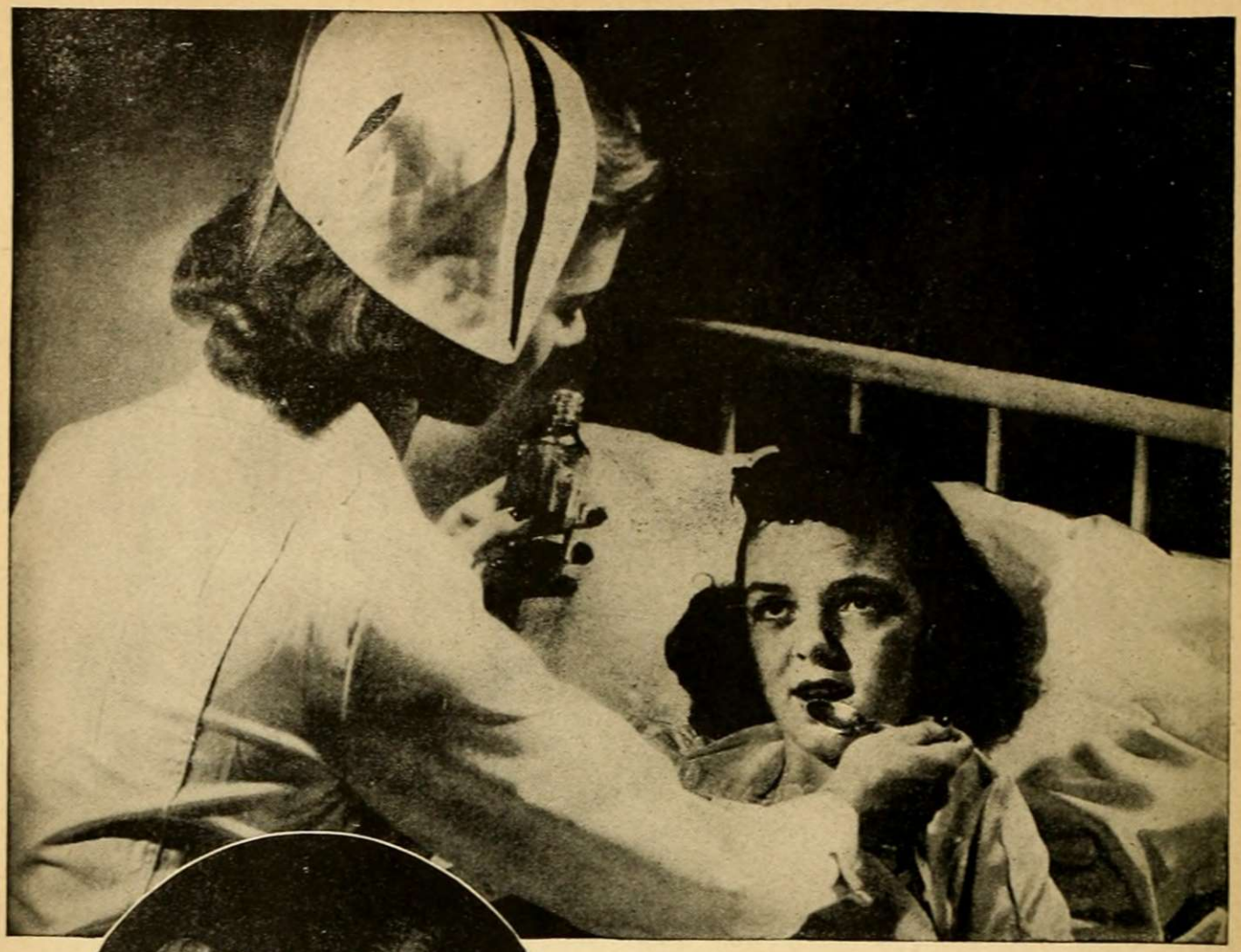
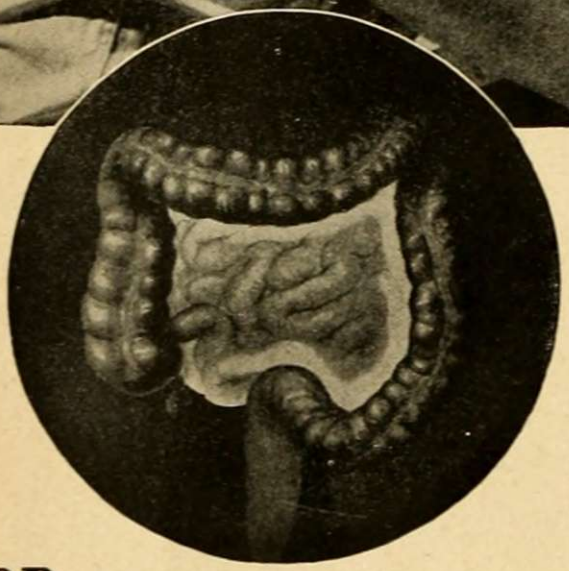
TABLE OF CONTENTS, PAGE IV





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VOLUME 6 JANUARY, 1945 NUMBER 1

PLANNING FOR MENTAL HYGIENE

GEORGE H. PRESTON, M.D.
Commissioner of Mental Hygiene, State of Maryland
BALTIMORE, MARYLAND

Planning for mental hygiene in the public health field must be double-barreled. On the one hand, it must include plans for those who are mentally ill; on the other, plans for those who are, at the moment, mentally sound. Part of the program must be curative and part preventive. Ideal planning leads toward reduction of facilities for treating the sick and increased efforts to keep the sound from becoming sick. Practical planning requires the development of both programs, side by side.

The briefest glance at public practice in this field shows a strange state of affairs. Tremendous sums of money have been spent in building hospitals for the treatment, care, and housing of the mentally ill. Sometimes this building has been well done, and sometimes it has been cheap and hasty. Let me point out here that no building ever cured a patient; no building ever treated a patient. Only a trained staff can do that, and almost universally, such hospitals have been overcrowded with patients and undersupplied with staff. The strange fact is that state governments, and the citizens whom they serve, have been content to count the noses of patients who walk in and out of their hospitals, taking pride in the facts that they had more beds per hundred thousand citizens than their neighboring states, that more of their patients recovered, and that their hospitals were more efficiently operated. Why people break down mentally and what can be done to prevent it has never been a matter of much public concern.

Presented to Charlotte Mental Hygiene Society, May 31, 1944.

Although I cannot prove this statement with figures, I believe that many, many times as much public money has been spent in trying to find out why chickens get sick or why tobacco plants droop than has ever been spent in trying to control mental illness in human beings. None of us would brag about our community because it had more beds for the treatment of typhoid fever or a higher recovery rate than any place in the country. We would stop typhoid. The fact that mental illness is vastly more complicated than typhoid fever is no reason for accepting mental disease as an unavoidable curse.

I do not mean that we can abandon plans for mental hospitals and concentrate our attention solely on a preventive program. We do not know enough about prevention. We know something, but not enough. For a long time, two or three generations probably, we must continue to treat large numbers of patients; but, at the same time, we must study causes and plan prevention.

What I hope to do in this presentation is to outline briefly the two essential elements of a mental hygiene program—treatment of the mentally ill and prevention of mental illness. It is obvious that we cannot discuss the detailed medical and psychiatric procedures. What I want to do is to draw a picture of the public planning necessary for the advancement of treatment and prevention in the field of mental hygiene. Such total planning should be the aim of a mental hygiene society.

Planning for Treatment

We will begin with a discussion of treatment as contrasted with prevention. Because of the limits of time, this must be almost a list, a sort of scale by which a community might measure its standards of treatment.

Informed people

Treatment begins with finding those people who need treatment. It must begin long before hospital care is necessary and must include a large number of people who will never need hospital care. You can see at once that this fundamental part of the program depends on the existence in the community of a group of people who have learned to recognize potential mental health problems and who know where to go for the necessary help. Clinics and hospitals and even trained specialists are useless unless there is widespread mental hygiene information among all those people in the community who are responsible for the training and care of other human beings. We will come back to this matter of informed people again and again, because any adequate mental health program depends on people, on trained people, and not on buildings or equipment.

Clinics

Informed people alone, however, are not enough. In order to carry out the initial phase of treatment, clinics and consultation services must be easily available, as part of the general state health program. Any teacher, any parent, any minister, any social agency, any court, and any physician should be able to refer any child or adult who cannot afford the care of a private psychiatric consultant to a special clinic. One word about these clinics: Too many community clinics are concerned only with hanging labels on patients. Hanging labels is a futile procedure, except that it gives the label-hanger a feeling that he knows more than he actually does. Community clinics should be organized so that real psychiatric treatment may be carried on. I know perfectly well that such clinics cannot be set up over night, and that it may be a long time before they are generally available. Just the same, no one who is planning a state program for the treatment of mental patients should feel that the job is done if in-

patients who will never need institutional care is vastly more important than the most beautiful institutional set-up in the world.

Institutions

Institutional treatment for patients is, however, absolutely necessary. In the first place, the public demands that individuals who are a menace be removed from the community. In the second place, certain patients cannot be treated in the community; and, in the third place, a good institutional system serves as the visible focus around which treatment programs can be built. The danger is that institutions are so easy to see. You cannot show legislative committees through the results of good treatments, but they are impressed by fine buildings. Please do not feel that I am belittling the value of good institutions. No mental health program can operate without them. The danger is that they tend to steal the show.

The strictly institutional part of a treatment program must begin with admission procedures. Ideally, it should be as easy for a patient to go into and out of a mental hospital as it is for a patient to enter and leave a general hospital. Practically, this cannot be done. Some procedure for involuntary commitment of patients must be set up. The primary requirement of such commitment is that mentally ill people be treated as sick patients by physicians, and not as criminals by courts. The law, however, stipulates that no citizen, regardless of his condition, may be confined against his will without proper legal protection. In general, it is wiser to allow for the necessary legal protection at some period after the patient has been admitted to a hospital, if it is demanded by the patient or by any other interested party in his behalf, rather than to insist on legal adjudication before admission. Plans of this sort have been worked out in many states.

One final word about the commitment of patients to mental hospitals: It should always be honest. When it is necessary to take a patient to a hospital, the patient should not be told by his relatives, or his physician, or anyone else, that he is being taken for a nice ride in the country, or that he is going to be taken downtown shopping, or any other of the numerous lies that are told patients in the belief that it avoids trouble and makes things easier. Most of our mental patients trust few people, if they trust anyone.

or children or doctors or ministers have lied to them, they can hardly be expected to trust the strange doctors they meet in a hospital into which they have been tricked by the very people on whose honesty they should have been able to count. If a patient is tricked into a hospital, the hospital physician may never be able to make honest contact with the patient; without honest contact, no treatment is possible. Lies told at the time of admission, with the best intentions, may make ultimate recovery impossible.

The hospital to which the patient is admitted must meet certain standards. It must be large enough to prevent overcrowding. It must be safe from fire. It must be clean. It must be properly equipped. But remember, the best building and the best equipment in the world never cured a patient. The one really vital factor about hospitals is the staff. Good treatment can be given under surprisingly poor conditions if trained people are available.

There is a great temptation to spend public money on fine buildings and then to skimp on staff. In the broadest outline, the requirements for obtaining adequate personnel are good civil service standards as to training, continuous training on the job, *medical rather than lay administration of the hospital,* adequate pay, secure tenure of position for competent people, decent housing, and some system for retiring employees after long service. As to the actual number of people and the various technical skills required, the American Psychiatric Association has set up standards which serve as a sound guide.

Even after suitable admission procedures and adequate hospitals, adequately manned, are provided, the job is still not done. Within each hospital there needs to be machinery for helping patients back into the community and for guiding them until they have reestablished themselves. This is the province of the hospital's social service department. Experience has demonstrated that with the help of this department, large numbers of patients can leave the hospital who would otherwise remain permanent hospital residents. In some hospitals, in addition to those patients who have recovered and those who have improved sufficiently to be returned to their families on visits or parole, almost 5 per cent of the resident population is being taken care of in boarding homes outside the hospital by social service departments. Provision for the return of patients to the community is an integral part of hospital planning. It should not be omitted, for it can make a very great difference in the number of patients who need permanent hospital care.

Central records in regard to all patients admitted and discharged from hospitals are an essential part of any state hospital system. Without such records, it is impossible to carry on long-time planning for a hospital system; and without long-time planning, no hospital system can be adequately developed. In addition, such records also make it possible to compare the work of one hospital with that of another; to provide for the care of specialized groups of patients; and to check from year to year trends in mental illness and the results of various types of treatment.

Hospitals should be planned so as to provide for the training in mental hygiene of many different groups of people within the community. It might interest you to know that in some hospitals, internships for ministers have been established, in order to equip them to care for some of the everyday mental hygiene problems which arise in every community.

Finally, the hospital system should serve as the basis for research. In the hospitals there are collected large numbers of patients of all classes and stages, and there are laboratory facilities and a group of interested and capable workers. The potential value of this combination should not be neglected. It is only by the use of such facilities all over the country that we can hope for any solution of the problem of mental illness.

These are the bare essentials of a curative program. Think of that as one-half the job. The other half of a mental hygiene program is prevention.

Planning for Prevention

Before we can talk intelligently about the prevention of mental illness, we need a clear idea of what we are trying to prevent. Let me see if I can give you such a picture.

Suppose a man had a damaged heart. His heart could not pump enough blood to his lungs, and therefore his lungs could not function properly. His heart could not supply his kidneys, and they could not function properly. The activity, the function, and the mutual helpfulness of those parts of that

man which lay inside his skin would be disturbed. We would think of that man as physically ill. Of course, his heart might have made him unable to work, might have made him depressed or irritable and, to that extent, might have affected some of the activities which take place outside of his skin between him and the rest of the world. To that extent, we might think of him as mentally ill; but because the most conspicuous damage was to relationships inside his skin, he would be classed as physically ill. You can see that this classification is artificial and depends on what part of his illness happens to be most conspicuous. This field belongs primarily to the non-psychiatric medical practitioner, although the treatment of the external relationships of any illness may require psychiatric understanding.

Now think of another man. This man has taken overdoses of bromide. He does not know where he is, what time it is, or who you are. He hears voices from nowhere and sees things that are not there. His trouble is with those relationships which exist between him and persons and things outside his skin. He may also be unable to digest his food and he may have a rash over his body, but because his major difficulties exist in relation to matters outside his skin, we call him mentally ill. If, instead of being affected by bromide or some other drug, our man had been hit on the head with a brick, had acquired paresis, had a brain tumor, had cerebral arteriosclerosis, or had been born without the brain equipment the rest of us are supposed to have, we would still think of him as mentally ill if his relations with the outside world had been seriously damaged.

Within this group, prevention is largely a matter for non-psychiatric medical practitioners and public health workers. To the extent that we can prevent poisoning, syphilis, other infectious diseases, accidents, the ravages of old age, birth injuries, and the propagation of the congenitally unfit, mental hygiene becomes the province of the obstetrician, the pediatrician, the internist, the syphilologist, the public health officer, and the eugenist. Working together, they can prevent an appreciable part of mental illness. Unfortunately, they are not often included in a mental hygiene program.

Now we come to the third and uniquely

he was stupid, awkward, ugly, and of no account; who had been shown by his parents and his teachers that no one really liked him; a man who had been made, by his minister, to believe that he was one mass of original sin; who had been chased by the police, hurt by his dentist, and neglected by his doctor. That man might be sound inside his skin, but he could never be comfortable in the world. He might hate the world, fight it and become criminal. He might hate himself, try to drown his sorrows in alcohol, and become a chronic drunk. He might build up some little illness and present it to the world and to himself as the excuse for his no-accountness. If he did, we would call him a neurotic. Or he might retreat into a world of his own imagination, where he was safer and more comfortable. Then we would certainly label him insane.

The function of individuals

Think of the people who have had a chance at this last man—his parents, his nurse, his school teachers, his Sunday school teachers, his minister, maybe a scout master, the representatives of the law in his community, and his physician. Any of them who knew or cared might have turned the tide. Ignorance or indifference on the part of any one of them may have given the final decisive push.

You may have noticed that I did not include the psychiatrist in that list. I omitted him deliberately because there are not enough psychiatrists and because, even if there were, they would not see people soon enough to carry on individual prevention. Prevention in the mental hygiene field must be carried on by every individual who has any contact with developing human beings.

What I have said has, I hope, indicated the scope of a preventive program. I will try to summarize it in such a way that it may serve as a check list for those who are planning a community program for the prevention of mental illness.

First comes the eugenist, who must prevent the creation of too many congenitally unfit individuals. Next come the obstetrician, the prenatal clinics, and the public health nurses. They must prevent as much birth damage as possible. Following the work done by these two groups, the public health officer must control the occurrence of

chiefly concerned with the prevention of damage to individuals.

The pediatrician is the next person who is concerned with a mental health program. I think we sometimes underestimate the extent to which the pediatrician, by means of the advice he gives mothers, may be an influence for mental health. Infants must be properly fed, but the wise pediatrician who is conscious of his responsibility towards mental health knows very well that no bottle was ever a mother. He will not establish a routine which prevents a child from developing the warm, affectionate relationships with the mother which are an absolutely essential part of mental health. Playing with infants, handling them, nursing them, and petting them are activities which should not be lightly put aside. There is good evidence that children who grow up without close contacts with their mothers fail ever to develop close relationships with other human beings. Without such relationships, mental illness is much more likely.

The teacher follows the pediatrician. Here the problem is one of introducing a child to competition and of insisting on the acquirement of certain basic skills, without destruction of self-respect and self-confidence. In very simplest terms, the teacher's major problem is to teach children to live in competition with their equals without fear or unhappiness. I have seen too many patients who have been taught geometry and trigonometry and who feared to live with people. They now live in mental hospitals. Part of a preventive program is to see that teaching of living becomes an integral part of courses given teachers in normal schools and teachers' colleges.

Physicians also belong in this program. Here I am not talking about specialists in psychiatry, but about the physicians who treat stomachs and hearts and lungs, who fix broken legs and take out infected tonsils. Every time a physician listens solemnly to an individual's heart, looks gravely at the patient and nods his head, some psychiatric effect, good or bad, has been created. Because no physician can treat a patient without carrying on some psychiatric treatment, and because no patient is ever physically ill without suffering some emotional upset, our preventive program must include the teaching of psychiatry in medical schools. Such psychiatric teaching should relate chiefly to the effects of the emotions and the beliefs about personal well-being on the functions of the various organs of the body. This is a relatively new field of medicine, now being talked about as psychosomatic medicine. It offers a real field for preventive psychiatry and will ultimately become part of every medical school program.

Ministers belong in this mental health program also. People come to ministers when they are sad and hurt, and they come when they feel wicked, guilty, or forsaken. The minister should be able to evaluate these symptoms and should know what to do about them. He can be a very important person in any mental health program. Part of the organization of such a program must be the encouragement of courses in mental health in theological seminaries.

The most important influences on an individual's mental health are, of course, his parents. The problem of parental education in mental health presents two major difficulties. One is that parents are by force of circumstance so emotionally involved that they are not particularly receptive to teaching; and the second is that the children of those parents who do reach eagerly for parental education are much more likely to need treatment than prevention. My own feeling is that mental hygiene teaching aimed at parents might best be given in high schools and colleges, on a very simple basis involving general principles rather than specific issues, before the emotional responsibilities of parenthood enter the picture.

The function of mental hygiene societies

None of these groups are going to be self-starting in the mental hygiene field. They are all concerned with their own technical problems and, to many of them, a mental health program has meant little more than the care of the feebleminded and the insane. To my mind, one of the primary duties of a mental hygiene society is to draw together the representatives of each of these groups, interest them in mental hygiene, show them what simple things might be taught, and then encourage them to go back to their own groups and develop a program. Such a plan would give a mental hygiene society the widest sort of basis for membership, would provide specific work for people in many different fields, and would lay the groundwork for real community prevention.

Essentials of a mental hygiene program

In order to avoid the dangers that sur-

round much of the talking in the mental hygiene field, I want to outline for you what I believe to be the essentials of a mental health program which might be taught in any of the fields which I have mentioned. I know that I am running a serious risk of over-simplifying what I have to say; I know that I will have to leave out many important items; I know that there are some people who will disagree with me as to the importance of some of the factors I want to stress. On the other hand, I am convinced that a mental health program, if it is to be widely taught, must be so simple that it can be taught by anyone, must be concrete enough to be easily grasped, and must be brief enough to be remembered. With these qualifications I want to outline the bare essentials which should be taught everyone concerned with a mental health program.

Remember that we discussed mental illness as a condition which existed outside the patient's skin—as an interference with the relations which exist between one person and the people with whom he comes in contact. Mental illness is primarily damage to inter-personal relations. Because this is so, preventive efforts in this field must be aimed at the relations which exist between people, at inter-personal relations. Anything which makes it harder for you or for me to meet our fellow men comfortably, confidently, and expectantly makes it a little more difficult for us to live in the world with our fellow men. If living with other people becomes too difficult, we draw away, retire into ourselves, and build up defenses. Such defenses are the material of which mental illness is built.

The greatest barrier to comfortable relations with other people lies in our own judgment and feelings about ourselves. Doubts as to personal competence, ideas that we are very different from the rest of the people in the world, feelings of shame or guilt, suspicions of other people, the convictions that others probably do not like us—all of these things make it almost impossible for us to make comfortable contacts. With a recognition of this fact, it is fairly obvious that any program which helps to do away with these feelings of personal insecurity will, to that extent, make contact with other human beings easier and tend to prevent the development of mental illness. Naturally, the absence of any such feelings would not be an absolute guarantee that mental illness will not occur, but it would certainly lessen strain on any individual and make the occurrence of a withdrawal defense and subsequent mental illness less likely.

Here I want to point out an important fact. Most unfrightened and unhurt infants and small children go to other people expecting to be liked, to be helped, and to be taken care of. This is important. The basis for comfortable inter-personal relations seems to exist naturally. When adults hide their feelings, are ashamed before other people, are suspicious and resentful, when they are uncertain of their reception, when they feel that they are different or not wanted, it seems quite obvious that, through some experience in living, they have been taught to feel that way.

The existence of comfortable inter-personal relations in early childhood and the absence of such relations in some adults give us our basic cue to the simplest, most widespread, and most generally useful mental hygiene principle. Briefly stated, it would be this: Every individual in the community who is responsible for the care and training of children should scrupulously avoid any action which would tend to destroy self-respect, self-confidence, and the feeling of being liked by others.

This does not mean absence of training or lack of reasonable control. It does not mean pampering. It means scrupulous honesty in all dealings with children. It means, before everything else, the avoidance of shaming, ridicule, and belittling. Coupled with this should go generous doses of affection and praise in all contacts with developing human beings. This is a very simple doctrine. It will not work miracles; it will not prevent all mental illness; but widely spread and practiced over a few generations, it offers a real help in the mental hygiene field.

330 N. Charles Street

In order to avoid the development of a train of adverse suggestions it is essential that the clinician should anticipate the questions which inevitably lie in the patient's mind; questions which may be too technical for him to express. Nothing is more frustrating to an invalid than the necessity for extracting information from a doctor who stubbornly maintains a sphinx-like silence or whose replies are so guarded and delphic that they add to the confusion. Added to this is the uncomfortable sense of inferiority generated by the feeling that the news is being censored.—Paul P. Swett: Suggestion as a Cause of Disease, Connecticut State M. J. 8:687 (Oct.) 1944.

THE PRESENT STATUS OF MENTAL HEALTH IN NORTH CAROLINA

MAURICE H. GREENHILL, M.D.

DURHAM

In 1936 there was issued in North Carolina a monumental document called "A Study of Mental Health in North Carolina: Report to the North Carolina Legislature of the Governor's Commission Appointed to Study the Care of the Insane and Mental Defectives".[1] This study clearly indicated the backwardness of the state in its care of the mentally ill, and offered excellent recommendations for the improvement of this condition. Prepared at a tremendous cost in time, effort, and money, this treatise setting forth the findings of the Commission ranks high among scholarly psychiatric and sociological productions, yet at the same time is so practical that it can be of inestimable value to legislators, physicians, teachers, social workers, sociologists, legal advisors, and laymen. Ironically, however, this study has been sorely neglected. It is a sad commentary on the progress of public welfare in North Carolina that it was not this study, but the newspaper publicity given to a single ex-patient of a state hospital, which aroused the state to set about improving the care of the mentally ill within its borders[2].

Improvement in the care of mentally ill persons proceeds slowly but resolutely, despite the natural tendency of men to put aside anything which is unpleasant to them. War imposes such a burden of psychiatrically disabled citizens upon a civilization that action is compelled. The 1945 biennial session of the North Carolina Legislature is therefore faced with certain problems related to the mentally ill which it will have to meet in one way or another. It has the excellent advice of many public spirited citizens in the professions, many of whom have offered recommendations through the State Hospitals Board of Control, the State Board of Charities and Public Welfare, the Governor's Commission on Medical Care, and other organizations. It might profitably use as well the 1936 "Study of Mental Health in North Carolina." Almost nine years have passed, however, since that study was published, and certain changes have occurred in the status of mental health in North Carolina to which attention should be called.

The Recommendations of the Governor's Commission, 1936

Governor Ehringhaus' Commission set forth certain recommendations, based upon factual information, for improvement in the care of the mentally ill. These were as follows:

(1) The existing state hospitals should be limited to a capacity of 2500 beds each.
(2) Plans for a new state hospital should be started in the near future.
(3) Personnel (physicians, nurses, and attendants) in the state hospitals should be increased to the level advocated by the American Psychiatric Association.
(4) The per capita costs should be raised to meet the present requests and needs of the hospitals.
(5) The public school system should develop a plan that will be more constructive in the training of the mental defective.
(6) Plans should be made for the establishment of a second training school for mental defectives.
(7) A psychiatrist, a social worker, and an assistant psychologist should be added to the staff of the Caswell Training School.
(8) The sterilization program of the Eugenics Board should be continued on the same basis but on a larger scale.
(9) Mental health principles should be brought more and more into the training of teachers and into practical applications in the classroom.
(10) Duke University, having the only four year medical course in the state, should become the center for psychiatric training.
(11) The University of North Carolina, through its Division of Social Work and Public Welfare, should be supported as a training center for social workers and the Department of Psychology should be supported as a training center for clinical psychologists.
(12) The present plan that is being adopted by the prison system of the state should be supported.
(13) Classification of delinquent children before and after admission to correctional institutions, a definite training program within the institutions, and well organized parole supervision should be required throughout the state.
(14) A correctional school for delinquent negro girls should be established by the state.
(15) The state should assume further responsibility for clinical service to the public through travelling psychiatric and mental hygiene clinics.
(16) A division of hospitals and medical service should be established in the State Board of

From the Department of Neuropsychiatry, Duke University School of Medicine, Durham, North Carolina.

1. Thompson, L. J.: A Study of Mental Health in North Carolina, Report to the North Carolina Legislature of the Governor's Commission, Appointed to Study the Care of the Insane and Mental Defectives, Ann Arbor, Michigan, Edwards Brothers, Inc., 1936. The study was authorized by Resolution XXXI at the 1935 session of the North Carolina State Legislature under the administration of Governor J. C. B. Ehringhaus. This was financed by a grant from the Rockefeller Foundation. Dr. Frederic Hanes was chairman of the commission and Dr. Lloyd J. Thompson was director of the study, which has often been called, "The Thompson Report."
2. The Investigation of the State Hospital at Morganton, 1942.

> Charities and Public Welfare. A further step in state organization that would follow this one would be the formation of a State Mental Health Council which would bring together representatives of various government agencies that are concerned with the mental health of the people. In North Carolina . . . the laws pertaining to psychiatric activities contain many antiquated terms and outmoded conceptions. At the present time the most urgent need for change in the wording of statutes and in attitudes toward them occurs in those procedures relating to commitment.

What has happened to these recommendations?

Very few of these recommendations have been carried out. There has been (1 and 2) no new state hospital proposed for the approximate number of 1255 patients on the waiting lists for the existing state hospitals. Every state hospital administrator and psychiatrist knows that, because of its size, a mental institution with a capacity above 2500 beds loses its efficiency and makes for an ultimately greater cost to the state; yet instead of asking the present legislature for an additional hospital the state now asks for enlargement of existing facilities to house additional patients. This, of course, is better than having no facilities at all for patients in need of admission to an institution, but it is an unprofessional and costly method of meeting the problem and will serve to keep North Carolina from being in the forefront of progress.

(3) The 1943 legislature made provisions for an increase in the number of professional personnel in the existing state hospitals. Because of the war and because there has been little in the way of professional stimulation within the state hospitals to attract physicians, it has been impossible for the state hospitals to fill the available positions. The more complete and modern are the facilities for psychiatric practice, the easier it is for an institution to obtain doctors to do its work, and the more economically therefore can its work be carried out. The 1943 legislature made no provision for certain specialized personnel which are as necessary to the successful treatment of the psychiatric patient as is insulin in the treatment of diabetes. It was solely through the efforts of Mr. N. E. Edgerton, Chairman of the State Hospitals Board of Control, and through the judgment of Governor Broughton that authorization was given for the employment of a psychiatric social worker for the state hospitals at Raleigh, Morganton, and Goldsboro, and for recreational directors at Raleigh and Morganton.

At the present time there is only one physician for each 512 patients in the state hospitals, and one graduate nurse for each 403 patients. The number of attendants is almost as limited.

(4) In 1934 North Carolina ranked forty-seventh among the states in per capita cost for care of mentally ill patients. No figures are available at the present time as to its rank on this basis, although for the past year the per capita cost was $277.00 per patient, as compared with $114.21 in 1936[1]. This comparison, of course, denotes a considerable improvement, but it is obviously behind the need; otherwise the institutions would not be asking for additional appropriations to raise the per capita cost at this time. Those states which have a per capita cost in the neighborhood of $400.00 are more nearly able to give adequate care to mentally ill patients, and to effect improvement and recovery in many.

(5) The public school system has not developed a plan which would be more constructive in the training of mental defectives.

(6 and 7) A second training school for mental defectives has not been established. The Caswell Training School has asked for an appropriation which would allow an expansion program to house 980 additional mentally defective children. If the present legislature meets this need, a great step will be taken in handling one of North Carolina's most neglected problems, the care of the mental defective. Here again it is believed that it would be more efficient to establish a second school for mental defectives in the western part of the state. There have not been added to the staff of the Caswell Training School a psychiatrist, a social worker, and an assistant psychologist.

(8) The sterilization program of the Eugenics Board has been continued on the same general basis but has not increased in scope.

(9) Little has been done to bring mental health principles into the training of teachers and into practical applications in the class room.

(10) Duke University has become a center for psychiatric training. The other four year medical school in the state, the Bowman Gray School of Medicine, has at the present time only one psychiatrist on its staff.

(11) The Department of Public Welfare and Social Work at the University of North Carolina has not until recently been supported as a training center for psychiatric social workers, and its present support is inadequate.

(12) Improvements are under way in the prison system of the state.

(13) Little has been done to classify delinquent children before and after admission to delinquent institutions. There is some training program within these institutions, but a well organized parole provision has not been set up.

(14) A correctional school for delinquent Negro girls has been established.

(15) The state has assumed only a measure of further responsibility for clinical services to the public through travelling psychiatric and mental hygiene clinics. New laws allow for the establishment of mental hygiene clinics in conjunction with the State Hospitals Board of Control. This, although a step in the right direction, may be years in realization inasmuch as it is impossible for any state hospital to administer a mental hygiene clinic unless it has a staff large enough to allow one physician per 100 patients. It is hoped that under the governor's medical care program, the state's responsibility for clinical services will be realized.

(16) A division of hospitals and medical services has not been established in the State Board of Charities and Public Welfare. Instead, a separate Hospitals Board of Control was set up by the 1943 legislature. This was a great step toward the improvement of the care of the mentally ill in the state, but has created overlapping of function with other state agencies which are in the process of being worked out. There is, therefore, more than ever the need for the formation of a state mental health council.

Nothing as yet has been done to revise and modernize the statutes pertaining to mental disorder.

The Scope of Mental Disorder in North Carolina

Much yet, therefore, remains to be done in improving the care of the mentally ill within the state. North Carolina does not rank high in the quantity and quality of its services to the mentally ill. The Thompson Report showed North Carolina's rank in the United States by figures available in 1936 to be very low.

	Year	*Rank in the United States*
State Hospital per capita cost	1934	47th
Patients per physician	1934	44th
Patients per nurse and attendant	1934	43rd
Patients per employees	1934	42nd
First admissions per 100,000 population	1934	34th
Hospital population per 100,000 population	1934	41st

Although it is believed that, through the efforts of the State Hospitals Board of Control, North Carolina's position has improved, it is the general impression that its improvement has been comparatively slight, for the problem of mental disorder in North Carolina is indeed a grave one. Not only does North Carolina rank low among the states in the quality of its medical care for mentally ill patients, but it also has the highest proportion of feeble minded individuals of any state in the Union. It has been estimated that there are over 27,000 mentally defective white children in the state and an additional 30,000 who are of border-line intelligence. During the school year 1943-44, 114,000 children failed to be promoted in school, and a large majority of these had a low level of intelligence. One-half of the children in the correctional schools and 3 per cent of the children in public schools are feeble minded. The Caswell Training School has a present population of 825 mental defectives. There are now 800 applications for admission to this school on file. A recent survey done by the State Board of Charities and Public Welfare showed that there are at least 900 feeble minded Negro children who are in need of institutional care. It has been noted that there are at the present time 8,462 patients in the state hospitals for the insane, and that there are approximately 1,255 mentally ill individuals in the state who have applied for admission to these institutions but cannot be admitted because of limited facilities. There are at least 1500 additional patients in the state who have been released from the state hospitals under probation.

The number of patients who require hospitalization in the four state hospitals, however, is a very small proportion of the total number of individuals in the state with mental illness. For general purposes one can divide all mental disorders into five groups: psychoses, mental deficiency, psychoneuroses, personality disorders, and psychosomatic illnesses. The problems related to the state hospitals, the State Hospitals

Board of Control, the role of the clerks of the superior courts, and the revision of the statutes pertaining to mental illness apply almost entirely to the first two groups.

On the other hand, the state has taken almost no responsibility for the patients with psychoneuroses, personality disorders, and psychosomatic illnesses. These have been called minor disorders. They are usually less dramatic, do not incapacitate the individual to the extent that institutional care is required, and appear to be at times such mild deviations from normal adjustment that there seems to be no immediate demand for action. However, in terms of loss of employment, absenteeism, suffering, economic loss to the individual and his family, and disruption of family emotions, the cost of these illnesses runs high. In a psychoneurosis one finds disturbed emotions with substitution of physical symptoms for emotional conflict; in the personality disorders an individual's relationship with his fellow men is disturbed and often distorted sufficiently to cause work and marital difficulties and in severe cases, criminality; and in the psychosomatic illnesses a person with a medical or surgical disease exhibits psychological reactions associated with his disease which influence healing processes adversely, making it necessary for the physician to handle the psychological reaction as well as the disease itself.

These disorders constitute by far the largest percentage of mental illness. Cobb[3] has estimated that they form at least 50 per cent of psychiatric illnesses, but it is felt that this figure is far too small, inasmuch as many of the personality problems and most of the psychosomatic disorders are not taken into consideration. A more nearly correct figure, although not a conservative one, would be 98 per cent. This figure is not unreasonable when one considers all of the psychological problems that occur in almost every type of medical and surgical disease, and the countless problems in marriage, in the family, and in inter-personal relationships. It has been estimated that 40 to 70 per cent of the practice of a physician in general medicine is comprised of psychiatric problems.

It is impossible at the present time to know the actual number of individuals in the state who have psychoneuroses, psychosomatic disorders, and personality problems. The number of such patients treated in the four psychiatric clinics in the state does not represent the total number under treatment, since the average physician always has some patients under psychiatric management; nor does it represent the number of individuals who need such treatment but are not receiving it. As a sample of what the need is, it has been found that of 97,446 patients seen at Duke Hospital in 1943, 8,283 or 8½ per cent had a psychiatric diagnosis on their hospital records. Experience and investigation from the literature tell us that this figure is indeed small. This low percentage is accounted for by the fact that in many cases a psychiatric diagnosis is not put down on the records of individuals with medical and surgical diseases who also have emotional problems which demand attention. It must be noted that even this percentage is far larger than the incidence of many other major medical problems such as tuberculosis. In North Carolina at the present time there are approximately 250,000 individuals upon whom a psychiatric diagnosis will be made.

It is well known that the cost of care for a patient with a psychiatric disorder is higher than for any other medical illness. The amount spent for the care of the insane in this state is known to the legislature, and a much greater amount will be necessary to raise the level of the care of the psychotic person. It is a little more difficult to estimate the cost of care for the other mental illnesses. Too often the psychoneurotic goes from physician to physician, and has innumerable laboratory tests needlessly done in order to rule out serious medical or surgical diseases before the diagnosis of psychoneurosis is made. After this has been done, many patients are treated as if they had a medical disorder, at a tremendous cost. Certain facts, however, are known. The average cost of diagnosing and treating a patient in the Wake County Mental Hygiene Clinic, on a nonprofit basis, is $20.00. The per capita cost in the Charlotte Mental Hygiene Clinic is comparable. It is a known fact that in the treatment of private patients at Duke Hospital the cost to the individual psychiatric patient for the initial examination runs $10.00 to $15.00 higher if he is seen first by an internist or surgeon than if he is seen by a psychiatrist at once. Under constant practice this figure is being reduced.

3. Cobb, S.: Borderlands of Psychiatry, Harvard University Monograph in Medicine and Public Health, Number 4, Cambridge, Harvard University Press, 1943.

How Is This Problem Being Met in North Carolina at Present?

Both government and private agencies as well as individual physicians, social workers, teachers, ministers, and court personnel are aware to some extent of the tremendous problem related to mental health in North Carolina, and attempts are being made to meet it. It must be recognized, however, that these attempts are far behind the need. How is the problem being met?

By government agencies.

State Hospitals Board of Control.

The 1943 North Carolina Legislature set up an operating board to centralize the activities of the four state institutions under the name of the State Hospitals Board of Control. To this board Governor Broughton appointed sixteen members, of whom five are physicians, one is a dentist, and the remainder are interested lay individuals. It is significant that there is not one psychiatrist on this board, nor is there any person who has had full experience as a hospital administrator. Neither is there a social service administrator, nor anyone to represent psychiatric nursing. This is comparable to the situation which exists in the commission appointed by the Governor of the State of New York in 1943 to reorganize the state hospital system there. Of this commission, Russell[4] writes, "It is remarkable that of the forty-nine 'experts' of which this impressive body of investigators consisted, only an assistant physician and two nurses were apparently qualified by experience to observe and advise understandingly in regard to conditions and requirements that are peculiar to administrators and practices in the hospitals of the type to be examined. In consequence, historic perspective, consideration of the social, political, and economic conditions which control the development and operation of the department and of the differences between hospitals for the mentally ill and those for other sick persons are strikingly lacking in the report."

The State Hospitals Board of Control, however, is doing a good job. Its chairman, Mr. N. E. Edgerton, has worked indefatigably and has contributed more to the development of mental health in North Carolina than has any other lay person since Dorothea Linde Dix. The first annual report of the North Carolina Hospitals Board of Control, made on July 16, 1944[5], is a comprehensive survey of the problems which the board has had to meet, of the developments which have taken place, and of problems of future improvement. This board is without question functioning in the proper direction. Its report began as follows: "One year ago today a sixteen member Board of Control began its existence and its ambitious program to do all in its power to see that the treatment and care of the mentally ill in North Carolina be improved to equal that of the best institutions of like kind and surpassed by none."

The board is made up of the following standing committees: committee to select a general superintendent; committee on by-laws; committee on building and equipment; committee to study equalization of salaries, wages, etc.; committee to meet with State Board of Charities and Public Welfare, and to investigate if there are any duplications of duties; committee on dividing territory and transfer and admission of patients between Raleigh and Morganton; publicity committee; committee on agriculture, live stock and provisions; committee on dentistry and its relation to mental patients; committee on improving the care of patients; committee on psychiatric standards and policies; and a legislative committee.

The recommendations of each of these committees are included in the general report. They are too numerous to mention individually. The recommendations of the committee on improving the care and treatment of patients are noteworthy and include suggestions for improvements and additions to existing physical structures, for construction of new buildings, and for providing necessary equipment and more adequate personnel with higher salaries, including an increase in the number of graduate nurses and the appointment of recreational directors, occupational therapists, teachers, laboratory technicians, and psychiatric case workers. It is recommended that there be one physician for every 200 patients. Furthermore, this board recommends adequate medical records, and general improvement in the care and treatment of patients to bring them up to modern standards. They also advocate the use of the state hospitals in the teaching programs of approved medical schools and

4. Russell, William L.: The Care of the Mentally Ill in New

5. Annual Report of the North Carolina State Hospitals

of the University of North Carolina School of Social Work. Other recommendations which bear the stamp of lay interest but are of less professional importance are made.

The committee on relation to the welfare department has been very active and is working out a system whereby a close affiliation will be established between the agencies of the State Board of Charities and Public Welfare and the state hospitals for the purpose of setting up a statewide system of social service. These two committees, together with the committee on building and equipment, are doing valuable work.

There are several facts, however, related to the functioning of the Hospitals Board of Control and of the individual state institutions to which attention must be called. In the first place, the State Hospitals Board of Control has not had the advice of the psychiatric profession. It is presumed that the superintendents of the state hospitals have given excellent counsel to this board, but because of their positions one wonders whether this can be given freely. Furthermore, it is a well known fact that the board has been handicapped by the absence of a general superintendent. It is obviously difficult to find just the right person for the position under war-time conditions, and furthermore, the stipulations made by the 1943 legislature are such that it is questionable whether a psychiatrist of the highest order would accept the office. Under the law the contract is for only two years, to be renewed at the discretion of the board; most candidates are wary of the political implications involved in this. Furthermore, there has been set up at the top a division of authority between the general superintendent and the business manager, an arrangement which is bound to be contrary to the judgment of an excellent psychiatric administrator. In the third place, no provisions are made for a professional staff for the general superintendent, and no one man can adequately administer such a large system. Lastly, the relationship of the State Hospitals Board of Control and the Board of Charities and Public Welfare has not as yet been completely clarified; because this issue is confused it will be more difficult to obtain a good psychiatric administrator for either the position of general superintendent of mental hygiene or the position of Director of the Division of Psychiatric and Psychological Service of the State Board of Charities and Public Welfare.

The State Hospitals Board of Control has done much to organize more completely the functions of the individual institutions. The board has been handicapped, however, by inadequate appropriations. This is shown by the conditions which today exist in the four state institutions. The quality of these institutions has been improved since the board began to function. Each of the hospitals has an excellent superintendent, who knows completely what is needed to make each institution a credit to the state. These men too have been handicapped by limited appropriations. There exist, therefore, both good and bad conditions within the state hospitals. At Raleigh some wards are no better than those which existed in Bedlam in the seventeenth century. Ward S, for example, is so overcrowded that the beds practically touch one another. The walls are broken, only spotted with plaster, and the floors are of cold damp stone. There are two toilets and two bathtubs for seventy-five patients. During the day one untrained attendant looks after seventy-five violent patients, and at night there is only one attendant for two hundred and fifty such patients. During favorable weather the patients are locked on a porch, where there are no toilet facilities; they excrete on the floor, and at any time one can witness the sight of one or more patients devouring their own excreta. Often these patients are completely unattended. Such conditions are in no way the fault of the hospital administration, for it is just as appalled by them as anyone. It simply does not have the funds to alter such conditions. There is only one graduate nurse available during the night for the entire Central Building, which houses about one thousand patients. On the other hand, good practices also exist within the institution—among them, the adoption of electric shock treatment and the organization of a social service department.

At Morganton the physical facilities are far superior to those at Raleigh because of the building program of the last five years. However, the physicians are so over-burdened—one having as many as 735 patients—that modern methods of treatment can not be used. No hydrotherapy or occupational therapy is carried out.

At Goldsboro the wards for the Negro patients are far superior to Wards S, R, and T, at Raleigh. No treatment other than medical treatment is carried out there. Help is so limited that violent patients have to be

restrained in cages similar to those used in the side show of a circus. Such cages are also in use at the Caswell Training School for the same reason.

At Caswell the physical structures and equipment approximate those of a model institution for the feeble minded, and its policies approach those of the best institutions of this type. Additional personnel, including a psychiatrist, and additional buildings are, however, very much needed.

Although this is not mentioned in the annual report of the Hospitals Board of Control, the system of probation and discharge of patients is in great need of improvement. It has been sadly neglected. Patients are not required to return to the hospital for examination during the probation period, and are discharged without having been examined. Discharges are given once a year on a certain date for patients who have been out of the hospital at least one year and in effect have not been heard of again. Some attempt is made by the hospital superintendent to have the county welfare superintendent investigate the situation of the paroled patient, but these county workers are not psychiatrists and cannot judge whether a person is well enough to be given a discharge from a hospital.

The statutes related to the commitment of the mentally ill are being given some attention by the Hospitals Board of Control, as indeed they should be; for in many respects they are antiquated, outmoded, and impractical.

The State Board of Charities and Public Welfare.

By virtue of a constitutional mandate the North Carolina State Board of Charities and Public Welfare has the responsibility for supervision of all mental institutions within the state. Therefore, when the State Hospitals Board of Control was organized, there was considerable confusion over the respective functions of the two bodies. At a meeting of representatives of the two groups, together with the governor and the attorney general, on February 9, 1944, it was decided that the Hospitals Board of Control was an operating organization for the four state institutions, and that under the constitutional mandate the State Board of Charities and Public Welfare would have supervision over it. As conceived, this type of supervision would indeed be very loose and would consist principally in the continuation of the annual inspection of the state institutions for the mentally ill. It follows, therefore, that the function of the Public Welfare Board in relationship to the state hospitals will gradually be reduced.

The mental hygiene work of the State Board of Charities and Public Welfare is administered through the Division of Psychiatric and Psychological Services. This division at the present time has no director, and whereas prior to the war it was made up of two psychiatrists and two psychologists it now has one psychiatric consultant and one psychologist. When it was acting in its full capacity its functions were manifold but often loosely defined. It has always taken a measure of responsibility for the development of mental hygiene throughout the state, and its last director promoted mental hygiene by devoting a sizable share of his time to lecturing before church groups and parent-teacher associations. Its functions were so many that its small staff could not completely round them out.

At the present time this division is devoting its efforts toward education in the psychiatric approach to social problems, particularly among the workers of the public welfare agencies, and to developing the social service relationships between public welfare agencies and the state hospitals.

By virtue of the constitutional mandate, the State Board of Charities and Public Welfare should be the central authority for the development and control of mental health within the state.

State Board of Public Instruction.

This board is exercising two functions related to mental health. The first concerns the mental health of school children. Practically nothing is being done in this regard. This board does not advocate special classes for retarded and problem children, as do most progressive states. In Massachusetts, for example, whenever ten or more children who are retarded or are problems are gathered together in any one school, a special class for these children has to be set up. The North Carolina Board advances the theory that the individual teacher can do more for the problem child than can a specially trained teacher do for a class of problem children. The scientific advice of psychiatrists shows that this is not feasible. The

care of retarded and problem children requires training on the part of the teacher; furthermore, it is impossible for a teacher who has as many as forty pupils to devote time to one particular pupil. Furthermore, problem children do better when they are taught in a group according to scientific methods.

The Board of Public Instruction has funds available for a liaison psychiatrist with the Department of Public Health to work on a special project, but it has been impossible to secure a psychiatrist for this position.

The most important function which the Board of Public Instruction is fulfilling in relationship to public health—and indeed one of the most important to the whole state—is the Physical Restoration Program under its Division of Vocational Rehabilitation. The standing costs of this program, which was set up and encouraged by the Social Security Agency of the federal government, are financed entirely by the federal government, and the operating costs, in terms of medical evaluation, treatment and vocational training, are subsidized to the extent of 50 per cent by the federal government, matched by an equal amount from the state government. For 1944, $90,000 was contributed by the federal government and an equal amount by the state. Psychiatric rehabilitation comes under this program. Any needy individual who has a psychiatric disorder and who, according to the judgment of an examining psychiatrist, can be improved or cured under treatment, so that he may be qualified for vocational training, can be treated at the expense of the Physical Restoration Program. This is a tremendous step towards improving the mental health of the citizens of the state, provided enough psychiatrists can be made available to handle these cases. It is obvious that the problem of the rehabilitation of discharged armed forces personnel with neuropsychiatric disabilities will be met in part by this program.

State Board of Public Health.

Mental hygiene should be as important a phase of public health work as sanitation and epidemiology. It may be that in time the United States Public Health Service and the individual state departments of public health will be the central agencies for the improvement of mental health. A beginning has been made by the appointment of public health medical officers to administer the Federal Physical Restoration Program. In this state both the Commissioner of Public Health and the Director of the School of Public Health at the University of North Carolina realize that mental hygiene is an important part of public health. The first step in bringing mental hygiene into the public health program was the inauguration in January, 1944, of a course in mental health for public health educators and nurses in the School of Public Health at the University of North Carolina. It has been proposed that when a liaison psychiatrist can be obtained for the Boards of Public Health and Public Instruction, this physician will have offices in the School of Public Health and will be Professor of Mental Health in the school.

The Governor's Commission for Medical Care.

A subcommittee on mental hygiene care was appointed by the governor as part of his commission to study and recommend a medical care program for the indigent citizens of the state. Included in the personnel of this subcommittee were one psychiatrist and one pediatrician. The only proposal that this committee made prior to December, 1944, was the recommendation for a sixty bed psychiatric unit at the proposed four year medical school at the University of North Carolina. The opportunities for service of this particular subcommittee are indeed great and can strongly influence the care of the mentally ill in the state for the next several decades.

State Planning Board.

The State Planning Board has the opportunity of cooperating in and perhaps leading the reorientation of discharged service men to civilian life. There has been some talk of a mental hygiene program for rehabilitation of discharged service men, but no final plans have been made, nor has professional counsel been sought.

Clerks of superior courts.

The clerks of the superior courts, by virtue of the existing statutes relating to commitment, have an integral role in psychiatry within the state. Many of these clerks are aware of the need for a change in the statutes. Under the existing laws a clerk of court has, in a sense, to fulfill the duties of a psychiatrist, inasmuch as he is compelled

to see the candidate for commitment and give judgment upon the candidate's sanity before signing the commitment papers. This is a tremendous responsibility to place upon these legal workers.

The Veterans Administration.

The importance of the Veterans Administration in any state program for psychiatric care must not be underestimated. It has been claimed that by the end of this war there will be in the United States 2,000,000 discharged veterans and 1,250,000 or more induction rejectees in need of psychiatric treatment. On the basis of population statistics, it is expected that in North Carolina alone there will be 55,000 discharged armed forces personnel with psychiatric illnesses and 33,000 induction rejectees in need of psychiatric treatment. Twenty per cent of all these will have a disability which is rated by the Veterans Administration as service-connected, and whose treatment therefore will be the responsibility of the Veterans Administration. It will fall upon the state and the local communities to care for the other 80 per cent.

What, then, are the provisions of the single Veterans Administration Facility in Fayetteville for the handling of this enormous problem? There exists there one small unit of forty beds devoted to both psychiatry and neurology and staffed by one psychiatrist. His duties consist in the diagnosis of neurological disorders and psychoses and the rating of veterans for pension. Because of his limited time he can do nothing in the way of treatment, nor can he devote any effort to the problem of the minor psychiatric disorders which constitute the larger percentage of mental illness. There is no outpatient clinic at this facility. There are no traveling clinics set up by the Veterans Administration to reach outlying districts. The Veterans Administration has appointed two examiners from among the psychiatrists of the state to help them with the rating of veterans for treatment. The local Veterans Administration facility is becoming more and more aware of the need for increased psychiatric personnel within the state and for the necessity of setting up outpatient services throughout North Carolina.

By private institutions.

The private institutions within the state are overworked and are unable to handle adequately the total volume of psychiatric cases which come to them. What are the private institutions, and what are they doing?

Department of Neuropsychiatry, Duke University.

It is recalled that Recommendation 10 of the Governor's Commission for the Study of the Care of the Insane and Mental Defectives in 1936 was that "Duke University, having the only four year medical course in the state, should become a center for psychiatric training." Because of this recommendation, the Rockefeller Foundation, which had subsidized the study of the Governor's Commission, endowed a Department of Neuropsychiatry at Duke University. To Duke it gave $175,000 to be used for the organization of such a department and for its operation over a period of seven years, with the understanding that the University would carry the costs of operation on a comparable scale after that. In the four years since its inception the Department of Neuropsychiatry has begun to fulfill its function of becoming a center for psychiatric training in the state. Most of the psychiatrists of North Carolina outside of the state hospitals are concentrated there. The department is rapidly gaining a national reputation. Young physicians, nurses, psychologists, sociologists, and attendants have come from all parts of North Carolina, the South, and the United States, for training in psychiatry. At the present time the department is producing from three to five psychiatrists each year.

The Department of Neuropsychiatry has a total staff of about sixty. This includes eight psychiatrists of senior rank and experience, and four young psychiatrists in training. The work of these psychiatrists consists in diagnosing and treating both private and indigent patients, in teaching medical students, nurses, and attendants, in the promotion of mental health within the state of North Carolina, and in research investigation to further the progress of psychiatric knowledge. In the training of medical students and nurses, the relationship of psychiatric problems to medicine has been emphasized, so that the average doctor who graduates from Duke University will have a practical knowledge of the handling of psychiatric problems in his own practice. Interested medical students are encouraged to become psychiatrists.

The Department of Neuropsychiatry consists of several branches. The Inpatient Department is housed in a section of Duke Hospital, and its physical facilities for the care of psychiatric patients are among the most modern in the country. All types of modern therapy are used. This department has been a pioneer in the development of electric shock treatment. In this division there are eighteen beds for psychiatric patients, but additional beds are used on the medical and surgical floors for patients with minor disorders. Approximately 300 acute cases per year are received into this unit. This is one-half the number received into each of the state hospitals every year, and is about the same number admitted to the average state mental institution in the country.

A second branch of the Department of Neuropsychiatry is the Outpatient Clinic, which treats 3000 ambulatory patients a year, the majority of whom have psychoneuroses and personality problems. This clinic is staffed by psychiatrists, social workers, and psychologists. A third branch is the Duke Rehabilitation Clinic, which has its offices in downtown Durham and which is set up to handle the problem of psychiatric rehabilitation for discharged veterans. This is one of four such clinics in the entire country. Its program is to evaluate and treat psychiatric disorders in veterans, to study the problem of psychiatric rehabilitation for North Carolina and for the South, to devise new methods of treating large numbers of patients, and to teach medical students military and rehabilitation neuropsychiatry. This clinic, which was organized in July, 1944, is seeing veterans at the rate of 500 a year. It has a working relationship with the Veterans Administration and the State Division of Vocational Rehabilitation Clinic, and might serve as a model for future rehabilitation clinics.

In addition to carrying on the work of these branches, the Department of Neuropsychiatry is taking an active role in the program of mental health in North Carolina. Its psychiatrists constitute the physicians' staff of the Charlotte Mental Hygiene and the Wake County Mental Hygiene Clinics. One of its members gives the course in mental health at the School of Public Health in Chapel Hill. The psychiatrist on the advisory panel of medical specialists for the physical restoration program of the Division of Vocational Rehabilitation is from that department. One of its members is psychiatric consultant to the State Board of Charities and Public Welfare. It has a member on the subcommittee for mental hygiene in the governor's medical care program.

As active as this department is, it is seriously limited by its cramped quarters. There are at least 100 patients on the waiting list for admission to the psychiatric floor of Duke Hospital, and 200 beds could easily be filled.

Bowman Gray School of Medicine of Wake Forest College

The psychiatric facilities of the Bowman Gray School of Medicine consist of a 24-bed unit in the Forsyth County Hospital, 4 beds of which are for acute cases. This unit is under the Department of Medicine.

Charlotte Mental Hygiene Clinic

The Charlotte Mental Hygiene Clinic was founded in 1933 and is sponsored by the Charlotte Mental Hygiene Society. It is the oldest psychiatric clinic in the state and is a very active one. It sees between 300 and 400 patients each year, all of whom must come from Mecklenburg County. It has a full time social worker and a part-time psychiatrist and psychologist.

The Mental Hygiene Clinic of Raleigh and Wake County

This clinic was established in 1940, and at the present time sees approximately 150 patients a year. It is supported by the Community Chest of Raleigh. It could almost be called the child guidance clinic for North Carolina since, although adults are seen here, the staff concentrates upon problems of childhood, and 85 per cent of its clientele are children. It is staffed by a part-time psychiatrist, social worker and psychologist, although the budget allows for a full time psychiatric social worker.

Asheville Guidance Clinic

This is a small, part-time clinic which sees approximately 100 patients a year and is housed in the offices of the Asheville Department of Public Health. It is not sponsored by the Asheville Mental Hygiene Society but was organized by the efforts of a retired psychiatrist.

Pinebluff Sanitarium

This private sanitarium is located in Pinebluff, and has facilities for approximately 35 patients, most of whom are psychotic. Its rates are average for private mental institutions. It is staffed by two psychiatrists, but the number of nurses and attendants is limited because of war time circumstances, a condition which is common to all private institutions in the country. Modern methods of treatment are used here.

Broadoaks Sanatorium

Broadoaks Sanatorium, in Morganton, is an old, well-established institution which can house 60 patients but which, owing to the good judgment of its director, has restricted the number of its patients to approximately 35 because of the limited nursing staff. Its rates are more reasonable than those of most such private institutions. At the present time it appears to concentrate upon problems of the aged. It is staffed by two psychiatrists. Modern methods of psychiatric treatment are not used here, principally because of the limited nursing personnel.

Appalachian Hall

This institution has met with physical handicaps during the last three years but has nevertheless managed to function with a high degree of efficiency. Its original quarters were leased to the navy for a reconditioning hospital, and the owners were compelled to house their patients in two buildings widely separated. Recently they have purchased the grounds and buildings of Asheville College, and plans are under way to convert these into a psychiatric institution. Appalachian Hall is staffed by two psychiatrists and uses modern methods of treatment. It, too, is short of nursing personnel.

Glenwood Park Sanitarium

This is a small sanitarium in Greensboro devoted principally to the treatment of addiction; it has 18 beds, a part-time physician, and no psychiatrist.

Highland Hospital

In 1939 the owner and the Board of Trustees of Highland Hospital in Asheville gave this institution to Duke University as a gift. It was thereupon leased to Highland Hospital, Inc., by Duke for a period of five years, ending September 1, 1944. At that time the lease was renewed and a new Board of Trustees was elected, made up principally of representatives from Duke University and the old Highland Hospital, Inc. Highland Hospital is not a psychiatric unit of Duke University. It is owned but is not operated by the University. It has no formal relationship with the Department of Neuropsychiatry. There is, however, some degree of affiliation between the staffs of the two institutions.

Highland Hospital has 60 patients who are treated by the most modern methods available. It is known as a center for insulin treatment. It has a reputation also for the "total push" method of treating psychiatric patients, which consists of exercise, stimulation and encouragement into practical activity. It is staffed by four psychiatrists, has a course in postgraduate psychiatric nursing, and knows no shortage of nursing personnel at the present time.

By societies

There are four state societies which are exerting an influence upon the mental health of the state.

Medical Society of the State of North Carolina

The president of the Medical Society of the State of North Carolina has appointed a committee to advise him upon mental hygiene matters. This is headed by an internist, not a psychiatrist. This development is a recent one so that the committee's recommendations have not been announced. There is no section in the state medical society devoted to neurology and psychiatry.

North Carolina Neuropsychiatric Association

This is an old society, which was well organized until the war. During the war, because of transportation difficulties and the over-burdening of its members, the society became inactive for a period of two years. Recently it has been reactivated. Its 52 members are made up chiefly of psychiatrists, several neurologists and some interested practitioners in medicine. It has recently felt the necessity of giving professional advice in the development of mental health programs within the state, and the president has appointed a committee on state mental health, a liaison committee with the state medical society, and a second liaison committee with the North Carolina Mental Hygiene Society.

The Charlotte Mental Hygiene Society

This is a very active community society which has exerted considerable influence on mental hygiene in the state. It is responsible for the Charlotte Mental Hygiene Clinic. Recently it has suggested certain pertinent changes in the mental health laws of North Carolina.

North Carolina Mental Hygiene Society

This state-wide society, which is an outgrowth of the Charlotte Mental Hygiene Society, has always been active in the state and recently has increased its activity. Formerly it depended heavily upon its lay members for guidance. Recently it has enlarged its scope, has included as active members and officers interested individuals throughout the state and is becoming increasingly aware of the need for professional members to give it active assistance. For several years much of the activity of the society was devoted to planning, but practical action was not forthcoming. During the past year a legislative committee, a research committee, and a membership committee have made action possible. The society has been intensely interested in studying and promoting changes in the present statutes. Its financial support comes entirely from its membership. It needs seriously a full time executive secretary, but does not have the appropriation for one.

The Problem of Limited Psychiatric Personnel in North Carolina

Throughout all the organizations in North Carolina devoted to mental health there is a definite shortage of psychiatrically trained personnel. North Carolina has sixteen psychiatrists in the state hospitals, whereas it needs almost forty to fulfill the recommendations of the State Hospitals Board of Control. The private sanitariums have in all ten psychiatrists. None of these twenty-six psychiatrists can devote any time to the care of patients outside of institutions. This burden falls upon the fourteen remaining psychiatrists in the state, twelve of whom are at Duke. The two practicing psychiatrists who are not at Duke are located at Charlotte and at Winston-Salem. There are in the state two full time practicing neurologists, both of whom are at Duke. The psychiatrists at Charlotte and Winston-Salem also practice neurology. There are a few internists in the state who devote a small portion of their practice to psychiatry. In all there are in North Carolina twenty physicians practicing outside of institutions who devote either all or part of their time to psychiatry or neurology. These men can handle only a small proportion of the cases needing treatment. It is estimated that, in addition to caring for their civilian practice, each one of these will have 4,400 ex-service men and rejected inductees with psychiatric disabilities as patients after the war. This is an impossible situation.

Of all the psychiatrists and neurologists in the state there are eight who are certified to practice as specialists in psychiatry by the American Board of Psychiatry and Neurology, and four who are certified as neurologists.

The situation regarding psychiatric social workers is even more trying. In the state there are only three qualified psychiatric social workers.

Most of the nursing schools in the state have no psychiatric teaching program, and none of them have affiliations with psychiatric institutions. The State Hospital at Raleigh has its own nursing school, and the Department of Neuropsychiatry at Duke gives the Duke nursing students psychiatric training. Apart from these two institutions psychiatric nursing education is sporadic and inferior. The Highland Hospital has a postgraduate nursing course, and a similar one is planned for Duke.

Because of the war there is a shortage of clinical psychologists. The State Board of Charities and Public Welfare is lacking one out of its quota of two. The fact that none of the state hospitals have clinical psychologists is a sad commentary, in the light of modern psychiatric practice. None of the private institutions outside of Duke have psychologists. At the present time the Department of Neuropsychiatry at Duke has one full time and one part-time psychologist. The Duke Department of Psychology is interested in training clinical psychologists, but this interest has had to be tabled because of the war. The Department of Psychology at the University of North Carolina should be encouraged to train clinical psychologists.

From Whom Should Come the Initiative for Progress in Mental Health?

Until recently most of the initiative has come from individuals outside the profession of medicine. The State Board of Charities

and Public Welfare, the North Carolina Mental Hygiene Society, and the Charlotte Mental Hygiene Society have been most active. The State Board of Public Instruction has begun to show an active interest in the problem of mental health. The School of Social Work at Chapel Hill is beginning to institute changes in their part of a state mental health program. The lay members of the State Hospitals Board of Control have exerted a considerable influence in the development of a total mental hygiene program for the state. It is not to the credit of men in the medical profession that the responsibility for community service related to mental health has been left to the laity. Only recently have the Medical Society of the State of North Carolina and the North Carolina Neuropsychiatric Association awakened to the fact that there is a deep and certain movement within North Carolina toward progress in a mental health program. It is not too late for action. All credit must be given to the initiative of those individuals outside the field of medicine who have taken the responsibility for the mental health of the citizens of the state. They are doing the state great service. In a tuberculosis or cancer program these laymen would not consider proposing wide-spread innovations which would set the tempo of prevention and cure for the next one hundred years without professional counsel. Since in psychiatry one is dealing in large part with human emotions, it is not unreasonable that every man considers himself a psychiatrist, whereas he would not think of amputating a leg unless he had had at least ten years of training to do so. These interested laymen need professional counsel, or else both good and bad measures will be included in the mental health program set up at this time. And the bad measures may take years to undo.

The question of overlapping and division of function

When many individuals and groups are independently interested in a single project, there is bound to be overlapping of function. Each group will naturally want to institute measures which will satisfy its own particular interest. Many organizations will try to fulfill functions which are already being carried out by other organizations. There is certain to be confusion as to where the division of function lies.

The simplest answer to such a problem rests in the foundation of a central authority to organize the many functions inherent in a mental health program and apportion these functions to qualified and interested agencies. Under present legislation it is impossible to do this. A constitutional mandate gives the North Carolina State Board of Charities and Public Welfare the responsibility for the supervision of this function, yet this board does not have the authority to carry it out as might a State Board of Mental Health set up under a constitutional amendment. Its present function may turn out to be a nominal one as far as mental health is concerned, with authority resting in the State Hospitals Board of Control. The State Hospitals Board of Control, on the other hand, does not have the authority for the state organization of those phases of psychiatry which lie outside of the premises of the state hospitals and which constitute a larger proportion of the psychiatric problem. These phases will be strongly influenced by a department of psychiatry at the proposed four year medical school at the University of North Carolina and by the subcommittee on mental hygiene of the Governor's Commission for Hospital and Medical Care. As a result there will probably be created some further problems of overlapping of function with the Hospitals Board of Control and the Division of Psychiatric and Psychological Services of the Board of Charities and Public Welfare.

The Duke Department of Neuropsychiatry can function as a training center and as a salutary influence upon the quality of psychiatric practice throughout the state. The state medical society can bring to its members, the practicing medical profession of the state, new attitudes related to the mentally ill. The North Carolina Neuropsychiatric Association can make psychiatric counsel available to any state organization. The importance of the North Carolina Mental Hygiene Society's role as a medium for mental hygiene education of the public cannot be overestimated.

All of these functions have to be clearly delimited so that efficient results and little or no overlapping will occur. It becomes, then, a question of a new mental health act which would set up a State Department of Mental Health as a central authority for division of function, or the institution of a State Mental Health Council as advocated

by the 1936 Thompson Report. This Council should consist of representatives of all state and private agencies concerned with the problem of mental health.

Recommendations for the Solution of the Mental Health Problem

In the light of the above discussion, the following recommendations for raising the quality of the care of the mentally ill in the state and for meeting the great needs of mental health are offered to the state legislature and to other interested organizations.

1. That the legislature approve an appropriation large enough to enable the recommendations of the Hospitals Board of Control to be carried out.
2. That the legislature authorize a new state hospital of 2500 beds to be built in the south-central portion of the state, instead of enlarging present state hospital facilities.
3. That a second institution for the feeble minded be built in the western section of the state.
4. That a hospital for mentally deficient Negroes be constructed adjoining the State Hospital at Goldsboro.
5. That the salaries of all state hospital superintendents be equalized.
6. That the laws pertaining to the position of general superintendent of mental hygiene be modified to make his tenure of office indefinite, to give him the position as unrestricted head of the state hospital system, and to provide him with an adequate professional staff.
7. That the statutes pertaining to the commitment of the mentally ill be changed in the following ways:
   a. Substitution of modern psychiatric terminology for the terms used in the laws.
   b. Revision of Statute (C. S. 6209), which is entitled "Commitment upon patient's own application."
   c. Adoption of a law providing for a period of observation and study before commitment.
   d. Revision of Statute (C.S. 6212) which provides for temporary care of mentally ill patients in jail.
   e. A change allowing for the transportation of psychiatric patients to a state hospital under the care of psychiatric attendants rather than court officers.
   f. Revision of the commitment laws so that a patient can be detained in a state hospital for ten days on the basis of a commitment paper signed by one physician or one court officer, or for thirty-five days on the basis of a paper signed by two physicians. At the end of thirty-five days, on the recommendation of the state hospital physicians, a patient is either automatically discharged or committed permanently by action of the superior court. This obviates the need for clerks of court to act as physicians or psychiatrists and, in some cases, permits treatment in a state hospital without permanent commitment.
   g. Revision of statute (C.S. 6210) which deals with inter-state transfer of mentally ill patients. It should be provided by law that the patient can be transferred from an institution in another state directly to one of the state hospitals in North Carolina without first being compelled to return to his home county, where he will reside in jail until a vacancy exists in the state hospital.
   h. Further clarification of the statute (C.S. 610) entitled "proceedings in case of insanity of a citizen of another State" as related to the problem of the epileptic patient. This statute is interpreted by the Raleigh State Hospital to mean that an epileptic is ineligible for care in that hospital if his first epileptic seizure occurred while he was a resident of another state, no matter how long he may have been a resident of North Carolina.
   i. Revision of statute (C.S. 6185) relating to the admission of the insane idiot. Under the present provision an idiot who is adjudged psychotic cannot be admitted to any state hospital, including Caswell, unless he is a Negro.
   j. The adoption of a law which requires that no state hospital patient on probation can be discharged unless he has been examined by a state hospital psychiatrist just prior to the time of discharge.
   k. The adoption of a law which will provide that any criminal suspected of a major felony can, on the judgment of the presiding officer of the superior court, be committed to a state hospital for a period not exceeding thirty-five

days for observation to determine whether he has a psychiatric disorder.

8. That a state institution be established for the care and treatment of epileptic and psychotic children.
9. That a state school for mentally defective delinquent children be established.
10. That the following suggestions be incorporated in the proposed medical care program for indigents.
    a. There should be a strong, modern department of psychiatry at the proposed four-year medical school. This department should consist of a staff of five to ten psychiatrists who have had the best training possible, and the salaries offered should be sufficiently high to attract good men. Facilities should be available for the training of interns and residents in the field of psychiatry. It should also have facilities to train psychiatric nurses and psychiatric social workers. The department should be flexible enough to allow medical interns to rotate through it as part of their internship training.
    b. This department should be housed either in a wing of the general hospital at the four year medical school or in a building adjacent to it. Sixty beds have been proposed for such a unit, but 100 or 120 would be ideal. There should be 60 beds for adult white patients, 20 beds for children, and 20 beds for Negro adult patients. Such a unit should have a good social service department, an occupational therapy department, and a physical therapy department. It should contain laboratory facilities to attract good men interested in research. In this unit every type of modern psychiatric treatment should be used, not only for the welfare of the patient but also for teaching purposes. The men in the state hospitals for the insane should have the opportunity of working in this unit for a brief period each year to receive stimulation and education related to innovations in treatment.
    c. Since the above unit is connected with the general hospital, most of the patients will be individuals with minor psychiatric disorders. It has been the experience of certain other states that receiving hospitals for the acute cases of mental illness have proven to be most economical for the state and of most benefit to the individual patient. The Boston Psychopathic Hospital, operated jointly by the State of Massachusetts and the Harvard Medical School, and the Langley Porter Clinic in San Francisco, which functions under the State of California and the University of California Medical School, serve both as teaching units such as the one proposed above and as receiving hospitals for the state institutions for the insane. The advantages of such an arrangement are that a great amount of teaching material is made available; that many patients who would otherwise have to be committed to a state hospital are successfully treated without a permanent commitment; and that patients receive modern methods of treatment much more quickly than they would in a large state hospital, with the result that a greater number eventually recover. It would seem advisable, under the proposed medical care program in this state, to use the psychiatric unit of the four-year medical school as a receiving hospital and to establish one other receiving hospital of a similar nature in the state. Such a program would decrease the number of patients in the state hospitals for the insane, would prevent many patients from becoming permanent wards of the state, and would ultimately result in a vast financial saving for North Carolina.
    d. So far the proposals have dealt with the mental health teaching program and the care of the insane. Some of the larger proportion of individuals with minor psychiatric disorders would be cared for in the psychiatric unit of the general hospital and in the other receiving hospital. The problem will scarcely be touched through these measures, however, unless the proposed county and community hospitals under the medical care program are supplied with facilities for the care of the psychoneuroses, psychological disorders associated with medical and surgical disease, and personality problems. Every county hospital should

have a small number of beds (5 to 10) for psychiatric patients. Each one should also have in its outpatient organization a psychiatric clinic. It should, if possible, have one psychiatrist and one psychiatric social worker. If this is impossible because of limited personnel there should be some system whereby the psychiatrists from the receiving units could be available for regular and frequent psychiatric consultation. Every small community hospital or community clinic under the medical care program should have psychiatric facilities also. These smaller hospitals should have at least 2 or 3 beds for psychiatric patients, and psychiatric clinics should be held regularly under the direction of psychiatrists from the county hospitals or from the state receiving hospitals. Unless psychiatric care permeates the entire state system in this way, North Carolina will be sorely neglecting one of its large problems.

11. The adoption of a law providing for a mental health council made up of representatives of all state agencies which have any responsibility whatsoever for the mental health of the citizens of the state.

These recommendations furnish a practical ideal. It may be that not all of them can be realized now. The present, however, is the time for action. In addition to the usual number of psychiatric patients in North Carolina, there will be during the post-war period a great added load of individuals who will need psychiatric care. These will be the discharged service men, the induction rejectees, the families of service men, and industrial workers undergoing a readjustment from war to peace time conditions. North Carolina has the opportunity of coordinating its mental health activities and improving its mental health facilities so that it can stand in the forefront of all states in terms of medical progress. The citizens of the state and all public officials responsible for administering a mental health program will turn to the physicians of the state to carry it out. This fact is inescapable, since psychiatry is inseparably bound with medicine. The responsibility for the mental health of the people of North Carolina right now rests in the hands of the legislature. After that it will in large part rest upon the shoulders of the medical profession. What is being done now, therefore, will influence the practice of medicine for the next several decades.

THE PROPOSED PROGRAM FOR THE STATE HOSPITAL AT MORGANTON

J. R. SAUNDERS, M.D.
Superintendent
STATE HOSPITAL AT MORGANTON
MORGANTON

Since the last meeting of this association there has been a vast change in the governing bodies which control the mental institutions of this state. On July 16, 1943, a sixteen-member Board of Control was organized, and immediately set about its task of improving conditions in all of the state mental institutions. Their program has been ambitious and I am sure they will do all in their power to see that the treatment and care of the mentally sick in North Carolina is improved until it equals that administered by the best institutions of like kind in this country.

When the new Hospitals Board of Control assumed office in July, 1943, the state hospitals for mental patients ranked about forty-fifth or forty-sixth in the union, according to the standards of the American Psychiatric Association. It is my opinion that this state of affairs can be attributed largely to the failure of our state legislature to provide sufficient funds to maintain our institutions adequately. However, I feel that the legislature has become sympathetic to the needs of our state hospitals, and is now willing to provide funds for the care of the mentally ill.

Since becoming Superintendent of the State Hospital at Morganton in July, 1943, I have been privileged to have a part in suggesting a program for that institution; therefore, I will confine my remarks from now on to the new program as it relates to the State Hospital at Morganton.

The program we had for the State Hospital at Morganton at the beginning of my administration has been disrupted and delayed on account of the war. Despite this fact, however, I feel that we have made some progress and that our plans for the future are sound and will mean much to this institution.

Read before the North Carolina Neuropsychiatric Association, Durham, November 24, 1944.

At the present time we have 2,721 patients at the State Hospital at Morganton. We anticipate an increase of about 100 patients per year, if new buildings are provided by the next legislature. We have just requested for the year 1945, through the Advisory Budget Commission, an appropriation of $1,612,420. The appropriation for 1934 was $262,297.44, and that for 1943, $706,205.

For many years the State Hospital at Morganton has been miserably under-staffed. At present we have only four doctors on the staff. It will be impossible to obtain doctors until the war is over, but we are nevertheless requesting an adequate appropriation from the next legislature to employ twelve full-time doctors and a part-time surgeon, a part-time ear, eye, nose and throat specialist, and a part-time internist. We have also asked for a sizable increase in the salaries of our medical staff, in order that we might obtain and keep competent psychiatrists.

Next in importance, in my opinion, is the employment of competent attendants and nurses. These, of course, will be extremely difficult to obtain until after the war, but we have requested funds to employ a sufficient number of attendants and nurses to comply with the standards of the American Psychiatric Association—one hundred and thirty-five female attendants (as compared with seventy-nine now allowed) and one hundred and twenty-five male attendants (as compared with ninety-eight now allowed). We have also requested a sufficient amount of money to pay them what we consider a living wage. As recently as 1940 the salaries paid attendants were $20.00 a month for women and $40.00 a month for men. The attendants and nurses are the backbone of a state hospital, and much care should be given to their selection. An adequate education is one of the first things to be considered in employing an attendant, but is by no means the only consideration. An individual with very little schooling sometimes makes a much better attendant than one with a high school education. It is our plan to conduct a training school for attendants as soon as it is possible.

Since all of us agree that dentistry is important in any medical program, we have requested funds to employ an additional dentist and to purchase extra dental equipment. We now have only one dentist to care for 2,700 patients. It is humanly impossible for him to render the proper care to all these patients.

So far as I know, there has never been a social service department connected with the State Hospital at Morganton. This type of service is invaluable to any mental institution, and we are proposing a well-organized social service department for this hospital. Funds have already been made available for the employment of a full-time psychiatric social service worker, and we are asking the next legislature to provide funds for the employment of several assistants. The information that this department will be able to obtain for us will be of great value in helping us to diagnose and treat our patients properly, and the department will render an important service to the patients who are allowed to go home.

There has never been a full-time recreational director at the State Hospital at Morganton. Knowing the value of recreation in the treatment of mental diseases, we made a determined effort to obtain funds to employ a full-time recreational director. I am glad to say that these funds have recently been provided, and I hope to be able to fill this position at an early date. When this program is finally organized, competent assistants will of course be necessary.

In my opinion, occupational therapy is one of the most valuable adjuncts in the treatment of mental diseases. This type of therapy has been carried on in a small way at Morganton for a number of years, but the funds provided for it were quite inadequate. We have no building suitable for this type of work, and the salary allowed at the present time for the supervisor of occupational therapy at Morganton is so small that it would be utterly impossible to obtain a well recognized occupational therapist. We are requesting of the next legislature a building for occupational therapy, to cost $118,100.00. We are also requesting a salary that would be adequate to obtain a competent head for such a department. In addition, we are asking for two assistants and ten qualified attendants to work solely in this department.

The hydrotherapy equipment that we now have has become obsolete and unfit for use. The value of hydrotherapy in the treatment of mental diseases is unquestioned; therefore, I have proposed that we employ a competent and well recognized hydrotherapist and that funds be provided for the purchase of modern equipment to be installed in our admission building.

There has never been a nurses' training school at the State Hospital at Morganton that would meet the present day requirements. At present the feasibility of such a school is being considered. I believe that for all practical purposes it would be much better to receive nurses from general hospitals as affiliates for a certain number of months of psychiatric training. In this way we would have student nurses in the hospital at all times.

I feel that the State Hospital at Morganton should be affiliated with one of the medical schools of the state and that there should be some agreement whereby students from the school could be sent to the hospital for a given length of time. In my opinion this arrangement would be of much value to the medical students, serving to stimulate their interest in psychiatry. This subject has been woefully neglected in many medical schools in years gone by. I think that it would also be quite profitable to have a working agreement between the State Hospital and the pathological department of the same medical school.

I have recommended a full-time pathologist for our hospital, but until the laws concerning mental hospitals are changed it will be impossible to obtain permission for a sufficient number of autopsies to warrant the employment of such a person.

It is my opinion that the laws governing the admission of mental patients to the various state mental institutions should be revised. I feel that the legal aspect of the commitment should be minimized as much as possible and that much stress should be laid on the medical aspect of the commitment. I share the opinion of many who think that the paper which legally commits a patient to a state hospital in North Carolina should have the signatures of at least two well qualified physicians. I have recommended to the Legislative Committee of the Hospitals Board of Control that the new commitment papers have incorporated in them authority to perform autopsies, and authority to operate on any patient if the Superintendent and the medical staff of the hospital think an operation is advisable (sterilizations excluded). According to the present law, permission must be obtained from the nearest relative before a major operation can be performed on a patient in a state hospital. If a patient from a rural section of one of our remotest counties develops an acute abdominal condition, it often takes several hours to get a message through to the nearest relative that an operation is necessary. This delay may sometimes be fatal. The commitment papers are also inadequate in that they give but very little information concerning the patient. If, however, we can obtain the services of competent psychiatric social workers, they will relieve that situation to a great extent. There are other laws that concern the governing of the state mental institutions which I would like to discuss, but limits of time will not permit me to do so. I will say, however, that it is my opinion that some of them would be strongly condemned by the American Psychiatric Association.

During the past several months, there has been a definite increase in the number of senile patients admitted to the State Hospital at Morganton. It is my understanding that this same condition exists in similar institutions throughout the United States. I am aware of the fact that much work is now being done in the specialty of geriatrics, and I am heartily in favor of a program that will properly care for these people. Too often, because of crowded conditions, these patients have to be placed on the wards with the acute cases. I feel that if it is necessary to admit senile patients to a state hospital, a separate and distinct unit should be provided for them. If such a unit is provided, I think it is extremely important to have specific regulations regarding eligibility for admission, in order that it will not become a county home on a large scale.

Much too often research is neglected in state hospitals, and the State Hospital at Morganton is no exception. If we are able to increase our staff and obtain the services of a pathologist, I will strongly urge that a research program be started at Morganton. We have already begun our medical library, and I hope that it will be possible for us to enlarge it until it will be adequate for all of our needs.

As soon as it is possible to obtain trained psychiatrists, it is our intention to sponsor outpatient clinics under the supervision of the State Hospital at Morganton. I feel that such clinics would be a great help in many ways. Their greatest value, no doubt, would be in the early diagnosis of many borderline mental cases, at the time when it is agreed that treatment is most effective. They would also be of much value to our paroled

patients who, as a rule, need a great deal of supervision and advice after leaving the hospital.

Our building program at Morganton is rather ambitious, but we have asked for nothing that is not needed. The buildings requested for housing patients are urgently needed because of the extremely crowded conditions that now exist throughout the entire hospital at Morganton. The total appropriation requested for buildings at Morganton is $3,876,100. I will not describe in detail each building asked for, but will only mention those that are needed mainly for the care and treatment of patients.

(1) Receiving building for female patients, containing accommodations for approximately 184 female patients, with the necessary office, treatment and service facilities.
(2) Receiving building for male patients similar to the receiving building for female patients.
(3) Hospital building, containing accommodations for approximately 125 patients, with an operating room, laboratory, dental and x-ray departments included therein.
(4) Female ward building, containing accommodations for approximately 300 female patients.
(5) Building for occupational therapy.
(6) Replacement of obsolete colony buildings that present a constant fire hazard.
(7) New male ward building, containing accommodations for 125 male patients.

If the above buildings are added, the net increase in capacity for patients will be 928 beds.

We have also requested adequate housing facilities for the medical staff and other employees of the hospital.

In conclusion, I will admit that this is a very ambitious program, but we feel that all of this is essential to bring the State Hospital at Morganton up to the standards prescribed by the American Psychiatric Association. I hope that each one of you will assist in every way that you can the program that has been recommended for this hospital, as well as for the other mental institutions of the state, in order that North Carolina may take her place as a leader in the field of psychiatry and the care of the mentally ill.

COCCIDIOIDOMYCOSIS

CAPTAIN JOSEPH P. McCRACKEN, M.C.
ARMY OF THE UNITED STATES

During the past year four soldiers with coccidioidomycosis have been studied at the Station Hospital at Fort Bragg, North Carolina. These men had spent several months for training in an area where this infection is endemic. Since a large number of soldiers who have been trained in such areas will later be dispersed to all sections of the country, it is of the utmost importance that all physicians have an understanding of this disease.

Forms of Coccidioidomycosis

Coccidioidomycosis, an infection caused by the fungus Coccidioides immitis, occurs in two forms:

1. *Primary* or initial. This is an acute, benign respiratory infection with or without skin and joint manifestations.

2. *Progressive* or chronic. This is a disseminated, usually fatal disease, manifested by cutaneous, subcutaneous, osseous, and visceral lesions.

The chronic, granulomatous form has been well known for fifty years. The primary form was not recognized until 1935, when Gifford and Dickson[1] showed that Coccidioides immitis is the cause of the "valley fever" and "desert rheumatism" prevalent in the San Joaquin Valley of California. This was the first known endemic area in the United States, but the fungus has since been found to exist in other parts of southern California, and in Arizona, Utah, and western Texas.

Incidence

The disease is seasonal, occurring chiefly in the dry, dusty period of the year. It is most prevalent in the summer and fall, and decreases during the few rainy months. The longer the residence in these endemic areas, the higher the percentage of infections. Approximately four-fifths of the permanent residents in the San Joaquin Valley have positive coccidioidin skin tests.

Read before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Pinehurst, May 3, 1944.

1. (a) Dickson, E. C.: Coccidioides Infection, Arch. Int. Med. 59:1029-1044 (June) 1937.
(b) Dickson, E. C. and Gifford, M. A.: Coccidioidomycosis, Primary Type of Infection, Arch. Int. Med. 62: 853-871 (Nov.) 1938.

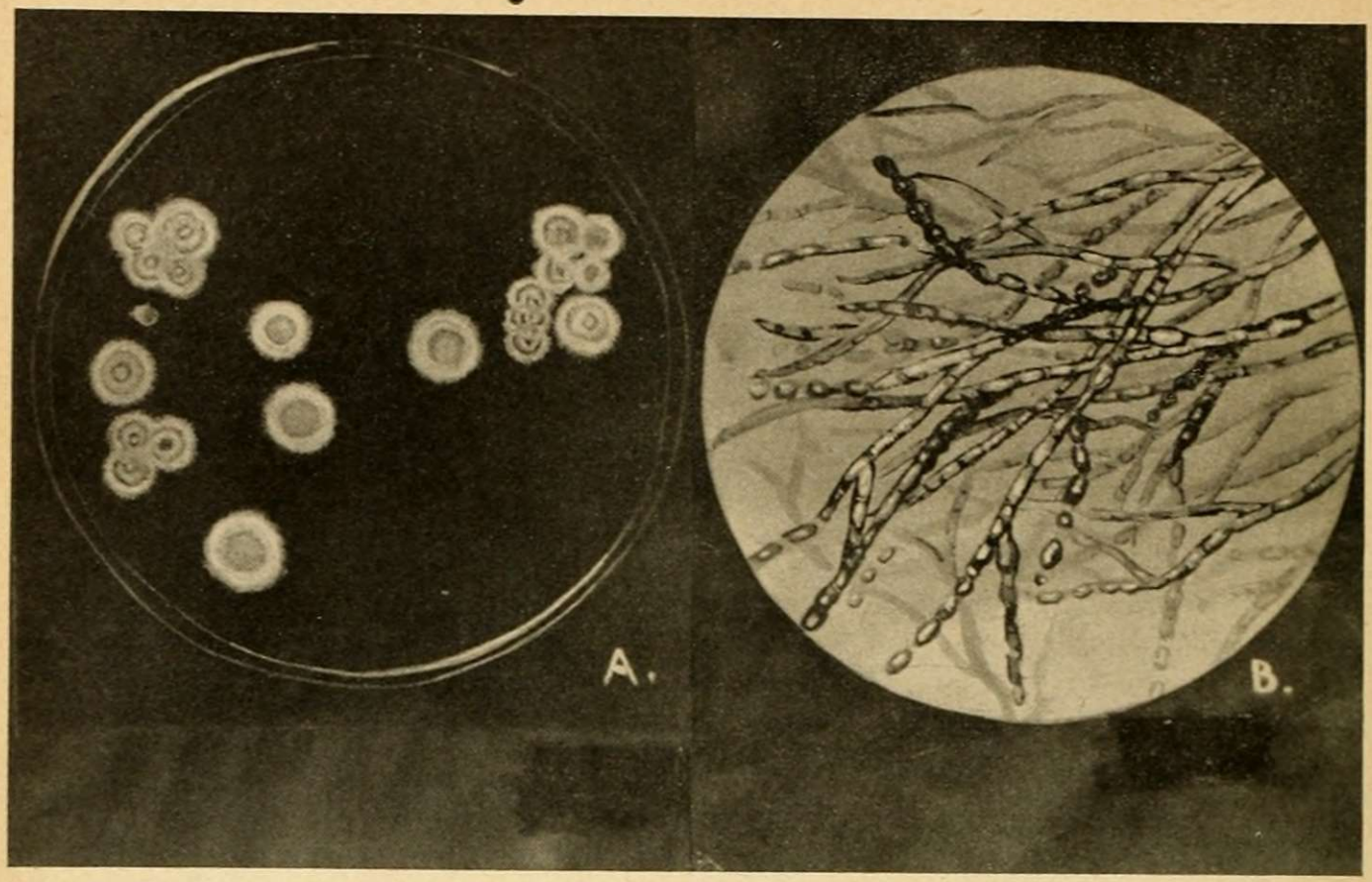


Fig. 1. a. Culture of Coccidioides immitis on Sabouraud's medium, showing its white, cottony growth. (Figures 1 and 2 are diagramatic reproductions taken from the syllabus "Coccidioidomycosis Control Program for the Army Air Forces Western Flying Training Command," published September 15, 1943, Headquarters, Army Air Forces Western Flying Training Command, Office of the Surgeon, 1104 West 8th St., Santa Ana, Calif.) Appreciation is expressed to the artist, Private First Class Edward T. Cooper, of the Medical Detachment of Station Hospital, Fort Bragg, N. C.

b. Microscopic appearance of old, pigmented culture, showing the fragmented chlamydospores.

Causative Organism

The fungus Coccidioides immitis grows on very simple media and on a variety of substances in nature. In the saprophytic form the growth appears white and cottony on solid media (fig. 1-A.) The older, pigmented cultures consist of multitudes of chlamydospores (fig. 1-B.) In this form the fungus may infect man. In an infected animal the chlamydospores assume a spherical shape. The protoplasm of the spherules divides by segmentation, forming endospores within the doubly refractile wall. This resulting mature spherule is the parasitic form that occurs in man (fig. 2).

Infection occurs as the result of inhalation of the chlamydospores. Initial infection produces permanent immunity.

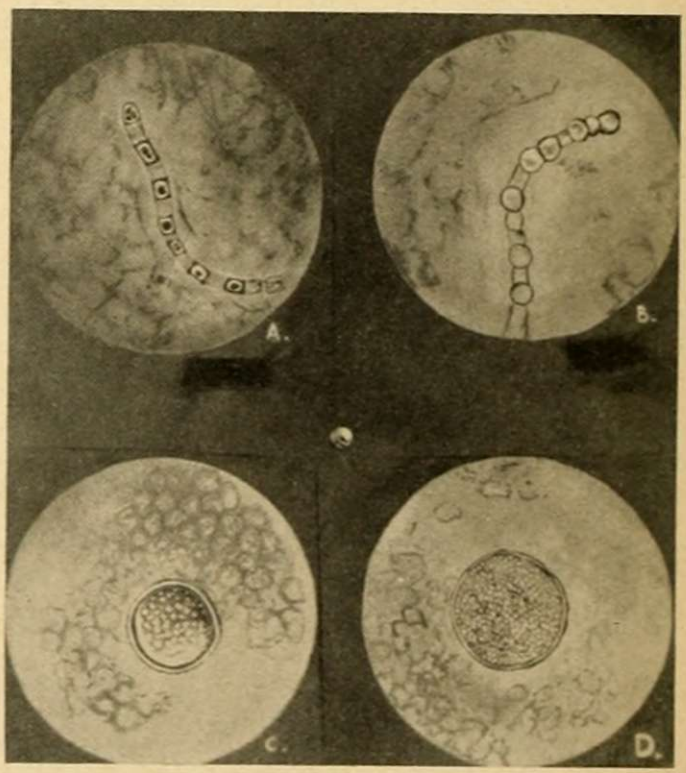


Fig. 2. Development of mature spherules.
a. Chlamydospores in tissue.
b. Chlamydospores assuming a spherical shape.
c. Protoplasm dividing, by segmentation, into endospores.
d. Mature spherule, containing endospores within its doubly refractile wall. The spherule ruptures, releasing the endospores into the lymphatics and blood stream.

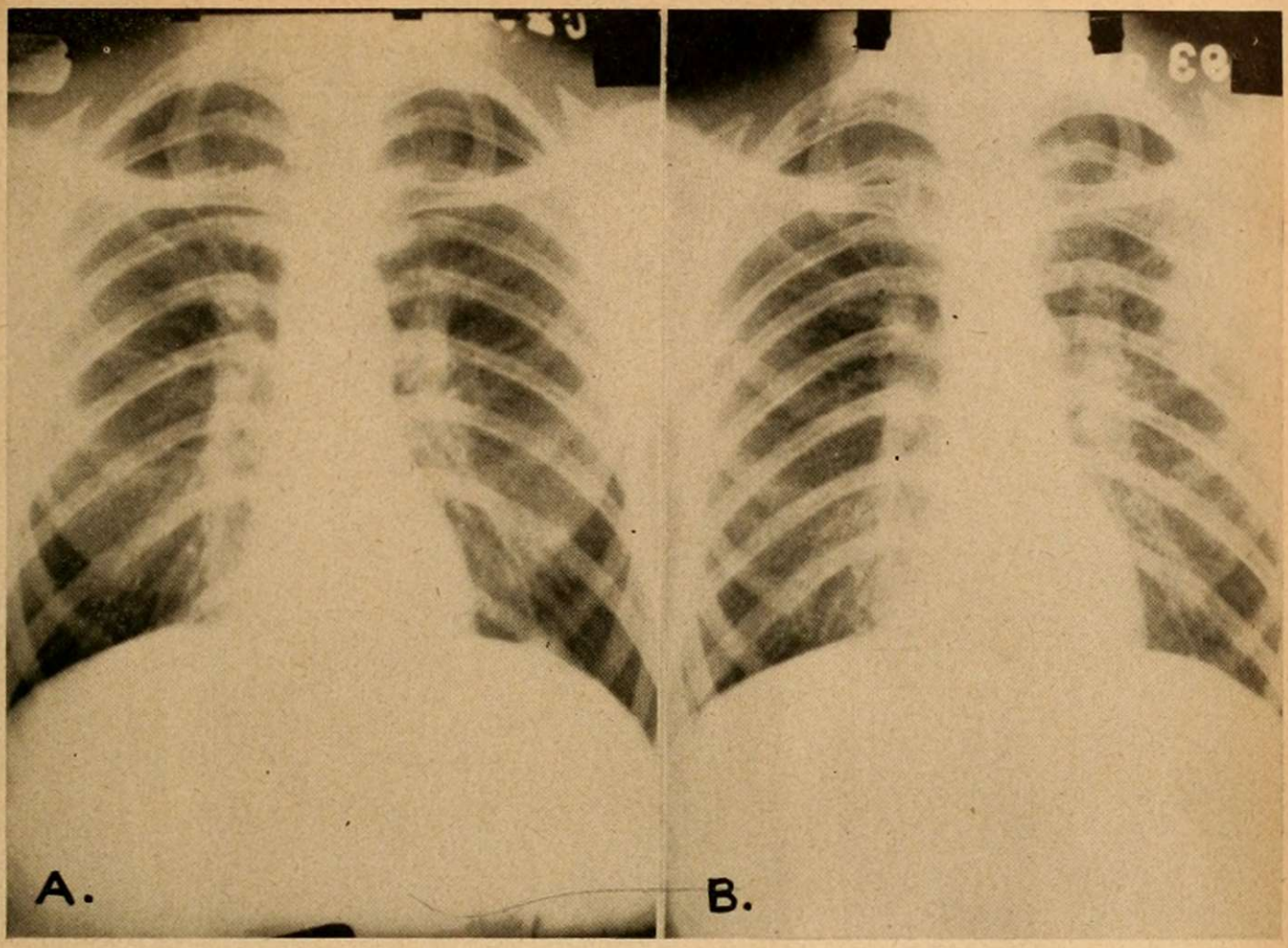


Fig. 3. Roentgenograms of the chest in case 2. The second film (b) reveals an area of increased density in the left upper lobe, appearing one week after the first film (a), which is negative.

Clinical Manifestations

Primary form

The clinical manifestations of coccidioidomycosis are varied. Many cases are subclinical and the only evidence of infection with the fungus is a positive coccidioidin skin test. The primary infection usually produces an illness with low grade fever (99 to 101 F.), chills, anorexia, headaches, and backache. Pleural pain may be present as a mild, constricting sensation or may be severe enough to suggest coronary occlusion, cholecystitis, or renal colic. Cough is usually non-productive, but may produce small amounts of muco-purulent sputum, sometimes blood streaked. The onset of the infection may be gradual or sudden. In its initial stages the disease is usually diagnosed as influenza, atypical pneumonia, or a common cold.

Physical examination reveals a healthy appearing individual. There may be a mild nasopharyngitis. The chest signs vary according to the degree of pulmonary involvement and may be lacking entirely or may be those of pneumonia, fibrinous pleurisy, or pleural effusion. Skin lesions suggestive of erythema nodosum have been observed in 3 to 24 per cent of the cases. These skin lesions appear during the first three weeks of the infection and are most frequently seen on the shins, knees, thighs and upper extremities. Erythema multiforme is another skin manifestation and may appear alone or in addition to the erythema nodosum. Patients with skin involvement are less likely to develop the progressive form of the disease.

A transient, acute polyarthritis also may occur. Almost any joint may be involved, but the knees and ankles are the most frequent sites. Symptomatic response to salicylates is not so striking as in rheumatic fever.

A roentgenogram of the chest may reveal one or more of the following changes:

1. Soft, fuzzy hilar densities.
2. Pneumonia-like infiltrations.
3. Nodular parenchymal lesions.
4. Mediastinal and hilar adenopathy.
5. Pleural effusion.

The pneumonic infection may result in cavity formation, but this is usually asymp-

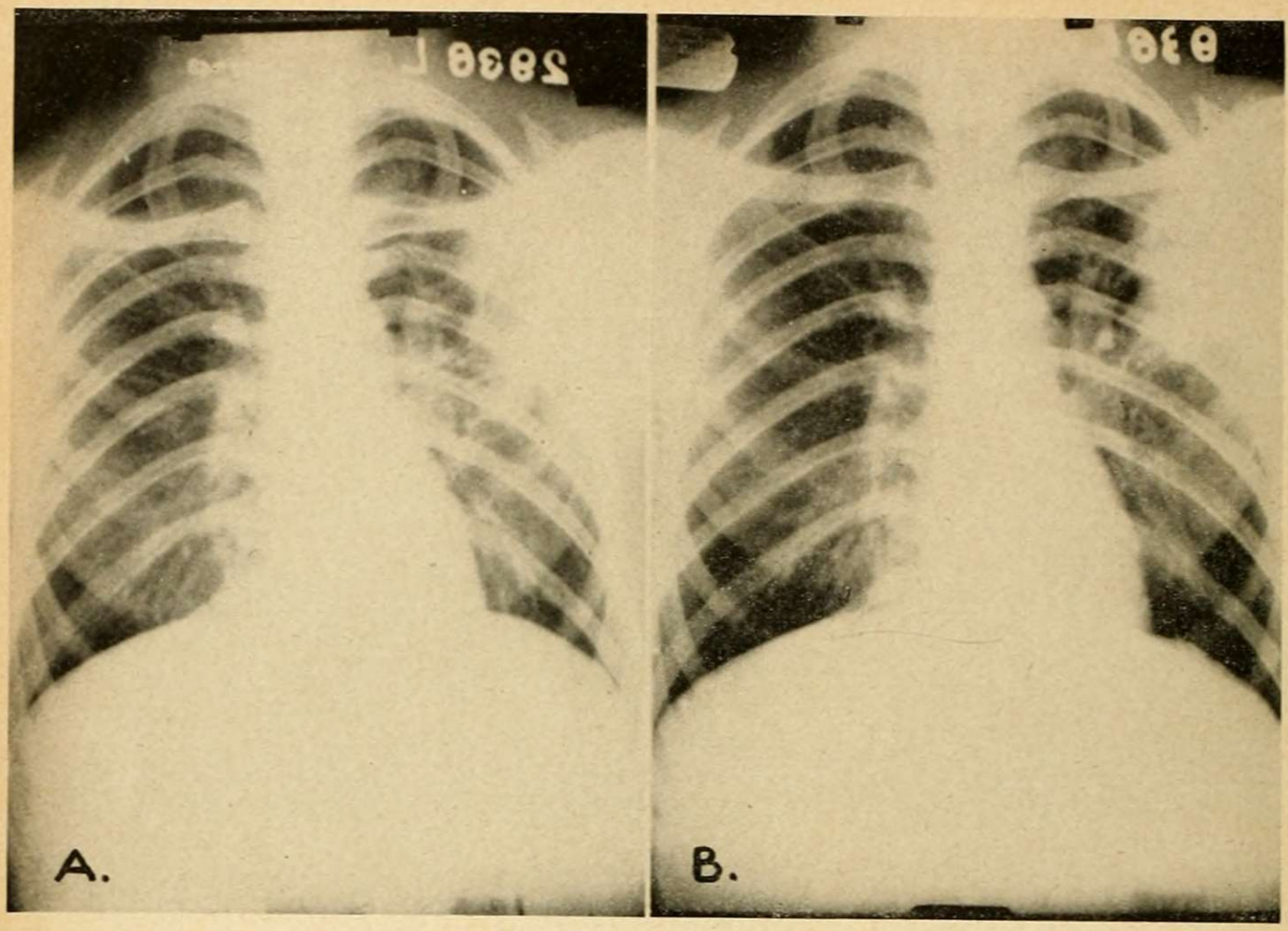


Fig. 4. Roentgenograms of the chest in case 2, continued. The first film (a) shows cavity formation in the area of consolidation; the second (b) demonstrates fluid level in the cavities.

tomatic except for very rare hemoptysis. The cavities can persist for months and even years, but are benign in nature. They do not act as reservoirs for dissemination of the fungus through the body.

Progressive form

In approximately .05 to 0.1 per cent of infections the fungus is disseminated through the body, resulting in the progressive or granulomatous form of the disease. This occurs within a few weeks or months after the initial infection. The disseminated type produces abscesses of the subcutaneous and deeper tissues, and bony, meningeal and visceral lesions. This chronic form may rarely occur after direct introduction of the fungus through skin abrasions and puncture wounds.

In the progressive form of coccidioidomycosis the symptoms depend on the site of the granulomatous infection. The most common locations are the meninges, bones, and subcutaneous tissues. In rare instances a miliary form occurs in which the disease disseminates to all parts of the body.

Diagnosis

Laboratory confirmation is necessary for a positive diagnosis of coccidioidomycosis. In the chronic, granulomatous form the fungus is easily demonstrated in material obtained from the local lesion. In the primary infection, it is found with difficulty in the sputum by direct examination or by culture on Sabouraud's medium. Frequently animal inoculation may be necessary to demonstrate the spherules.

When the organism cannot be isolated, a presumptive diagnosis can be made by the coccidioidin skin test. This is an intracutaneous test using 1:1,000 or 1:100 dilutions of a saline coccidioidin extract. This test is analogous to the tuberculin test and has the same interpretation and limitations. The positive test is recorded, like the tuberculin test, as 1, 2, 3, or 4 plus. Regardless of the size of the reaction, it may indicate either an old or an active infection. A change from a negative to a positive reaction with repeated tests is of diagnostic significance. Precipitin and complement fixation tests have proved useful but have not been employed extensively because of difficulty in securing the antigen.

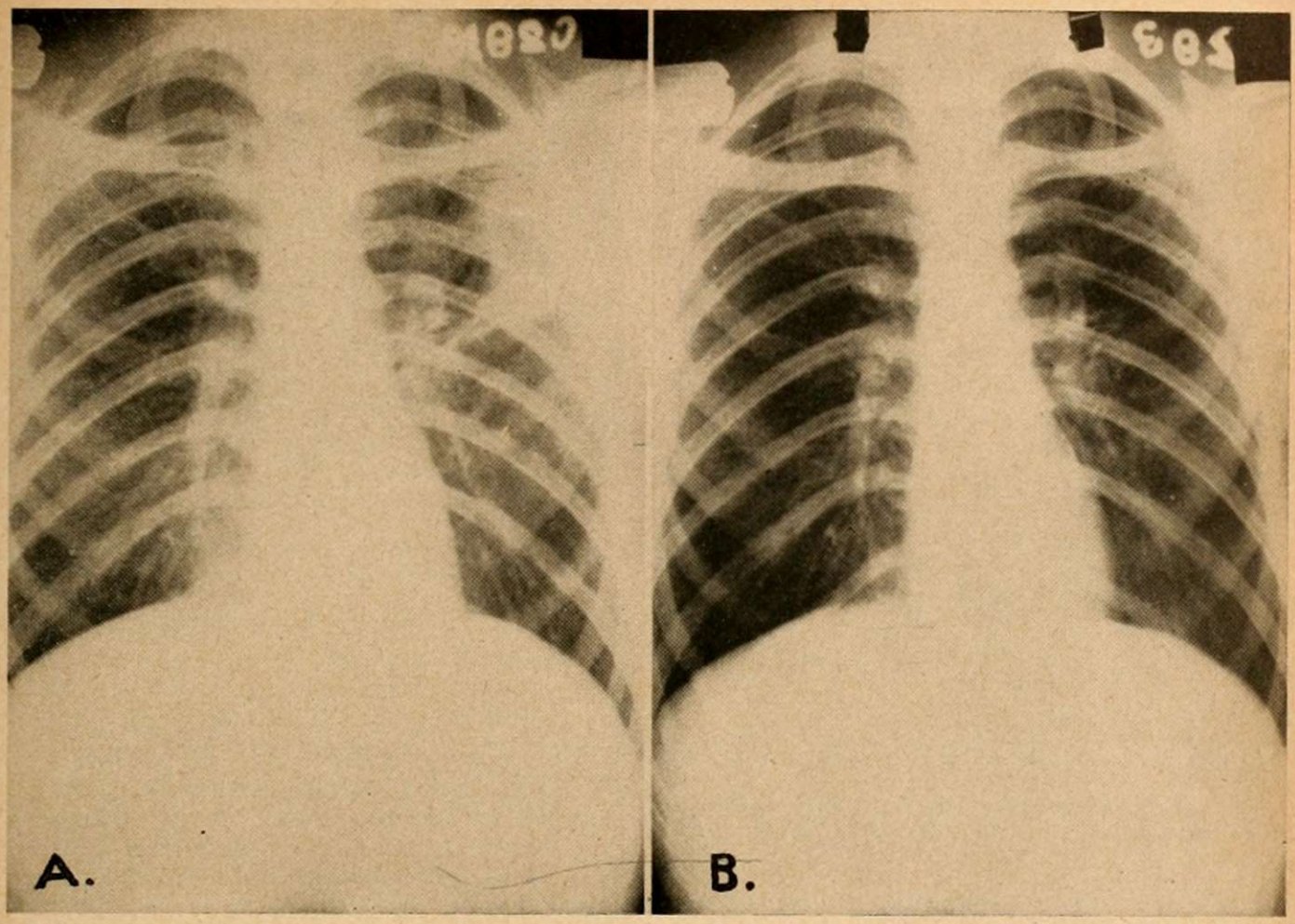


Fig. 5. Roentgenograms of the chest in case 2, concluded. The first film (a) shows beginning resolution of the pneumonic infiltration; the second (b), return to normal.

During the early period of the primary infection there may be an initial leukocytosis with moderate eosinophilia. The blood sedimentation rate is rapid at the onset of the primary infection and gradually returns to normal with recovery. In the progressive form elevated values coincide with active phases of the infection.

The similarity of this disease to tuberculosis cannot be over-emphasized. Two soldiers who had been stationed in an endemic area were suspected of having coccidioidomycosis. Each had positive coccidioidin and tuberculin skin tests and suspicious roentgenographic lesions in the chest. After repeated examinations, however, tubercle bacilli were found in the sputum. Only after tuberculosis has been excluded can the diagnosis of coccidioidomycosis be made with certainty.

Prognosis

The prognosis in the primary infection is excellent. No deaths have occurred from this form. However, once dissemination occurs, there is less than a 50 per cent chance for recovery. The final course may be rapid, with death occurring in four to six weeks, or the illness may be prolonged over a period of years.

Therapy

There is no specific therapy for coccidioidomycosis. In the initial, primary phase, as in tuberculosis, bed rest is essential and should be continued until the patient has completely recovered. Pneumothorax may be necessary in the rare instances of continued hemoptysis. Isolation is not necessary, as the disease is not transmissible from man to man. Chemotherapy with iodides, sulfonamides and even penicillin has proved ineffective. When dissemination has occurred, indications for local therapy will depend on the site of the granulomatous lesions.

Case Reports

Four cases of coccidioidomycosis seen at Fort Bragg exemplify the protean manifestations of this infection. The first 3 cases are examples of the primary form. These

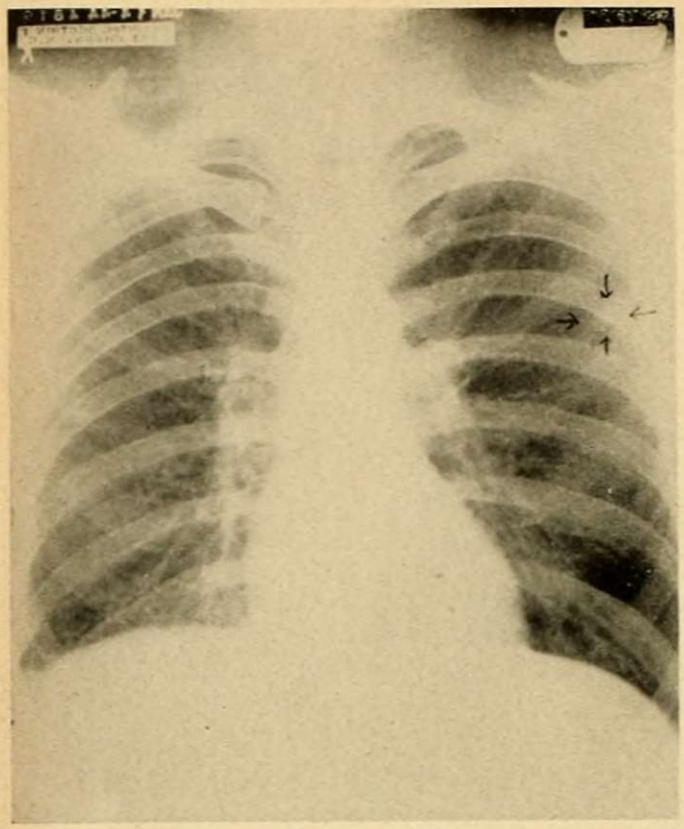


Fig. 6. Roentgenogram of chest, case 3, showing the small nodular infiltration in the left upper lobe.

3 soldiers were in the same unit and had been stationed for a period of three months at a military post in southern California in an area where the disease is endemic. The clinical symptoms first appeared while the soldiers were *en route* from California or shortly after their arrival at Fort Bragg. The first case illustrates how coccidioidomycosis may simulate acute rheumatic fever.

Case 1. A 29 year old private was admitted with an acute arthritis involving the knees, ankles and wrist. He had a moderate fever. There were erythematous and edematous lesions over the legs, and a diagnosis of erythema multiforme was made. The arthritis and skin lesions subsided in a few days and he was returned to duty. He was readmitted later with a recurrence of the joint involvement, but this subsided promptly. On this second entry, it was thought that he had rheumatic fever. However, a coccidioidin skin test was strongly positive, indicating the true nature of the disease.

The second case is an example of the type of pulmonary involvement which produces cavitation and closely resembles tuberculosis.

Case 2. This 24 year old soldier noted a transitory erythematous rash over the upper and lower extremities on the second day after leaving California. Two weeks later

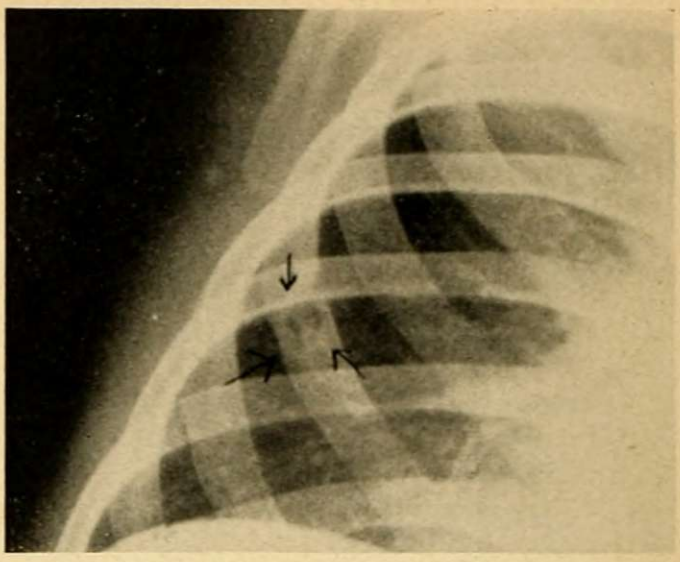


Fig. 7. Roentgenogram demonstrating the destructive lesion in the rib in case 4.

he was admitted to the hospital because of cough, chills, general malaise, and anorexia. The cough became productive of muco-purulent sputum. After seven days an area of consolidation appeared in the left upper lobe. A cavity developed one week later, but had cleared completely at the end of one month (fig. 3, 4, and 5). The fungus was not isolated from the sputum, nor were diagnostic lesions found in an inoculated animal. The coccidioidin skin test was strongly positive, however, and the diagnosis of coccidioidomycosis was made. Tuberculosis was excluded by repeated negative sputum examinations, a negative tuberculin test, and rapid disappearance of the cavitation.

Case 3. A 32 year old soldier was sent to the hospital with a preliminary diagnosis of tuberculosis. He had had a transitory polyarthritis two weeks after leaving the California camp. Two weeks later he noted cough, productive of a small amount of mucoid sputum. He had no other complaints and said that he felt well. The roentgenogram demonstrated a nodular lesion in the left upper lobe (fig. 6). This did not change in appearance during a month's hospital stay. On the initial sputum examination, spherules of Coccidioides immitis were found. The coccidioidin skin test was strongly positive. Tuberculosis was excluded by repeated negative sputum examinations and a negative Mantoux test.

The fourth case illustrates the progress of the primary form into the chronic, granulomatous form of the disease.

Case 4. This 30 year old private had spent four months in Arizona, which is situated

in an endemic area. He had been in excellent health, but while on furlough in North Carolina in January, 1943, he developed an upper respiratory infection. On his return to the Arizona camp he was hospitalized because of cough, fever, and chest pain. A coccidioidin skin test was negative when he was first admitted, but was found to be positive two weeks later. A soft nodule appeared beneath the skin in the right deltoid area and persisted. Another subcutaneous nodule later appeared on the left arm. While on furlough again in North Carolina in May, 1943, he became ill and was admitted to the Station Hospital at Fort Bragg. At this time he had a subcutaneous nodule on each arm, and another overlying the left tenth rib. There was lymphadenitis of the right supraclavicular chain. A destructive lesion in the right sixth rib was noted by x-ray (fig. 7). While in the hospital he developed a retropharyngeal and a deep lumbosacral abscess. Coccidioides immitis was identified on direct examination of the purulent material. The coccidioidin skin test was strongly positive.

Summary

1. Coccidioidomycosis is endemic in certain areas of the western United States.

2. The importance of recognizing this disease is stressed and emphasis is placed on the migration of military personnel from endemic areas to all parts of the country.

3. Coccidioidomycosis occurs predominantly in its primary, benign form. The progressive, chronic granulomatous form of the disease is less frequent and is usually fatal.

4. The similarity of coccidioidomycosis to tuberculosis is emphasized.

5. Four cases of coccidioidomycosis are presented to illustrate the significant clinical manifestations of this disease.

Abstract of Discussion

Dr. Theodore J. Abernethy, Commission on Acute Respiratory Diseases, Fort Bragg: The practical implications of this excellent paper are twofold. First, to the military surgeon, wherever he may be stationed, the recognition of coccidioidomycosis is becoming increasingly important. This is particularly true since the onset of the present war, with large bodies of troops being trained in regions of the United States where coccidioidomycosis is endemic, and with the frequent movement of troops from these endemic areas to those in which the disease is not generally considered to be endemic. Secondly, to the civilian practitioner, whether he be internist, surgeon, orthopedist, roentgenologist, dermatologist or general practitioner, the diagnosis of coccidioidomycosis is, or shortly will be, an important consideration. Because of its protean manifestations, this disease is not the concern of the internist alone. Although the medical man may be the first to see the patient, his colleagues in allied fields may be presented with a like opportunity. It it important, then, that in coming years coccidioidomycosis be suspected in any individual giving a history of residence in endemic areas or presenting symptoms or physical signs suggestive of the disease. Fortunately, as Captain Fleming has reported, a useful test is at hand—namely, the coccidioidin skin test, which may aid in the recognition of a past or recently active infection.

The Commission on Acute Respiratory Diseases, stationed at Fort Bragg, has been interested in obtaining data concerning the practicability of the coccidioidin skin test and the frequency with which soldiers who have trained in endemic areas for variable periods of time will react positively to this antigen. Three surveys have been completed in the past five months. Organization A, consisting of field artillery trainees from predominantly Middle Western and Southern states, served three months in southern California during the fall of 1943. Skin tests on 1558 men were performed approximately two months after this service. Two hundred and forty-eight positive reactors were discovered—an incidence of 15.9 per cent. In one battalion of approximately 500 men there was a definite correlation found between those giving a "probable" history of coccidioidomycosis and those showing positive skin reactions. Organization C, one squadron of which had spent seven months and another eleven months in southern Arizona and California, was tested in February, 1944, approximately one month after arrival at Fort Bragg. In 1522 men from this organization the incidence of positive reactors was 22.1 per cent. A third, control survey was done in one battalion of 271 men who had recently come from reception centers east of the Mississippi River. Only five weakly positive reactions were discovered —an incidence of 1.8 per cent.

These surveys indicate that a high proportion of soldiers who by reason of training in endemic areas are exposed to Coccidioides immitis actually acquire infection and recover spontaneously. They also indicate that in individuals who are not so exposed only a small percentage will give reactions. These are interpreted either as non-specific or as cross-reactions to some closely related fungus.

CESAREAN SECTION, WITH SPECIAL REFERENCE TO THE LOWER UTERINE SEGMENT OPERATIONS

W. Durwood Suggs, M.D., F.A.C.S.

Richmond, Virginia

The following study is an analysis of cesarean section operations in a private general hospital (Stuart Circle Hospital, Richmond, Virginia) from 1933 through 1943. During this ten-year period there were 3,342 deliveries, 122 of which were by cesarean section—an incidence of 3.6 per cent.

Read before the Section on Obstetrics and Gynecology, Medical Society of the State of North Carolina, Pinehurst, May 3, 1944.

TABLE 1

Primary or Principal Indications for Cesarean Section in 122 Cases

	No. Cases	Percentage
Disproportion: Contracted Pelvis, Abnormal Pelvis	62	50.0%
Cervical Dystocia: Infantile Cervix, Rigid Cervix, Stenosis of the Cervix	12	9.8%
Placenta Praevia	11	9.0%
Toxemia (Including Nephritis)	8	6.5%
Previous Cesarean Section	8	6.5%
Uterine Inertia, Primary and Secondary	6	5.0%
Fetal Distress	4	3.2%
Dystocia Dystrophy Syndrome	2	1.6%
Elderly Primipara	2	1.2%
Abruptio Placentae	1	0.82%
Prolapse of the Cord	1	0.82%
Uterus Didelphys; Vagina Septate	1	0.82%
Acute Suppression of Urine (Traumatic)	1	0.82%
Tetany of Uterus	1	0.82%
Ruptured Uterus	1	0.82%
Myoma Uteri	1	0.82%

Although these 122 operations were done by eight different men, 91.8 per cent were performed by three individuals. There was one maternal death (from sepsis), giving a mortality rate of 0.82 per cent. The standard of morbidity used was any temperature of 100.4 F. or above on any two days, exclusive of the day of operation. Cases falling into this category were classified under "puerperal morbidity," unless data on the charts showed other definite causes of fever. The corrected morbidity rate for the series was 33.0 per cent. Except for the one mortality, due to sepsis, and one moderately severe case of pelvic thrombophlebitis, all other cases of puerperal morbidity were very mild.

Table 1 shows the primary or principal indications for section. There were many other secondary indications too numerous to tabulate. In most cases there was a combination of indications. Fetal-pelvic disproportion is by far the most frequent reason for abdominal delivery.

Table 2 indicates the effect on morbidity of the duration of labor. As would be expected, there is a sharp rise in morbidity in sections done after the onset of labor, but contrary to our expectation, the morbidity rate did not rise after the first twenty-four hours of labor.

Table 3 shows the effect of vaginal and rectal examinations on morbidity. As was to be expected, those patients who had neither rectal nor vaginal examination showed the lowest morbidity rate. This group consisted largely of cases in which the operation was an elective procedure, and the

TABLE 2

Effect of Labor on Morbidity

	No. Cases	Percentage	Morbidity
Elective Cases (Not in Labor)	71	58%	28.0% (1 death)
In Labor less than 24 Hours	22	18%	45.5%
In Labor 24-96 Hours	21	17.2%	43.0%

factors of labor and rupture of the membranes did not enter the picture. There was a sharp rise in morbidity in the group having one to four examinations, perhaps due to some extent to the factors mentioned above; however, again contrary to our expectation, the rate did not increase as the number of examinations increased beyond four.

Sterilization apparently causes no increase in morbidity (table 4). The number of cases in which myomectomy was done in conjunction with abdominal delivery is too small to permit conclusions. In the 4 cases, however, there was no morbidity, although one patient had been in labor, with ruptured membranes, for eighty-four hours, and another had been in labor ten hours, with the membranes ruptured for fourteen hours.

In 7 cases cesarean section was preceded by attempts at delivery from below with forceps. There was no infant or maternal mortality in this small group. Four patients, or 57 per cent, had a very mild postoperative morbidity. One patient was in labor, with ruptured membranes, for fifty hours, and had six rectal and two vaginal examinations, without morbidity. Another patient who was in labor fifty-six hours, six and three-quarters of which was second stage, and whose membranes were ruptured for twenty-six hours, had twelve rectal and two vaginal examinations without morbidity. On another patient whose cervix had been completely dilated for eight hours, cesarean section was performed without morbidity, after an attempt at forceps delivery had failed.

TABLE 3

Effect of Vaginal and Rectal Examinations on Morbidity

	No. Cases	Percentage	Morbidity
No Rectal or Vaginal Examination	49	40.0%	20.0%
1-4 Rectal and/or Vaginal Examinations	30	24.6%	46.6% (1 death)
4-8 Rectal and/or Vaginal Examinations	15	12.3%	47.0%
8-14 Rectal and/or Vaginal Examinations	11	9.0%	27.4%

TABLE 4

Effect of Other Operative Procedures on Morbidity

Operation	*No. Cases*	*Morbidity*
Appendectomy	2	50%
Sterilization	22	27%
Myomectomy	4	0

The 4 patients with postoperative morbidity were all in labor, with ruptured membranes, for a considerable length of time, one having had a bag induction and manual dilatation of the cervix preceding an attempt at forceps delivery. The uterus was preserved in all 7 cases, low, two-flap laparotrachelotomy being the type of operation employed.

Figure 1 shows the number of cesarean sections, the types of operations employed, and the morbidity rate by years. Only three different types of operations were employed: the classical—usually the low modification, and in 1 case Schumann's modification; the modified Porro; and the transperitoneal subvesical laparotrachelotomy. Hysterectomy was done in only 3 cases, and not because of infection. The uterus was removed in 1 case because of rupture of the scar from a previous section; in another because of multiple fibroids; and in the third in order to control hemorrhage in a multipara with placenta praevia whose uterus failed to contract. Transperitoneal laparotrachelotomy has gradually superseded other types of operation as the procedure of choice, until in the last three years 91.7 per cent of all sections have been of this type. In the earlier years the DeLee-Beck technique was used, but recently the Kerr-Phaneuf technique has been employed almost exclusively, even in elective cases. There has been a decided decline in the morbidity rate as the incidence of low cervical operations has increased. Neither the transperitoneal exclusion type of operation nor the extraperitoneal operation has been employed in this series.

Kronig contended that the main advantage of extraperitoneal technique, as devised and perfected by Frank, Latzko, Sellheim and others in the early part of this century, and improved and simplified more recently by Waters in this country, consisted not so much in avoiding the peritoneal cavity as in placing the uterine incision in the lower segment and then covering the incision with the bladder and peritoneum. The advantages of the incision in the lower uterine segment have been amply demonstrated and are generally accepted. However, there are some

TABLE 5

Year	*No. Deliveries*	*Percent. Sections*	*Morbidity Rate in Section Operations*
1933	161	3.8%	66%
1934	178	3.3%	0
1935	209	6.2%	23%
1936	232	3.0%	43%
1937	239	3.0%	43%
1938	285	3.8%	35%
1939	329	1.8%	32%
1940	387	1.5%	50%
1941	397	4.5%	32%
1942	458	3.5%	20%
1943	467	5.5%	23%
TOTAL	3,342	3.6%	33%

1 mortality in 122 operations—Mortality rate 0.82%

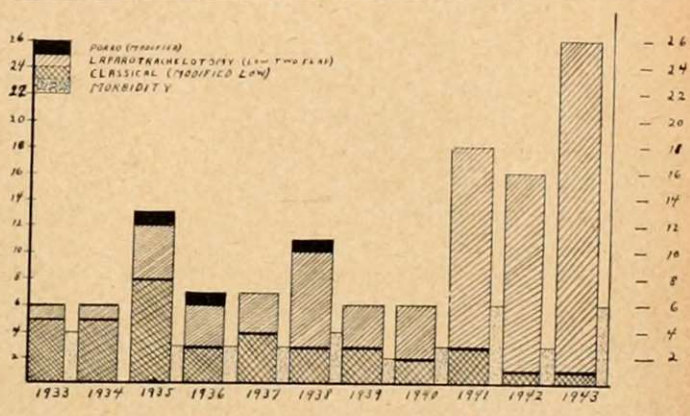


Fig. 1

controversial points involving the relative advantages and disadvantages of the transperitoneal and extraperitoneal approach. The possibility of occasionally opening the peritoneum or bladder in the extraperitoneal operation does not constitute a serious disadvantage. However, the necessity of drainage in most of these cases is a disadvantage. In an infected case, the spread of infection through the soft cellular tissues of the space of Retzius often proves serious, and it is contended by some authorities that the peritoneum can cope with infection better than can this type of tissue. Since the advent of the sulfonamide drugs and penicillin, we can afford to take more chances with potential infection. However, I share the opinion of those who believe that in the presence of frank infection the safest procedure is to remove the infected organ by hysterectomy.

Every patient admitted to the hospital for delivery is given a vaginal injection of mild antiseptic solution, which is repeated every eight hours until delivery. The initial douche is given before any examination, either rectal or vaginal, is made. The value of this technique is controversial, but we are among those who feel that it helps to control and prevent infection. We believe that the low morbidity rate, and particularly the absence

of any increase in the morbidity rate following repeated examinations in cases of prolonged labor, may be ascribed to this procedure.

In potentially infected cases, gloves are changed and soiled drapes replaced following extraction of the infant. During the past two years 5.0 Gm. of one of the sulfonamide drugs in powder or crystal form has been placed in the uterine cavity before its closure and along the uterine suture line before this is covered by the upper peritoneal flap and bladder.

We feel that the facts revealed and the results obtained in the small series of cases covered in this analysis justify the use of the procedure and technique that have gradually been evolved and applied during the past ten years.

Summary

1. Out of 3,342 deliveries performed in the Stuart Circle Hospital over a ten-year period, 122 (3.6 per cent) were by cesarean section. There was 1 mortality (0.82 per cent), and the corrected morbidity rate was 33.0 per cent (table 5).

2. Disproportion between the maternal pelvis and the fetus was by far the most common indication for abdominal delivery.

3. The morbidity rate was almost twice as high when the operation was done on patients in labor as when it was performed before labor began, although the duration of labor had no effect on the morbidity rate.

4. The morbidity rate was doubled in patients who had had rectal or vaginal examinations prior to operation, although the number of such examinations had no effect on the morbidity rate.

5. The lower uterine segment is the best location for the uterine incision, even in patients who are not in labor. This is probably the chief advantage of the extraperitoneal operation.

6. Antiseptic vaginal douches before elective operations and at stated intervals during labor preceding emergency operations are believed to be a factor in controlling and preventing infection.

7. The local use of sulfonamide crystals in the operative field in potentially infected cases appears to be desirable.

8. The low, two-flap transperitoneal subvesical cesarean section is a relatively safe procedure, even in potentially infected labor cases.

Monument Avenue and Lombardy Street

FAVORABLE RESPONSE TO PENICILLIN THERAPY IN A CASE OF TREATMENT-RESISTANT SYPHILIS

RAY O. NOOJIN, M.D.
J. LAMAR CALLAWAY, M.D.
and
ARTHUR H. FLOWER, M.D.
DURHAM

Many investigators have sought to prove that because of certain altered conditions in the host, the drug, or the organism syphilis at times becomes resistant to treatment. Beerman[1], Dennie and McBride[2], and others are inclined to stress the host as the usual responsible factor. On the other hand, Akatsu and Noguchi[3] pointed out that the Spirochaeta pallida could increase its tolerance for arsphenamine and neoarsphenamine *in vitro* by being exposed to gradually increasing concentrations of the drugs. Specifically, the tolerance could be increased five and one-half times within three to four months. Cutaneous lesions are known at times to heal during a course of treatment with one of the arsenicals, only to relapse when a heavy metal is begun. Here the question of drug inadequacy is certainly raised.

Whether the host, the drug, or the organism is responsible, the fact remains that the specific etiologic factor, or factors, productive of treatment-resistant syphilis are still not readily apparent.

Our purpose is to report a case of syphiloderma which promptly responded to penicillin therapy after having failed to respond not only to two and one-half years of irregular treatment, but also to ten consecutive weekly concomitant injections of bismuth subsalicylate and mapharsen. Whatever factor, or factors, caused this patient to be treatment-resistant apparently did not interfere with the effectiveness of penicillin. Healing occurred in this case when the drug was changed. No other circumstance was altered. It is difficult to believe, in this instance, that the host was responsible for

From the Section of Dermatology and Syphilology of the Department of Medicine, Duke University School of Medicine.

1. Beerman, H.: The Problem of Treatment-Resistant Syphilis, Am. J. Syph., Gonor. and Ven. Dis. 20:165-206 (March); 296-334 (May) 1936.
2. Dennie, C. C., and McBride, W. L.: Treatment of Resistant Somatic Syphilis, Arch. Dermat. and Syph. 30:1-5 (July) 1934.
3. Akatsu, S., and Noguchi, H.: The Drug-Fastness of Spirochetes to Arsenic, Mercurial and Iodide Compounds in Vitro, J. Exper. Med. 25:349-362 (March) 1917.



Fig. 1

treatment-resistance since healing occurred so rapidly with penicillin. The evidence in this case points to the assumption that the infecting organism was little affected by bismuth and arsenic and that the failure of treatment was due to the resistance of the organism to the drugs used.

Case Report

C. S., a 28 year old white male shoe repairer, developed a penile lesion in 1941. A serologic test for syphilis was said to be positive at this time, and he was started upon treatment with neoarsphenamine. Darkfield examination was not performed. The patient received intravenous injections fairly regularly for the first ten injections, and after this, treatment was intermittent. The penile lesion did not heal until three months after therapy was begun. At the end of this period the serologic test for syphilis was said to be negative. During the next two and one-half years the patient received irregularly approximately sixty injections of neoarsphenamine (average dose 0.6 Gm.), and ten injections of bismuth subsalicylate.

The patient was first seen at Duke Hospital on April 24, 1944. He presented himulcers over his hands and feet during the previous three months. During the six months preceding examination, he had received an average of approximately two intravenous injections of neoarsphenamine each month. He had no complaints other than the one involving his skin.

Physical examination revealed numerous erythematous, granulomatous, exudative, oval lesions involving the hands and feet. Present over the left ankle was a peculiar crescent-shaped lesion. The lesion involving the third finger on the left hand had formed a painful paronychia. All lesions were slightly tender. The physical examination was otherwise not remarkable, except for a



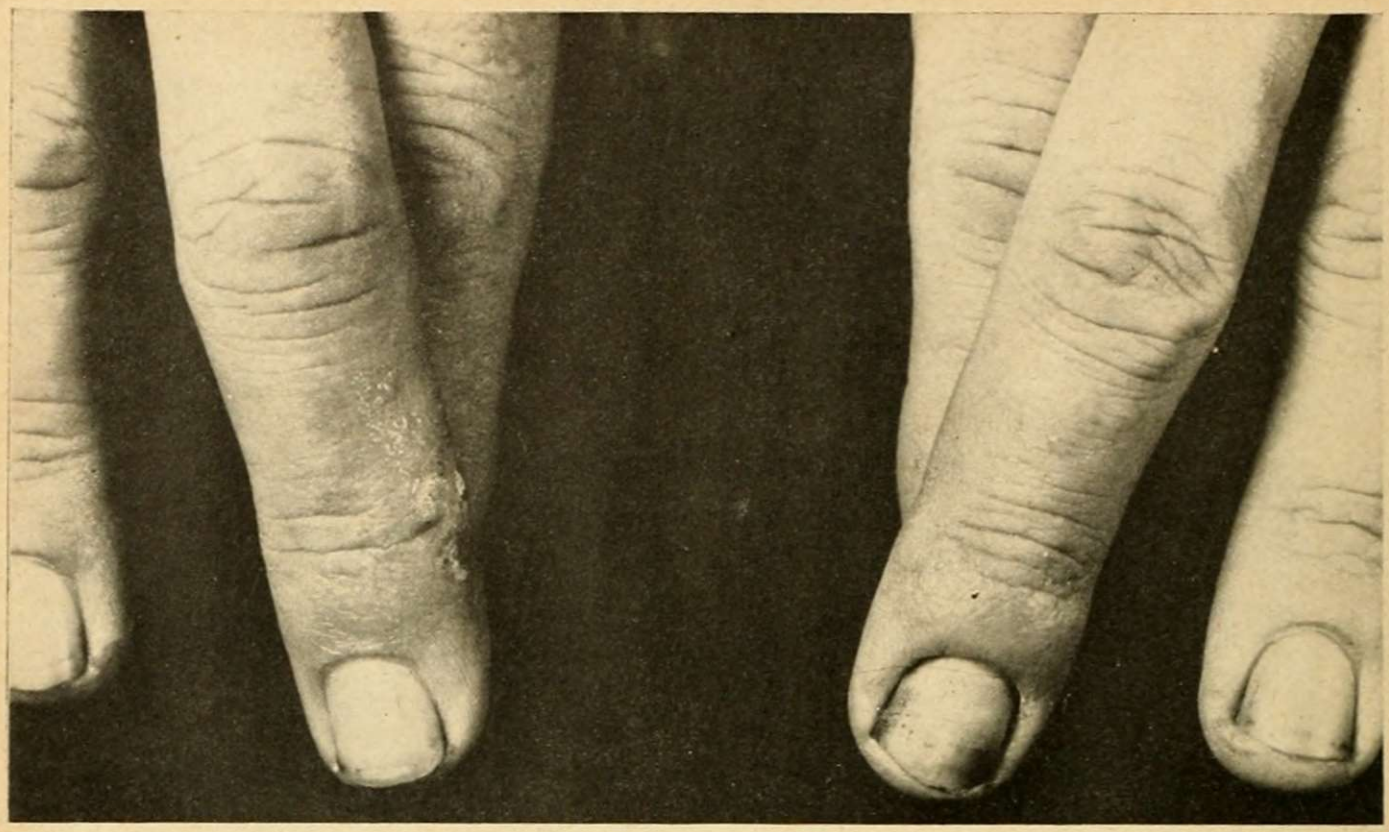


Fig. 3

residual penile scar.

Repeated Wassermann, Kahn, Kline, and Mazzini tests on several blood specimens were strongly positive. Darkfield examinations of several of the cutaneous lesions repeatedly revealed S. pallida. Other laboratory tests were non-contributory. A spinal fluid examination was not carried out at this time.

The patient was given immediately bismuth subsalicylate 0.2 Gm., intramuscularly, and mapharsen 0.06 Gm., intravenously. He was given a note to carry to his physician with a request that the mapharsen be repeated within four days and that bismuth and mapharsen, in the same dosage, be given concomitantly each week for the succeeding six weeks. The patient was requested to return promptly if healing did not begin within the first two weeks. He was warned of his infectiousness. Serologic family follow-up was advised.

The patient did not return until ten weeks had elapsed. During this interval he had received concurrent intramuscular and intravenous therapy each week, as advised, but had not noted any improvement. Re-examination revealed little change in the appearance of the cutaneous lesions (fig. 1 and 2). The cutaneous lesions were again found by darkfield examination to be positive for S. pallida. Serologic tests for syphilis were again positive. Wassermann examination of the cerebrospinal fluid was positive in the 0.4, 0.6, 0.8, and 1.0 cc. dilutions. The colloidal mastic test was normal. There were 2 mononuclear cells present. Total proteins were 28 mg. per 100 cc. of spinal fluid. Fluoroscopic examination showed no evidence of cardiovascular syphilis.

Because of the failure to respond to other treatment, the patient was given 1,200,000 units of penicillin over a period of four days. Forty thousand units were administered intramuscularly every three hours, day and night, until a total of thirty injections had been given.

Darkfield examinations were made hourly after treatment was begun, and these con-



Fig. 4

tinued positive for S. pallida for four hours. The examinations made on the fifth hour, and thereafter, revealed no organisms. Within twenty-four hours after treatment was begun, the exudative character of the lesions had disappeared and, clinically, improvement thereafter was continuously progressive. Midway during the therapeutic period the patient had a shaking chill lasting several minutes, and immediately his temperature rose to 39 C. (Herxheimer reaction). The following day the temperature returned to normal, where it remained. There were no other reactions. The cutaneous lesions were not treated locally at any time.

Follow-up examination, ten days after treatment had ended, revealed all lesions to be practically healed (fig. 3 and 4). Nineteen days after the final injection of penicillin, healing was complete and there were no new lesions. Subsequent follow-up examinations up to three months after completion of therapy revealed no further clinical change.

In table 1 the quantitative serologic titers recorded upon each follow-up examination are listed. Only prolonged follow-up examinations for many years will prove whether this patient has been "cured."

TABLE 1
Kahn Serologic Titers*

Dates	*Undil.*	1-2	1-4	1-8	1-16	1-32	1-64	1-128	1-256	1-512
7-23-44	4	4	4	4	2	1	0	0	0	0
7-27-44	4	4	4	3	2	1	0	0	0	0
8- 4-44	4	4	4	3	2	±	0	0	0	0
8-14-44	4	4	4	3	2	±	0	0	0	0
8-31-44	4	4	4	3	1	0	0	0	0	0
9-18-44	4	4	4	2	1	0	0	0	0	0
10- 5-44	4	4	3	1	±	0	0	0	0	0

* Kline and Mazzini Serologic Titers were similar and are not listed.

Summary and Conclusions

A patient with darkfield positive cutaneous lesions found to be treatment-resistant to mapharsen and insoluble bismuth responded promptly to penicillin therapy, with rapid healing of all cutaneous lesions.

Within six weeks after treatment a gradual diminution in peripheral blood quantitative serologic titers began.

This case indicates that causes of treatment-resistant syphilis are probably variable and not necessarily limited to an abnormal response on the part of the host.

THUMBNAIL SKETCHES OF EMINENT PHYSICIANS

JOSIAH C. TRENT, M.D., *Editor*

DURHAM

THE EVOLUTION OF THE ASEPTIC PRINCIPLE IN SURGERY

I

Introduction

Ideas seldom spring full-fledged from the mind of man. What he does, what he thinks, what he is depend upon a multiplicity of factors over which he has no control. For example, minds as great as William Harvey's were produced in the fourth century B. C., but the circulation of the blood was not discovered until the seventeenth century A. D. The second century conceived minds which surpassed even that of the great Vesalius; yet human anatomy was not a fact until the sixteenth century. Progress is seldom constant. A chart of medical progress would resemble nothing so much as an economic graph with its valleys of depression and peaks of prosperity. A great discovery waits upon propitious social, technical, and cultural factors, upon the accumulation of pertinent but often isolated facts, and finally upon genius to forge the final link and "make" the discovery. Obviously, therefore, a purely biographical approach to history is inadequate and often gives a distorted image of the whole; but a pure history of ideas without consideration of the men who fostered them is dull and thus not always profitable.

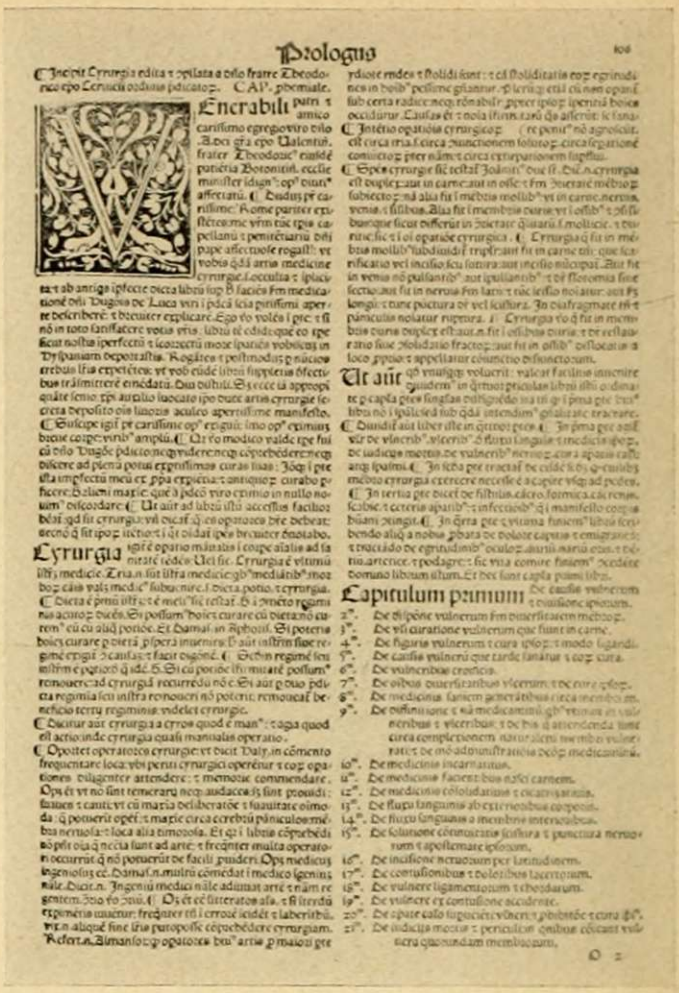
The men presented in these pages during the past year certainly have not been dull. They have often been the geniuses responsible for some remarkable discovery or advance in medicine. What preceded their discoveries or what followed them was neces-

sarily omitted for lack of space. In the ensuing year, instead of selecting subjects at random, we shall confine ourselves to one idea, the aseptic principle in surgery, and trace its evolution by biographical sketches of the men who have influenced its development. We shall attempt to illustrate our point that ideas evolve and do not emerge full-blown.

The principle of asepsis, more than any other one factor, has made possible the miracles of modern surgery. Yet few realize that the idea grew slowly through the centuries, receiving boosts along the way—often unknowingly on the part of the contributor—from microscopists, physicists, bacteriologists, obstetricians, and laymen, as well as physicians and surgeons, before it culminated in the antiseptic principle of Lister which quickly evolved into our present concept of asepsis.

Wounds and their complications have concerned man from the earliest times. The ancient Greeks sutured wounds and used simple wine and astringent dressings, with apparently few wound infections. Galen also had good results in treating the wounds of the gladiators by suture and simple dressings. The later copyists of Galen, however, distorted his true meaning and extolled the value of suppuration—"laudable pus"—in wound healing. This abominable concept of wound therapy, which demanded that every wound discharge pus before healing, became so firmly entrenched in the middle ages that it was not completely dislodged until the nineteenth century.

One of the first breaches in the solid front of the advocates of "laudable pus" was made by Theodoric, Bishop of Cervia, one of the most original surgeons of all time. In 1266 he completed a surgical treatise, later printed in the surgical anthology at Venice in 1498 (fig. 1), in which he advocated the simple, expectant, dry treatment of wounds: "It is not necessary as Roger and Roland have written, and as many of their disciples teach, and as all modern surgeons profess, that pus should be generated in all wounds. No error can be greater than this. Such a practice is indeed to hinder nature, to prolong the disease, and to prevent the conglutination and consolidation of the wound." Theodoric thus anticipated our modern aseptic treatment of wounds by more than six


Prologus

Incipit Cyrurgia edita a magistro a dño fratre Theodorico ep̃o Cervien ordinis predicatorum. CAP. primum.

Venerabili patri et amico carissimo egregioq; viro dño Bonifacio dei gra ep̃o Valentin. frater Theodoricus eiusdē ordinis ep̃us Botontin. eccle minister ideam cū optata affectionis. Cū dudum pr̃ carissime. Rome pariter existeremus vim tue ep̃alis capellanie penitentiarie dñi pape affectuose rogasti: vt vobis ꝙdā artis medicine cyrurgie. loculia et ipsius aut ab antiqa ipsius specie breca libris sup. B facies fm medicationē dñi Rogerii de Luca viri in ꝙdā scia peritissimi aperte describere. et breuiter explicare. Ego vo volēs i pte et nō in toto satisfacere votis vris. libris tū eisdēq; eo ipse sicut nostra imperfectis et locupletis mose ipsius vobiscum in Dyphanium depositis alias. Rogastes i pelimodus p̃dictos artibus illis expectētes. vt vob eisdē libris suppletis defectibus trāsmitterē emendata. Qua dilectissime in appropinquante senio. ego auditio tuo cate ipo tuare artis cyrurgie secreta depositio diu tempore acuteo apertissime manifesto. Suscepe igit pr̃ carissime op̃ exiguū imo op̃ eximium breue compendium amplia. Ut eo modo valde tue fui cū dño Dñe pdicto incepte perficere. ego cōpetēter ea cōpetēdere ego dilexere ad plenū potui expositionis curas haui. Deq; ipe ista impfectis meis ex ipa expectat. amicitie q; curabo p̃fecte. Beliani magistr. qui à pdicō viro eximio in nulla nostrum" discordare. Ut aūt ad libros illos accessus facilior hēat. qd sit cyrurgia vel vocat. q; ea operatoria bre debeat: secundq; sit ipoq; inchoari. igit ordo dari ipos breuiter enodabo.

Cyrurgia nitate ordo. Dei fic. Cyrurgia ē vtilium lib; medicie. Ejus fin sit ultra medicie ob̃ mediatib" mor bog; cāa vals medic" subuenire. Subiecta potio. cyrurgie.

Subiecta ē pmis illis q; ē medic" sic refert. Si q; medico regimis actiōq; ducēs. Si possum" boies curare cū diet aīo curem" eū cu aliq; potice. Et Damas. in Aphoris. Si potero boies curare per ea. p̃pera inuenio. Si aūt infirm fuer regime exigit scientias: facit cognē. Sed in regime seu infirm e operis q; ade. Si cū potioe illi curare possum" renouerecad cyrurgiā recurredū nō e. Si aut p potio pdicta regimia seu infra renouerī nō poterit: remouear beneficio terty regiminis: videlet cyrurgie.

Dicitur aut cyrurgia a cyros quod ē man": et agia quod ell actio inde cyrurgia quasi manualis operatio.

Opponit operatorio cyrurgie: vt dicit Daly. in cōmento frequentare loca: vbi pertit cyrurgici operēur et eoꝝ operationes diligenter attendere: et memorie commendare. Ops ēt vt no sint temerarij neq; audaces: sed timorati: scientes: et artē: vt cū maria deliberatōe et suauitate oīmoda: q; ponerit opēt: et magie circa cerebrū pānicula membra nervosa: et loca alia timorosa. Et q; i libris cōprehēdi nō pōt ea q; necia sunt ad artē: et frequēter multa operatione occurrūt q; nō poterūt de facili prudenter. Ops medicus ingeniosus ēt. Damas. militia comedat i medico ingenium valet. Dicit. n. Ingeniū medico valet admirari artē et nām re gentem. Sed eo ipso. Qui ēt ēt litteratus alia. et sit exercitatus experientia maxime: frequenter tū i cerroꝝ sedēt et laberibus. vt in aliquē sine illa purapossit cōprehendere cyrurgiam. Refert. n. Almansor ep̃ operatores bon" artis p̃fession gre

Capitulum primum. De cautis vulnerum et cautione ipsorum.

2°. De diuersitate vulnerum fm diuersitatem methog.
3°. De vtl curatione vulnerum que fiunt in carne.
4°. De figuris vulnerum: et cura ipsoꝝ: et modo ligandi.
5°. De cautis vulneri que tarde sanatur: et eoꝝ cura.
6°. De vulneribus cranioꝝ.
7°. De oibus diuersitatibus vlcerum: et eoꝝ cura ipsoꝝ.
8°. De medicinis fm̃ generalitatem circa membra.
9°. De ordinatione et ꝛ medicamentis q̃ requirūt in vulneribus et vlceribus: et de his q̃ attendenda sunt circa completionem naturalem membroꝝ vulnerat: et de mō administrandi medicamenta.
10°. De medicinis incarnatiuis.
11°. De medicinis faciens bon" sarcī carnem.
12°. De medicinis cicatrizatiuis et cicatrizatiua.
13°. De fluxu sanguinis ab exteriorib" corporis.
14°. De fluxu sanguinis a membris interioribus.
15°. De solutione cōtinuitatis scissura et punctura nervoꝝ et apostemate ipsoꝝ.
16°. De incisione nerꝝ per longitudinem.
17°. De contusionibus et dolentibus accidentibus.
18°. De vulnere ligamentoꝝ et tendinū.
19°. De vulnere et contusione accidente.
20°. De apate calo tapocisis vlceris et debilitate et cura ipsoꝝ.
21°. De indicijs mortis et periculosis quibus occidunt vulnerati quorundam membroꝝ.

Fig. 1. A page from the work of Theodoric in the CYRURGIA, Venice, 1498, a surgical anthology containing the works of Guy de Chauliac, Brunus, Theodoric, Roger, Roland, Lanfranc and Bertapaglia. (Author's collection)

centuries. His teaching was given little credence, however, after Guy de Chauliac, the most eminent authority on surgery in the fourteenth and fifteenth centuries, repudiated his doctrine and again advocated "laudable pus."

Paracelsus, the physician, surgeon, alchemist and mystic of the early sixteenth century, was another precursor of asepsis. He taught that nature and not officious meddling heals wounds. Although others, including Villanova in the fourteenth century and Fallopius, Wuertz and Duchene in the sixteenth century, recognized the deleterious effect of air on wounds, no real progress was made toward a rational therapy of wounds until some light was thrown on the cause of infections. One of the early contributors to this field was the microscopist, Antonj van Leeuwenhoek, the subject of the next sketch.

J.C.T.

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JANUARY, 1945

NORTH CAROLINA'S DRAFT REJECTION FIGURES

Most North Carolina doctors, in common with other intelligent citizens of the state, will heartily endorse a resolution recently adopted by the North Carolina State Nutrition Committee:

WHEREAS, an official report has been published to the effect that a larger percentage of men called in the Selective Service in North Carolina were disqualified because of physical conditions than in any other state, the percentage being given as 54 of each 100 called; and WHEREAS, this announcement has been received with both a deep concern and some skepticism;

Therefore, the State Nutrition Committee of North Carolina composed of eighty-three members, representative of departments and divisions of State Government and other public and many voluntary groups of citizens, in meeting assembled, urge that the State Health Officer call upon the Selective Service Administration for additional data relative to this classification of the State. This Resolution is inspired to some extent by the feeling in some quarters that analysis of all factors may prove the relative standing of the State to be inaccurate; but it is inspired more powerfully by the belief that the facts are important enough to call for frank facing of them with the view to a constructive program looking to their improvement.

It is the part of intelligent patriotism to want to know the actual facts behind the apparently appalling proportion of North Carolinians rejected for selective service. It is for the best interests of the state that the true story be told, regardless of state pride. We trust that the Selective Service Administration will supply the additional data desired. Meanwhile, however, a few facts might be reviewed.

First, before we jump hastily at the conclusion that all of our younger generation are physical weaklings, let us recall that the football team which was runner-up in the Southern Conference—winning eight out of nine games—was composed largely of 4-F's; and that a fair sprinkling of the players on the team which won the championship and also the Sugar Bowl contest were considered unfit for military service.

Second, the average weight of the present inductees is 150.76 pounds against 141.54 for the soldiers of the first World War, and their height 68.11 inches against 67.49 inches. Even the 4-F's are 9 pounds heavier and a third of an inch taller than the inductees in the first World War. The following statement from a bulletin of the Metropolitan Life Insurance Company was quoted in a former editorial[1]: "Actually, the causes of most rejections for military service today do not seriously impair the individual for ordinary civilian occupations, nor do they have markedly adverse effects on his health and longevity."

Third, the chief cause for North Carolina's high rejection rate is the large proportion of Negroes among the draftees. This statement is true of the other Southern states as well. For some reason best known to those in the induction centers, most Negroes sent there were rejected on one pretext or another. On May 12, 1943, in the final session of the House of Delegates of the State Society[2], Dr. Houston Moore called attention to a newspaper article which stated

that forty-six out of fifty-six Negroes sent to Fort Bragg for induction had been rejected. Dr. Moore said that their experience with draftees sent from Wilmington had been similar to this.

Those Negroes who have seen service abroad have given a good account of themselves. Drew Pearson, in "Washington Merry-Go-Round" for January 5, tells how the Germans in Italy found to their sorrow that the Negroes can fight, when they selected the all-Negro 92nd Division as a weak spot in the American line.

Many spokesmen for the Negro race—both white and colored—have been bitter in condemning the discrimination against Negroes as soldiers. It may give these spokesmen a certain grim satisfaction to know that the youth of North Carolina—and of other Southern states also—have suffered as a result of this discrimination the humiliation of being branded as the nation's weaklings; but it does not right the wrong done either the Negroes or the South.

1. Those Draft Rejection Figures, North Carolina M. J. 4: 389 (Sept.) 1943.
2. Transactions of the Medical Society of the State of North Carolina, North Carolina M. J. 4:306 (Sept.) 1943.

* * * *

MR. OLDHAM—RIGHT AND WRONG

In the *Winston-Salem Journal and Sentinel* for December 17, special correspondent Edward A. Oldham, of New York, refers to our state hospitals for mental disease, and makes the very pertinent comment that, in spite of some advances which have been made, there is still room for vast improvement in the laws regulating those institutions. Virtually everyone who has made any study of this question will emphatically agree.

Certainly Mr. Oldham is right in protesting against the archaic system that makes it possible "for any citizen to be yanked off to Morganton without due and scientific examination by a competent psychiatrist." There are also many other changes which should be made, however. For example, the law specifies that the State Hospitals Board of Control "is hereby authorized and given full power to employ a general superintendent of mental hygiene and prescribe his duties and fix his salary." So far, so good: but the reason that the committee appointed by the board to select a general superintendent has failed to fill the position is to be found in the sentence, "He shall be employed for a period of two years from and after the date of his selection, unless sooner removed therefrom by the board for incompetence or misconduct." Even a football coach would hesitate to surrender a job in which he was doing well for a short two-year contract with another institution.

Another weak spot in the present law is the provision that "The Governor shall have the power to remove any member of the board whenever in his opinion it is to the best interest of the State to remove such person, and the Governor shall not be required to give any reason for such removal." It is hard to believe that Governor Cherry would assume the dictatorial powers thus delegated to him; but how do we know that men of high ideals will always succeed him? Herein is the danger of making this board a political football. The type of citizen needed for service on this board should not have to risk the insult of being kicked out any time at the whim of a governor who "shall not be required to give any reason for such removal."

Mr. Oldham recalls the "monumental report" of the committee headed by Dr. Frederic M. Hanes, which was quietly dropped between the Ehringhaus and the Hoey administrations. Mr. Oldham is mistaken in one statement: "This is the work of experts, which cost North Carolina a pretty penny and for which John D. Rockefeller of New York sent his check for $5,000." He was right in saying that this generous gift, "so far as I can learn, has never been officially acknowledged." He was wrong, however, in thinking that the report cost North Carolina anything; in his letter transmitting the report to Governor Ehringhaus, Dr. Hanes said clearly, "The very considerable expense involved in this study has been borne entirely by the Rockefeller Foundation."

Perhaps if the survey had been paid for by the State of North Carolina, it would have been more greatly appreciated, and its recommendations would have been carried out—or at least considered—by the next legislature. Instead, it was pigeon holed for six years, until a series of melodramatic newspaper stories aroused public opinion sufficiently to necessitate another "investigation." It is human nature to value services at their cost, and the state's evaluation of the Hanes report was, very unfortunately, no exception.

THE DOCTOR-PATIENT RELATIONSHIP

There has been a growing tendency on the part of the advocates of political medicine to minimize the importance of the relationship between the individual doctor and his patient. The excellent medical care given our military men has been cited as proof that medical care can be both impersonal and efficient.

A powerful argument for the doctor-patient relationship was given by Col. Howard A. Rusk, who is Chief of the Convalescent Training Division, Office of the Air Surgeon, Army Air Forces, in his address[1] before the Second General Public Session of the Southern Medical Association. In outlining the plan of treatment used in his division, Colonel Rusk said that they had found the individual doctor-patient relationship of the utmost importance in maintaining the morale of their patients. Each patient in the convalescent hospital is assigned to *one* doctor, whom he termed that man's "family doctor." This doctor has the privilege of requesting any consultations or laboratory procedures deemed necessary, but all reports are sent back to him, and the patient looks to him—his "family doctor"—for advice. Colonel Rusk said that it had been found that this plan was universally satisfactory to the patients.

Let us hope that all advocates of federally-controlled medical practice may hear of this experience.

1. "New Horizons in Medicine."

* * * *

SISTER KENNY: AN AUSTRALIAN APPRAISAL

It is always interesting to know how a celebrity is regarded in his—or her—native land. A recent issue of the *Medical Journal of Australia*[1] has an editorial comment on the report of the committee of American orthopedic surgeons appointed to evaluate the so-called Kenny method of treating infantile paralysis[2]. It may be recalled that the report of this committee was not exactly flattering, and that it was bitterly assailed by a lay fountain head of medical wisdom in the *Reader's Digest* for October[3].

The *Medical Journal of Australia* quoted with evident approval the report of the American committee, which substantiated the conclusions set forth in a number of reports that the Australian journal had carried at various times between May, 1937, and February, 1939. Like the American group, the British observers found a good deal of value in Sister Kenny's method, but could not accept all her statements, such as the very optimistic claim that splints and respirators are never needed.

The Australian writers, like the Americans, gave full credit to Sister Kenny for having stimulated the medical profession to investigate carefully the problem of poliomyelitis. However, the carelessness with which Sister Kenny has often handled the truth has irked her fellow countrymen as much as it has her American critics.

1. The Kenny Treatment: A Report from America, M. J. Australia 2:516-7 (Nov. 11) 1944.
2. Evaluation of the Kenny Treatment of Infantile Paralysis. Report of Committee for Investigation of the Kenny Treatment of Poliomyelitis, J. A. M. A. 125:466-9 (June 17) 1944.
3. Miller, Lois Mattox: Sister Kenny vs. the Medical Old Guard, The Reader's Digest 45:10:65-71 (Oct.) 1944.

* * * *

A LAY VIEW OF MEDICAL PROGRESS

The leading editorial in the December number of *Victor News,* published by the General Electric X-Ray Corporation, gives the medical profession such a pat on the back that it is reproduced here for the benefit of those who may not have already seen it.

In these days when there is so much discussion about the regimentation of medicine, we can't help but think about a few things which the medical profession has accomplished without bureaucratic control.

As one writer put it, medicine "has progressed, developed, flourished under nearly every kind of government which has had the common sense to let it alone. It has developed great leaders, good hospitals, it has conquered many of the world's greatest scourges. As a nation we are living longer, living healthier lives than almost any comparable group of people."

Despite the fact that 50,000 physicians are in the armed forces, the country's death rate is the lowest in history.

And never has a war been fought with less sickness and with less trauma of shot and shell than in World War II—thanks to the Army and Navy Medical Corps. Ninety-seven per cent of the injured in battle recover.

Anyone who would talk in favor of the Wagner-Murray-Dingell bill or any other form of regimented medicine should bear these facts in mind with the added thought that these medical accomplishments, especially on the home front, were made in spite of the lagging behind of adequate housing, proper sanitation, good nutrition, favorable working conditions, all of which when neglected tend to promote illness and to impair the health of the poverty stricken.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE UNIVERSITY SCHOOL OF MEDICINE

DR. E. E. MENEFEE, JR.: A 58 year old white, married, childless woman was admitted to the Surgical Service of Duke Hospital on March 10, 1943. Eight months before she had noticed a nodule in the right breast which had grown rapidly but had not caused any pain. She had lost 20 pounds during the preceding year.

Seventeen years ago she had painful swelling of both breasts which disappeared spontaneously. Twelve years ago she had noticed a small nodule in the outer upper quadrant of her right breast which lasted eighteen months and then disappeared without any therapy.

Physical examination showed a large, firm, nodular mass in the right breast lateral to the nipple. It measured 8 cm. across and was adherent to the skin. In the axilla a few hard nodes were present. The rest of the findings were within normal limits. The hemoglobin was 14 Gm., and there were 4,950,000 red blood cells, and 7,200 white blood cells. The differential count and smear were normal. X-rays of the chest were normal.

The clinical diagnosis of carcinoma of the breast was made, and on March 11, 1943, a radical mastectomy was done. The pathologist reported the tumor as being an undifferentiated carcinoma. The postoperative course was uneventful and the patient was discharged on March 30, 1943, after being given a course of deep x-ray therapy totaling 4800 roentgen units.

She was seen in the Surgical Outpatient Clinic at frequent intervals during 1943, and her condition seemed quite satisfactory. X-rays of the chest made in August and again in December were reported as normal. There was no evidence of any recurrence of the cancer.

She did not return in 1944 until late in March, when she came to the Outpatient Clinic stating that she had had "flu" in the latter part of February, which had left her with a hacking cough and general malaise. She had lost 10 more pounds. She appeared quite sick and was admitted on Medical

Physical examination on this admission revealed an emaciated woman who was obviously acutely ill. The skin and mucous membranes were quite pale, and scattered over the entire body were numerous purpuric spots. There were hemorrhagic areas over the posterior nasopharynx and in the tonsillar fossae. The pupils were round, regular, and equal. They reacted well to light and on accommodation. The ears, nose, and throat were normal except for the hemorrhagic areas. The tongue was normal. The teeth were carious and the gums retracted. The neck was normal and the lungs were clear. The right breast was absent and beneath the incision was a firm, non-tender mass 2 cm. in diameter, not attached to the skin. Two firm nodes were palpable in the right axilla. The heart was normal in size; the rate was rapid, the rhythm regular; no murmurs were heard. The abdomen was normal, and the liver, spleen, and kidneys could not be felt.

The accessory clinical findings were as follows: Blood Kahn and Kline tests were negative. The hemoglobin was 8.9 Gm. and there were 2,300,000 red blood cells, 8,150 white blood cells, and 250,000 platelets. Smears of the peripheral blood showed 74 per cent undifferentiated abnormal cells, 7 per cent segmented polymorphonuclears, 1 per cent juvenile forms, 2 per cent myelocytes, 7 per cent small lymphocytes, 3 per cent large lymphocytes, 6 per cent monocytes. Bone marrow studies showed a white cell count of 24,000; the bone marrow was largely replaced by abnormal cells which could not be classified. The urine was normal. X-rays of the chest were normal.

The patient died thirty hours after this admission, despite transfusions and supportive therapy. Her temperature ranged from 39.3 to 40.9 C., her pulse between 120 and 160, respiration from 24 to 30.

Discussion

DR. E. E. MENEFEE, JR.: It seems to me that we have here a case which presents three separate diagnostic possibilities. We know that the patient had a carcinoma of the breast which was removed approximately one year ago. With this history and with the nodule which recurred in the breast, the first thing to think of is recurrent carcinoma with metastases. It is well known that cancer does frequently metastasize to bones,

and at other times markedly depressing the bone marrow. I have never seen a case in which the bone marrow was completely replaced by the carcinoma, and I doubt if this occurs. In this case the normal bone marrow was almost entirely replaced by some abnormal tissue, and cells from this tissue were present in large numbers in the circulating blood; hence, I do not believe cancer can explain the whole picture.

Second, we could assume that this patient never had carcinoma but that she had a lymphoma, perhaps a lymphosarcoma, which involved the breast and later became quite widespread. Against this assumption are the facts that the surgeons were sure she had a cancer of the breast, that the pathologists agreed, and that the patient responded at first to surgery. The evidence for carcinoma is too strong to be ignored.

Finally, we have to think of the possibility of the presence of two separate diseases. To make a diagnosis of two major diseases at one time is always hazardous, but such things do occur. I cannot explain all of the findings on the basis of any one disease. Clinically, she had the classical signs and symptoms of an acute primary blood dyscrasia, plus the signs of a recurrent carcinoma of the breast. She ran a high fever, had purpuric spots over the entire body, hemorrhages into the mucous membranes, and abnormal cells in the circulating blood and bone marrow. With the information at hand, I cannot diagnose the exact blood dyscrasia, but it would fit clinically with an acute aleukemic leukemia. I think this was the immediate cause of death.

Dr. Menefee's Diagnoses

1. Aleukemic leukemia, not differentiated.
2. Recurrent carcinoma of the breast with metastasis to the axilla.

DR. O. C. HANSEN-PRUSS: I saw the bone marrow and blood smears from this patient, and, although I cannot definitely classify the abnormal cells, I am sure that they belonged to the myeloid series. In my opinion, she had aleukemic myeloid leukemia.

Pathological Discussion

DR. GEORGE MARGOLIS: The only tumor found at autopsy was a 3 cm. nodule of recurrent carcinoma in the line of operative incision.

The profound disturbance of the hematopoietic system was an acute myeloid leukemia. Characteristic infiltrations were present in the bone marrow and viscera. Hemorrhages were present in the internal organs as well as in the skin.

The immediate cause of death was a bacterial tracheobronchitis and hemorrhagic lobular pneumonia, a frequent complicating process in leukemia.

Anatomical Diagnoses

Acute myeloid leukemia
Ulcerative tracheobronchitis
Hemorrhagic lobular pneumonia
Carcinoma of the breast, with postoperative recurrence in the line of incision.

PSYCHOSOMATIC CONFERENCE

DUKE UNIVERSITY SCHOOL OF MEDICINE

Medical History and Findings

DR. H. KING: A 22 year old white, married female was brought to Duke Hospital because of convulsions. Her first convulsion occurred six years ago at the time of her only pregnancy. She has one son, aged 6, living and well. For the past six years the patient has had many nervous spells. During these spells, which appear to occur frequently, she complains of choking, difficulty in swallowing, extreme nervousness, and precordial pain. Following them she usually falls into a sound sleep. Her husband has described still another type of spell which she has experienced during the past six years, in which she stares into space and is unresponsive for a few seconds.

For several months the patient has complained of severe frontal headaches. Her vision has gradually grown poorer during the past several years. Six months ago, because of lower abdominal pain, she had a uterine suspension.

Her second convulsion occurred three weeks ago. According to her husband's statement, she sat up in bed, stared into space, turned her head to the right side, began to breathe heavily, and then had a convulsion. After this she fell into a sound sleep, and when she awoke she had no recollection of what had happened. Since then she has had several convulsions. These all occurred at home and were not accompanied by an aura.

Five days before admission here she was taken to her local hospital, where she was

given medication (probably dilantin). While taking the medicine she had no attacks. The night before her admission here, while at home, she suffered five convulsions.

On admission she was found to be a well developed and well nourished white female who was drowsy and slowly mumbled answers to questions. She had been given heavy sedation during the day preceding her admission. Her temperature was 37.4 C., pulse 80, respiration 20, blood pressure 120 systolic, 80 diastolic. The physical examination was within normal limits. Neurological examination revealed only a rapid, sustained nystagmus upon both lateral and upward gaze. Reflexes were physiological, but the sensory examination was not considered valid because of the patient's state of drowsiness.

Accessory clinical findings were as follows: Hemoglobin 12.8 Gm. or 83 per cent, red blood cells 3,910,000, white blood cells 6,240, with a normal differential; platelets 350,000; sedimentation rate 8 mm. in an hour, corrected; blood nonprotein nitrogen 30 mg. per 100 cc.; blood bromides 36 mg. per 100 cc. A stool specimen was normal. Blood Kline and Mazzini tests were negative. Spinal fluid examination revealed normal dynamics; the total proteins were 41 mg. per 100 cc.; the Wassermann reaction and colloidal mastic test were negative. X-ray examination of the skull, lungs, and heart failed to reveal any significant abnormalities. An electroencephalogram was interpreted as follows: "The records contain a number of irregularities but no definite dysrhythmia. Over-ventilation has not much effect upon the pattern." A second electroencephalogram done after the injection of pitressin showed "a definite generalized cerebral dysrhythmia during the resting state. Over-ventilation produces bursts and runs of large slow waves that persist for a considerable time after the end of the procedure."

During the physical examination the patient was asked to over-breathe and was told that this would bring on one of her attacks. Although she was under heavy sedation she threw up her hands and arms, turned on her right side, and continued to over-ventilate for two or three minutes. She was then told she would awaken, and she did so. After this she fell into a rather profound sleep. She has had no other attacks

Psychiatric History and Findings

DR. SAMUEL KILGORE: Most of the psychiatric information was obtained in several interviews with the patient and in an additional interview with her husband. A sodium amytal interview was also carried out.

The patient's mother and father were strict with her. The mother has been nervous for the past ten or eleven years, and during that time she has been unable to do any work. In the past year she has had two or three heart attacks, the last of which the family thought would be fatal. The patient said that she did not worry too much about this, although her husband has noticed that it has had an effect upon her. The father was more strict than the mother. This girl, the oldest of five children, had to do all the heavy work in the family. Her father even left some of the ploughing to her. She also had to hang tobacco, and she injured her back doing this heavy work. There were four other children in the family, none of whom are nervous and none of whom have had seizures.

The patient was in the eighth grade, at the age of 14, when she had to discontinue her education because of her mother's poor health.

The parents did not punish the children a great deal, but usually talked to them instead. The patient resented this, but did not say much. When boys became interested in her, her parents were very strict. She could not go out with them, but had to see them at home. She finally ran off to be married. The patient said that she would not be married yet if her husband had had to ask permission of her father, for he was just as afraid of him as she was. She states frankly that she married mainly to get away from home and the work situation. After she was married she had an easier time than ever before.

Her husband claims the patient has been nervous ever since he has known her. Following their marriage, they lived on a farm not far from her home. The patient soon became pregnant although neither she nor her husband wanted a child at that time. She had a difficult pregnancy. During the second month there was an onset of "little spells." The husband noticed that the first one followed her getting angry with him. At that time she did not respond for a short

but said no more about the incident and seemed just a little worried. She claims she did not remember anything about it. From that time on, she frequently had these episodes.

Several days before the baby was born she became very restless, and two days later she had the first convulsion. Following this she was given medication, and does not remember anything until after the baby was born.

Since then her health has not been as good as formerly. She has not been able to do as much work, and has been bothered by noises. She has a "little spell" at least once a month, and she associates these with her periods. Since her pregnancy, she has never enjoyed sexual relations, being afraid she will become pregnant. Her baby sometimes gets on her nerves, but there is elicited no direct feeling against the child.

When the baby was 3 years old, she began to suffer dyspareunia and pain in the lower abdomen. She was told by her physician that her "womb was misplaced," and that she required surgery and should be sterilized. She was extremely eager for sterilization and agreed to surgery. After the operation the doctor told her that he had not tied her tubes, for he did not want to take the chance of ruining her life. She has had some feeling against the doctor for failing to do this. Her dyspareunia disappeared, but she still has pain in her lower abdomen. Both she and her husband feel that she has been worse since the operation.

She had her first convulsion of the recent series four weeks ago. She had been in bed, but when her husband came home from work at 11:30 p.m., she got up until he was ready to go to bed at 1:30 a.m., and then had some difficulty in going to sleep. She had her first convulsion that night and had at least six "little spells" between then and morning. She would sit up in bed, rubbing her arms, and then would lie back down again. Following these attacks she was hungry and ate ravenously, although she remembered nothing about this when she awoke four hours later.

The sodium amytal interview was essentially noncontributory. She told almost exactly the same story.

She has an intelligence quotient of 70.

Discussion

DR. ALEXANDRA ADLER: From the description of the seizures and from the general clinical picture, I think that the patient has epilepsy. Sometimes, however, it is not easy to differentiate between neurological and hysterical spells. If the pupils do not react during the spell and if the patient has a positive Babinski sign, we can say that it was an epileptic fit; however, it is rare to see a patient during one of the spells. We cannot rely entirely upon the psychiatric history to make this differentiation, for we can usually find psychogenic factors in the histories of individuals with proven epileptic seizures. Hysterical fits can be avoided by protecting the patient from the cause of excitement. It has been pointed out, however, that the number of epileptic spells decreases if the patient can be kept occupied, and therefore epileptics are advised to work. There are innumerable difficulties in making the differential diagnosis, and one has to consider all the factors involved in the questionable cases in arriving at a tentative impression.

DR. SAMUEL KILGORE: I think of this patient as one who has a latent epileptic disorder which might have remained dormant had it not been for unusual external conditions. She has had a heavy emotional load, although it is difficult to evaluate completely the increase in tension and anxiety associated with the fear of pregnancy, for she has taught herself to mask her feelings. Nevertheless, the pregnancy factor appears to be an important one.

DR. R. BURKE SUITT: If the accessory clinical findings and the form of the illness are disregarded, we have a setting, in combination with a group of personal experiences, from which a functional or psychogenic illness might easily materialize. In such a life situation an unconsciously determined illness might serve the needs of an individual unable to handle painful emotional experience more directly.

Viewed in completeness, however, from the psychiatric standpoint the case fits poorly into any part of the nomenclature allotted to psychogenic convulsions. The appearance of structurally-determined attack disorders in periods of personal tension and environmental stress has been noted by numerous observers.

From the somatic standpoint, it appears to me that this patient's illness does not come under the category of "idiopathic epi-

lepsy." There is a much smaller group of patients who have epileptiform attacks whenever one or another defect in homeostasis materializes; the present case seems to fall into this group. In this connection, I wonder what the glucose tolerance curve would show if the fast were continued through the fourth hour. Also, the carotid sinus might be investigated under varied physiological conditions to discover what, if any, role it has in releasing the seizure mechanism in this individual. The nictitation test, in which the patient is required to blink the eyelids under controlled conditions, with the objective of producing a seizure under conditions which might be thought of as a type of tension, might be applied. There is a slight possibility that the blood pressure values with postural changes and the cold pressor test might contribute significant data.

Be these things as they may, it is all too frequently that such a patient as this, with atypical convulsions and a history of relevant defects in homeostatic function, is brought to the attention of the neurosurgeon late rather than early in the process. The defects in homeostatic functions which permit the seizures to occur also suggest involvement of the diencephalic region. A neurosurgical opinion as to the value of air injection in this case might be of considerable interest.

DR. CHARLES K. DONEGAN: This is an interesting problem to us medically. We see this type of patient, with hysterical or epileptic attacks, often. Can you bring on an epileptic attack by over-breathing and suggestion? I would like to know what diagnosis would have been made if you had not had the results of the water pitressin test. What is the etiology of the spells?

DR. MAURICE H. GREENHILL: I might paraphrase Dr. Donegan's questions as follows: How would one by the usual clinical methods arrive at a diagnosis and understanding of this case? Ordinarily it is easy to diagnose a convulsive state, but occasionally, when psychoneurotic factors in a case appear to be obvious, many clinicians feel compelled to make an either-or diagnosis. To them it becomes a matter of the patient's having either epilepsy or a psychoneurosis, when actually the patient often has both conditions. If the physician adheres to four rules in such instances, diagnostic thinking becomes clarified. These rules are: (1) "Hysterical convulsions" are very rare. They do occur, but nine out of ten patients who have seizures which are termed "hysterical" turn out to be individuals with cerebral dysrhythmia. (2) Certainty in the diagnosis of convulsive states rests upon the characteristics of the seizures and the findings in the neurological examination. The electroencephalogram is simply a corroboration of this. A bizarre seizure does not mean hysteria, for the psychomotor epileptic attack may follow almost any bizarre pattern. (3) A patient may have both hysteria and epilepsy at the same time (hystero-epilepsy). (4) The diagnosis of a psychiatric condition in the presence of seizures of any type should not be made on the basis of exclusion. A psychiatric condition is present only when the signs and symptoms of that condition are present.

In evaluating the case which was presented today one can apply these four rules. The patient has to be considered from the psychosomatic point of view, which means that she has to be looked upon as a total unit influenced not by one factor, but by many, including the hereditary, environmental, medical, sociological, and psychological. The etiology of her condition is not a single one but is related to multiple causes.

It is a fact that "hysterical seizures" are rare, and therefore the burden of proof is upon us. From the neurological aspects of the case it is my opinion that anyone who has witnessed almost every variety of convulsive seizure would state almost without hesitation that this patient falls within the group of patients with cerebral dysrhythmia. Her attacks conform with grand mal, petit mal, and psychomotor patterns. She either loses consciousness or has a reduction in consciousness. She has never been aware of her petit mal seizures, which is not infrequently characteristic. Her spells are followed by sleep. It is true that an ordinary electroencephalogram showed little evidence of cerebral dysrhythmia, but it is true also that patients with epilepsy sometimes have normal brain wave tracings on occasion. The water pitressin test, it is known, produces seizures in 85 per cent of individuals with subclinical epilepsy. Although there are no figures on the percentage of such patients who develop abnormal brain wave tracings as well, it is thought to be high. The fact that this patient, without question, had a cerebral dysrhythmia following a water pitressin test puts her into the category of an epileptic.

The fact that the patient has epilepsy does not make her immune to a psychoneurosis. She has a history of anxiety attacks and of spells of hyperventilation. Sometimes epileptics may have spells which appear to be anxiety attacks but which actually may be abortive seizures or sensations which constitute an aura. Yet, on the other hand, in some instances they may have both an anxiety neurosis and epilepsy. Furthermore, an individual with an anxiety neurosis may hyperventilate in an anxiety attack, and if he has subclinical epilepsy the hyperventilation may precipitate a seizure. I am of the opinion that such is the case in the patient we have seen today.

It follows that the psychological factors which influence the anxiety neurosis, and in turn the hyperventilation, must be of importance. They are at least present. There has been strong resistance to her parents throughout her life. She has learned to control strong feelings which have been built up within her because of this resistance, and such suppression has produced tension. Her parents' attitude might very well have something to do with the formation of anxiety within her. Psychological problems are almost entirely responsible for her rejection of the idea of having children. She had a child, as it were, under protest. Since then there has been a conscious fear of pregnancy and the occurrence of pelvic symptoms and sexual difficulties related to this. In general all of these psychological factors are little different from those which produce symptoms of anxiety and tension in some women. In a woman who has the tendency toward convulsive seizures these may be enough to disturb her homeostasis and to lower the threshold for the seizure. On the other hand, the criteria for the diagnosis of hysteria are wanting.

If we were to take the average epileptic and study him as intensively as we did this patient, we would find comparable factors at work. Every epileptic is pushed into a seizure by disturbances of homeostasis. The factor which disturbs the balance may be neurological, medical, metabolic, or psychological. Every epileptic has had the experience of being thrown into a seizure by psychological factors. In this patient the psychological factors seem particularly important, although we see that hyperventilation, water and pitressin, and even pregnancy also have an influence. Here is the problem of multiple causation in the etiology of a medical disorder, and that is psychosomatic medicine.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.
Raleigh

Evidence: *Entrapment methods are held proper by the courts to secure inculpating testimony if the person committing the crime uses his own volition and is not influenced by outside control.*

Deceptive methods for obtaining inculpating testimony have been used for a great number of years, especially in securing evidence for use against violators of national and state drug laws. The fundamental rule regarding this matter should therefore be of interest to the medical profession. The case selected to illustrate this rule is that of a physician who was indicted and tried on a charge of the unlawful sale and distribution of morphine. The trial before a jury in Superior Court resulted in a verdict of guilty, and the defendant physician moved for a new trial and arrest in judgment. This being denied, the case was appealed to the Supreme Court. The pertinent facts of the litigation are as follows:

A detective under employment by the Pure Food and Drug Department of the state went to the office of the defendant physician and requested a prescription for morphine, allegedly for a friend of his. It later developed, however, that no such person existed. After the detective obtained the prescription and paid for it, he took it to a pharmacy, where it was filled. The drug prescribed was morphine in the form of hypodermic tablets.

When this case came up for consideration before the Supreme Court there were many errors assigned, but the one of interest to the medical profession was the one with reference to the method of securing testimony to be used against the defendant at his trial. The court, in agreement with numerous other decisions, was of the opinion that, while the sale of morphine in this particular instance was induced by an agent of the Pure Food and Drug Department for the express purpose of securing incriminating testimony, the defendant was not excused

by reason of this method of procuring evidence. The court in this connection referred to a similar case (Excise Commissioner *vs* Backus—N. Y.), in which it was held: "The mode adopted by plaintiffs to bring to light the malfeasance of the defendant had no necessary connection with his violation of the law. He exercised his own volition independent of all outside influence and control."

It was brought out in the decision that before an officer is allowed to use deceptive methods of entrapment he must first believe the accused a violator of the law, and he must not in any manner influence the suspected person against his volition and cause him to commit a crime of which he had no original intention.

The Supreme Court in this case was of the opinion that there was no justifiable error in the trial of the Superior Court, and the verdict of guilty was sustained.

The act of prescribing morphine for a person without a proper examination—in fact, for a person who was later found to be nonexistent—is from a medical standpoint improper, and within itself throws suspicion on one charged with this type of irregular practice. In emergencies, ordering opiates without examination for one known to the doctor, especially one of his own patients, might in certain instances be excused, if not specifically prohibited by law. Obviously testimony brought out before the court of this type of procedure would certainly be of no help to one charged with a violation of the narcotic law. It therefore behooves the physician, in prescribing opiates and other drugs included under the Harrison Narcotic Law, to exercise the utmost caution, and to be sure that all details are regular and according to law. (Tennessee Supreme Court, March Term, 1915—175 S. W. 1127).

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TUBERCULOSIS CONTROL IN HOSPITALS

Few hospitals will accept tuberculosis of the lung as a disease to be treated within their walls except the large public institutions with special facilities for that purpose. Recently private hospitals in Chicago were asked:

1. Do you admit patients with pulmonary tuberculosis to your hospital for treatment of that disease?
2. Do you admit patients with known pulmonary tuberculosis to your hospital for treatment of other conditions?

Of the 73 hospitals which replied, 5 answered question one with "Yes;" 68 with "No;" 25 replied to question two with "Yes" and 48 with "No" or with comments which amounted to a negative reply. The answers indicated that hospital administrators do not consider the admission of the tuberculous an asset to hospital service. In fact many of them thought this was an attempt to uncover an administrative deficiency.

In a community with sufficient beds available in tuberculosis hospitals this attitude does not hamper phthisiotherapy, although in the past physicians have beeen deprived of facilities to hospitalize their patients in this manner. With the increase of surgical treatment this has often proved hampering. In communities with inadequate facilities for the treatment of tuberculosis failure to exploit all the available space, especially

when numbers of general hospital beds were vacant, has seemed unjustified.

Fear of Infection

The reason for this is the fear of infecting non-tuberculous patients and hospital personnel housed under the same roof. This precaution might be justified if the refusal could really lead to a hospital atmosphere free of tubercle bacilli, but that is not the case.

In recent years, since we have become aware of obscure tuberculosis, our distrust of a negative history and physical examination has become deep-seated and justified. Again and again evidence has shown that any hospital may have patients with unknown and open pulmonary tuberculosis in its rooms and wards however little the ailment for which these persons were admitted may have to do with pulmonary disease.

Routine Chest X-rays

Only universal X-ray examinations of the chest of all patients, regardless of the nature of their complaint, could lead to exclusion of the tuberculous. The University of Chicago Clinics and the affiliated Provident Hospital have X-rayed all clinic admissions for some years with most beneficial results. As a method of avoiding contamination, however, this is only part of the necessary effort. As a means of keeping tuberculosis out of hospitals, pre-admission X-rays would lead to an unnecessary increase in the rejection of patients badly in need of care.

Many patients will always enter hospitals without a previous examination, and they cannot be asked to leave if tuberculosis is discovered. Even if a discharge could be effected without harm to the patients, where should they go for treatment? Tuberculosis hospitals could hardly be expected to engage in the treatment of all extrapulmonary, non-tuberculous conditions. Sanatoria are usually not located or staffed for the purposes of general medicine and surgery. Many communities have no facilities specifically intended for the treatment of patients with tuberculosis.

Danger of Unrecognized TB

General hospitals should accept the necessity of housing tuberculous patients. The danger of infection arises from not recognizing their pulmonary infection, as has been the unavoidable fact up to now.

Proper isolation in one wing, floor, or section of the building is easily accomplished. At the University of Chicago Clinics this has been done during the past twelve years. Through knowing who and where our tuberculous patients are we are avoiding the most acute danger of contamination which always arises where germs are being spread without the knowledge of either the distributor or the recipient.

Staff Examination

Isolation protects the medical and nursing staff and other employees against infection from the patient. However, to make tuberculosis control in a hospital complete, physicians, nurses, attendants, etc., have to be protected not only from patients but from each other and patients have to be guarded against infection from members of the personnel.

Nearly 15 years ago when the University Clinics introduced X-ray examination of the chest by roentgenograms for all nurses, the supervisor of the operating rooms and the nurse in charge of the sterilizing room for the newborn were found with active tuberculosis. Neither was aware of her condition. Stereoscopic roentgenograms were then made obligatory for all physicians and nurses on taking employment, with re-examinations every year for those on general duty and every three months for the personnel of the tuberculosis division.

General Hospital Personnel

Other personnel were exempt from this routine. About a year later, positive sputum findings began to be reported in patients where no other findings suggested tuberculous infection. The clinical findings in most of these patients suggested upper respiratory or bronchitic involvement. The suggestion that an X-ray examination of the chest of the members of the laboratory staff be made was resented by that staff and rejected by administrative officers.

Eventually, it was found that the laboratory worker in charge of sputum tests, a plump and healthy appearing girl, had extensive cavernous tuberculosis with an almost pure culture of acid fast bacilli in her sputum. She had contaminated the patients' specimens. The embarrassment of apologizing to the patients in question and of revoking the reports to the health department had a most beneficial effect. Roentgen examination of the chest has since been obligatory for all staff members and hospital employees and has been gratefully received by almost all of them.

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Eventually, it was found that the laboratory worker in charge of sputum tests, a plump and healthy appearing girl, had extensive cavernous tuberculosis with an almost pure culture of acid fast bacilli in her sputum. She had contaminated the patients' specimens. The embarrassment of apologizing to the patients in question and of revoking the reports to the health department had a most beneficial effect. Roentgen examination of the chest has since been obligatory for all staff members and hospital employees and has been gratefully received by almost

Sincere Effort Needed

Experiences like this may seem extraordinary. The author believes they appear so only because there has been no great drive to uncover tuberculosis in hospital personnel. There can be no cause for the hesitation on the part of the general hospital to put its house in order with regard to tuberculosis other than inertia and the fear of administrative commotion.

A painstaking design and observance of rules governing the diagnosis and isolation of the disease in patients and employees will make it possible with safety to admit tuberculous patients to general hospitals. There is no reason why all this cannot be accomplished by voluntary efforts. It is obvious from our newer experience with tuberculosis that such hospitalization is one of the great necessities to achieve the basic aim of all medical endeavor—the saving of human life.

Tuberculosis Control in Hospitals, Robert G. Bloch, M.D., The NTA Bulletin, August, 1944.

Now more than at any other time, because of the pressure of work, longer hours, and crowded and unsatisfactory living conditions, there is reason for extra precaution so far as tuberculosis infection is concerned, both in large and small industries. Many individuals will have to be employed whose health is sub-standard and who should be considered more susceptible to such infection. Therefore, there should be more effort made to extend and maintain proper health supervision, especially in regard to the detection and control of tuberculosis.—W. A. Sawyer, M.D., N.Y.S. Jour. of Med., Jan. 15, 1943.

CORRESPONDENCE

To the Editor,
North Carolina Medical Journal

The North Carolina State Board of Health at its last meeting on December 14 adopted an extensive revision of its Rules and Regulations Governing Communicable Disease Control for the state. This revision includes changes in the list of diseases required to be reported by physicians. A copy of this reportable list is enclosed. Included in the list, for easy reference, is a summary of the new isolation and quarantine requirements.

If it can be arranged we would appreciate your publishing the new list of reportable diseases, including possibly the summary of the isolation and quarantine requirements, in the next issue of the North Carolina Medical Journal. The information is at present being transmitted to local health and quarantine officers throughout the state for forwarding to the physicians of each county; however, the additional emphasis gained by the publication in the North Carolina Medical Journal would be of great value in obtaining prompt reporting on the part of physicians of the diseases on the new list. Since morbidity information concerning these diseases is collected on a calendar year basis, it is important that physicians become well acquainted with the above information as soon as possible so that the statistics for 1945 will not be inaccurate because of lack of reporting during the first weeks after the change is announced.

It might be of interest to note that reporting has been put on a more practical basis than before. Chicken pox, influenza, German measles, pellagra, and Vincent's infection have been deleted from the reportable disease list. Ophthalmia neonatorum is to be reported as gonorrheal ophthalmia. The following diseases have been added: dengue, amebic dysentery, infectious encephalitis, glanders, granuloma inguinale, leprosy, and lymphogranuloma venereum. These changes eliminate those diseases the reporting of which has been burdensome in the past and the information concerning which has been of minimum public health value. The diseases added to the list are uniformly required to be reported in other states and are of such nature that their reporting is of definite value to the public health program.

Any action you see fit to take in this matter will be greatly appreciated.

Carl V. Reynolds, M.D.
State Health Officer

Instructions for Reporting

1. Physicians and other persons are required to report these diseases as follows:

A. In case more than one physician is in attendance, the first physician to determine the nature of the infection is responsible for reporting.

B. In case no physicians are in attendance, school superintendents or teachers, parents, guardians, or heads of households, nurses, owners of dairies or other foodhandling establishments, and superintendents of public and private institutions, hospitals, or jails are responsible for reporting cases of these diseases in persons coming under their supervision.

2. All reports of these diseases from persons required to report should be mailed within twenty-four hours after diagnosis to the health or quarantine officer of the county or city in which the case is located at the time of the report.

LIST OF REPORTABLE DISEASES
(Effective January 1, 1945)

Disease Required to be Reported	*Placarding for period of Isolation or Quarantine*	*Isolation of Patient*	*Quarantine of Contacts*
*Anthrax	Required	Required until all lesions are healed	Required for 7 days from last exposure
Chancroid	Optional with health officer	Optional with health officer	If suspected of being infected—optional with health officer
*Cholera	Required	Required until 2 stool cultures at 48-hour intervals are negative	Required for 5 days and until 3 stool cultures at 48-hour intervals are negative
Dengue	Not required	Required to be screened until 6th day	Not required
*Diphtheria	Required	Required for 21 days or until 2 cultures at 24-hour intervals are negative	Required for susceptible contacts for 7 days from last exposure
*Dysentery, amebic	Not required	Not required	Not required
*Dysentery, bacillary	Not required	Required until 2 stool cultures at 5-day intervals are negative or for duration of disease	Not required
Encephalitis	Not required	Required to be screened for duration of fever	Not required
Glanders	Required	Required until all lesions are healed	Required for 14 days from last exposure
*Gonorrhea	Optional with health officer	Optional with health officer	If suspected of being infected—optional with health officer
Granuloma inguinale	Optional with health officer	Optional with health officer	If suspected of being infected—optional with health officer
Leprosy	Required	Required until all lesions are healed	Required until examined for lesions
Lymphogranuloma venereum	Optional with health officer	Optional with health officer	If suspected of being infected—optional with health officer
*Malaria	Not required	Required to be screened for duration of fever	Not required
Measles	Not required	Required for 7 days after rash appears	Not required
*Meningococcus meningitis	Required	Required for 14 days	Required for 14 days from last exposure unless released by health officer
*Paratyphoid fever	Required	Required until 2 stool cultures at 5-day intervals are negative	Not required
Plague	Required	Required for duration of the disease	Required for 14 days from last exposure
Poliomyelitis	Required	Required for 21 days	Required for contacts under 16 years for 14 days from last exposure
Psittacosis	Required	Required for duration of the disease	Required for 14 days from last exposure
*Rabies	Not required	Required for duration of the disease	Not required
*Rocky Mountain spotted fever	Not required	Not required	Not required
Scarlet fever	Required	Required for 14 days	Required for susceptible contacts under 16 years for 7 days from last exposure
Septic sore throat	Required	Required for duration of the disease	Required for contacts under 16 years for 7 days from last exposure
Smallpox	Required	Required until all lesions are healed	Required for all contacts until vaccinated or revaccinated
*Syphilis	Optional with health officer	Optional with health officer	If suspected of being infected—optional with health officer
Trachoma	Optional with health officer	Optional with health officer	Not required

*Tuberculosis	Optional with health officer	Optional with health officer	If suspected of being infected—optional with health officer
*Tularemia	Not required	Not required	Not required
*Typhoid fever	Required	Required until 2 stool cultures at 5-day intervals are negative	Not required
*Typhus fever endemic	Not required	Not required	Not required
*Typhus fever European	Required	Required until 2 days after fever subsides	Required for 14 days from last exposure
*Undulant fever	Not required	Not required	Not required
Whooping cough	Required	Required for 21 days after onset of cough	Required for susceptible contacts for 14 days from last exposure
Yellow fever	Not required	Required to be screened until 6th day	Not required

BULLETIN BOARD

PRESIDENT'S MESSAGE

In the December issue of the JOURNAL there was printed on this page an article by Dr. Hamilton McKay dealing with the recommendations of the Commission appointed by Governor Broughton for the extension of medical and hospital care in North Carolina. Dr. McKay is chairman of a committee from the Medical Society appointed to collaborate with the physicians on the Governor's Commission in working out the proposed program.

Below is an article by Dr. T. L. Carter, also a member of this committee. Dr. Carter, through no fault of his own, was unable to attend either of the meetings held by this committee with the physician members of the Commission and the Executive Committee. In correspondence and conversation Dr. Carter has expressed to me in a most earnest and sincere manner his unqualified opposition to the recommendations of the Commission. Furthermore, Dr. Carter is a most useful and respected member of our Society, and he has been my personal friend for more than ten years. Feeling that it is only fair and proper for the members of our Society to have through the JOURNAL both sides of the proposals, and being impressed by his well informed and sincere views, I requested Dr. Carter to reduce his ideas to writing for publication in the JOURNAL.

It should be added that Dr. Carter graciously offered to resign from the committee in view of the fact that his views are not in harmony with the majority. I have, however, insisted that he remain on the committee, and he finally agreed to do so.

As the members of the Society well know, I earnestly and sincerely feel that the adoption of the proposals will be for the best interest of both the people and the physicians of North Carolina. I further feel, however, that we should respect the sincerity of each other's views and decide this issue in the democratic manner after full and frank discussion. In this spirit I recommend that you give full consideration to the following article.

Respectfully,
PAUL F. WHITAKER, M.D.

* * * *

A RURAL PHYSICIAN OPPOSES THE GOVERNOR'S PLAN

THOMAS L. CARTER, M.D.
GATESVILLE

The medical profession of North Carolina is facing a great problem. The trustees of the University of North Carolina are asking the state for a four-year medical school and hospital. In addition, they are seeking to build a chain of hospitals in the state. Governor Broughton approved the plan and appointed a commission composed of thirty-one laymen and eighteen physicians to gather data and make reports. The state medical society, through its president, appointed doctors to work with the Governor's Commission. I respect the sincerity of every member of the committee and the commission. I am strictly a rural general practitioner, and my honest opinion is that we are off on the wrong foot. I welcome an opportunity to give some reasons for my opposition to the so-called "Governor's Plan."

Financial Considerations

The advocates of this plan tell us that "The final plan of action will of course be determined by the Commission as a whole, and the financial means of creating and maintaining the program will be determined

by the General Assembly."[1] The medical profession has approximately one vote to four hundred in the legislature. They also tell us that "there are adequate resources in the state to support such a program year in and year out once it has been established."[1] We may have the resources, and it is true that the state has a surplus now, but there will be lean years, as there have been since the days of Joseph. I can recall that twelve years ago this state's credit was at stake, and in order to get money to tide her over it was necessary for her governor to go to New York and beg for money at an interest rate above 5 per cent. That same governor, during the campaign, had pledged himself against a sales tax. Seeing the financial structure of North Carolina crumbling, and being a wise man, he took the only available course and backed the enactment of a sales tax, which saved the state from financial ruin.

Governor-Elect Cherry has unqualifiedly pledged that the state will do all that is necessary for our returning veterans. We do not know when the war will end, nor how many veterans will return and what it will cost the state to do its duty for its veterans. There is no reason to believe, because we have money today, that we will have it in the future unless we guard our expenditures. If this giant undertaking is put into being it will be dependent, to a great extent, upon the action of our legislators. When tax receipts drop off and money is hard to find only the politicians who will promise reduced taxes or no increase in taxes can be elected. The Legislature has never granted sufficient appropriations to run its state institutions properly. North Carolina stands forty-fifth in the nation in the care of mental cases. These institutions have never received the support asked for and needed, and they have been and still are pitifully lacking. If we have failed in the small things in the past, how can we expect so much larger things in the future from the same source?

The development and maintenance of this plan would depend wholly on the whims of the General Assembly. Big outfits which are built up in times of prosperity often shrink in times of normalcy and go down, for lack of funds, in times of depression. The state had heavy drops in five schedules in the past year, amounting to nearly half a million dollars. "This may be the beginning of the downward trend which should guide the legislative action on appropriations in 1945."[2] "Current expenditures of the General Fund are dangerously near the total income that may be expected during *normal* times. Expansion of spending, coupled with the decreasing tax collections, will bring trouble in the future. This should be avoided by the 1945 General Assembly."[3] "There is little possibility of finding new sources of revenue."[3]

The proponents of the Governor's Plan tell us that we are spending only a small amount of money for the health of our people. Yet state, county, and federal governments, and charitable foundations are paying $1.03 per capita yearly for this purpose. The state is receiving annually from the federal government $1,463,372.17 for health purposes, and the state and counties are appropriating yearly $438,961.00. The Reynolds Foundation appropriates annually $178,188.00 for the fight against venereal disease. Many other organizations are contributing, in various drives, to boost this figure to a sizable sum. The amount Virginia is spending for medical schools and health purposes is pointed out. Please remember that North Carolina, unlike Virginia, has two first-class medical schools with sufficient endowment to run them without taxation. We are indeed fortunate to have such a medical set-up.

Care of the Indigent

It is my opinion that the indigent, with rare exceptions, are receiving the necessary medical attention. The health departments are giving free vaccinations, prenatal and child clinics, pre-school examinations, eye, tonsil and adenoid clinics, dental work in schools, venereal disease clinics, and fluoroscopic and often x-ray clinics. In addition, we have free cancer and orthopedic clinics. If this is not sufficient the local welfare department, through state, federal and local units, takes care of the necessities from a medical and hospital standpoint. I believe these services furnish medical attention to all those who actually need it. What more should we want? If we establish the Governor's Plan, are we going to cut down on our appropriations to the State Board of

1. Whitaker, Paul F.: Some Further Considerations Relative to the Extension of Medical Care in North Carolina, North Carolina M. J. 5:314 (August) 1944.
2. Tax Collections, Editorial in We the People of North Carolina 2:19 (Nov.) 1944.
3. The Legislature, Editorial in We the People of North Carolina 2:18 (Nov.) 1944.

Health, the State Sanatoria, and other state-aided institutions? We should learn to use freely the services we now have, and if necessary give them more aid, so that they can continue to be helpful to all the doctors, particularly the rural physician and his patients. Why have duplication of the various services?

I am in full sympathy with the worthy indigents, and will continue to serve them to the limit of my ability. The adoption of this plan, however, will encourage a greater number to become indigent. "The Lord helps those who help themselves." It is a dangerous procedure to overtax the thrifty to take care of the non-thrifty and shiftless. When state or nation does this, the thrifty become fewer and fewer and the shiftless more and more; sooner or later they meet on a common level and neither can help the other. Then what? To quote Prime Minister Churchill, "We must beware of trying to build a society in which nobody counts for anything except a politician or an official, a society where enterprise gains no reward, and thrift no privileges."

The Hospital Program

If this program is to serve its purpose it must establish local hospitals. Some sections would support these out of public money; other sections would not, and there would still remain sections without the type of hospital service this plan calls for. Even if hospitals were established in all sections of the state, it would be impossible to obtain the services of outstanding specialists. A first-class specialist, regardless of pay, would not stay in a place where there was not a large amount and variety of material. If he did he would deteriorate rather than grow. I would not want any man who made his living in general practice and did surgery as a sideline to perform a difficult operation on me.

Statistically there may be a hospital bed shortage. I recall that some years ago, when the federal government set out on a program of building a large number of hospitals to care for its veterans, Dr. Morris Fishbein spoke and wrote considerably against this. He, along with the profession as a whole, believed that this was a step toward federal socialization of medicine, and that it would be much cheaper for the government to pay private institutions to take care of these veterans than it would be to build and maintain government hospitals. At that time a survey showed that there were thousands of vacant hospital beds. What has happened to these beds? Have the federal and state governments, by competition, forced these institutions out of business? If they have, it is due time for both federal and state governments to stop such a practice and let private institutions, run by doctors, take care of our medical situation. If the medical profession wishes to do something, let it persuade the legislature to pass adequate compulsory medical and hospital insurance laws. When hospital insurance is widespread and hospital bills are reasonably paid, there will exist no shortage of beds, because private expansion will be sufficient. It is not reasonable to assume that doctors, or any individuals, will spend money in enlarging and expanding hospitals, not knowing when they will be crowded out of business by federal or state competition. If necessary, let the state go into the hospital insurance business. It would be far less expensive than would the building and operation of a great medical school, a large central hospital with nurse and intern quarters, and a series of smaller hospitals.

When this war is over the federal government will give treatment and hospitalization to the veterans and their immediate families for the asking. I believe this is fair and should be done. At the most conservative estimate the number will be around 25,000,000. This will take care of approximately 18 per cent of our hospital bed population, and will absorb our statistical bed shortage.

I am not opposed to the state's making outright gifts to a community which has raised its share of the cost of building and equipping a hospital which is really needed and is not in competition with privately owned institutions. I am opposed, however, to the building of makeshift hospitals that would be unable to meet the standards for a good hospital.

The Danger of Socialized Medicine

We are told that unless the medical profession does something the state and federal governments will force socialized medicine upon us. My advice is to stand by our guns as an organized group and continue to work hard and practice good medicine. Then if the practice of medicine is socialized by the state or federal government, let not the profession be co-partner in this socialization.

It is said that this plan is best for the doctors and the public, and will be run by the doctors. I do not see it entirely this way. Any organization, regardless of its type, is governed to a large extent by the people who put up the money. In this case it is the taxpayers, and this makes it an excellent field for political footballing.

The Doctor-Patient Ratio

It is claimed that North Carolina is short of doctors and that it is necessary to build a four-year medical school at the University in order to take care of this shortage. "Average number of physicians who die or retire in North Carolina each year, 50."[4] For the past five years an average of fifteen graduates from Duke University[5] and twenty from Wake Forest[6] have been licensed yearly to practice medicine in North Carolina. "In the future it is reasonable to expect that this number will be at least doubled."[6] *The number of physicians licensed in North Carolina for the four years from 1940 to 1943 inclusive averaged 145 annually*[4]. I contend that our doctor-population ratio is doing well. If the existing medical schools of this country have been sufficient, in the past, to graduate one doctor for every 800 people I see no reason for the establishment of new medical schools anywhere, particularly in North Carolina, where we already have two first-class medical schools that are destined to grow larger and better as the years go by.

North Carolina in 1940 had approximately one doctor for every 1575 people[7]. This, I believe, is enough doctors. This plan calls for one doctor for every 1000 people. "One thousand population equals 1,111 cases of illness per year."[8] At this rate a doctor would have very little to do.

The Governor's Plan contemplates making loans to worthy medical students with the understanding that upon graduation at a North Carolina medical school they will practice in rural North Carolina for four years. In one report to the Governor's Commission it is stated that "15.8% of the days of care of all white patients were free, and 53.5% of all days of negro patients treated in 89 hospitals was free."[9] If such a large percentage of a doctor's work for the 1000 patients hypothetically allotted to him is to be done free, he would hardly be able to make a living, and certainly would not be able to pay back a loan.

As I see it, we will need a smaller proportion of doctors in the population as time goes on. Seventy-three per cent of this state's population is rural. Rural electrification, good roads, automobiles and telephones bring patient and doctor closer. The physician of today, along with the public health units, is educating people in the value of preventive medicine. Such things as typhoid fever, smallpox, diphtheria, tetanus, and whooping cough no longer exist as major problems. In addition, with sulfonamides and penicillin, such diseases as pneumonia, erysipelas, gonorrhea, pyelitis, and otitis media are usually cured in half the time formerly required. Doctors are learning the value of teaming up, and can have good workshops, with laboratories and good office equipment. It is not necessary, even in a well-equipped practitioner's office, to do more than the average routine blood tests, urinalyses, and other laboratory examinations, because we have an excellent State Laboratory where throat cultures, blood cultures and various other procedures are done by trained men. I use the State Laboratory freely, because the service is good and the time lag on reports is but little more than it would be if a local hospital were situated at my front door.

Gates County, in which I have been practicing since 1925, has a population of about 11,000. We have had only three doctors to cover this county. I admit that the going, at times, is hard; but it is my opinion that the population has received from its three doctors the necessary medical care, and received it at a very reasonable cost. There is no lack of harmony in this county among its doctors. None of us hesitates to call one of the others to see a patient. There is no hospital in this county, but when necessary we put our patients in hospitals. With the exception of state institutions for tuberculosis and mental diseases, no hospital has refused admission to one of our patients for lack of bed space. Yet the hospitals to which we send the vast majority of our patients are located

4. Report of the Subcommittee on the Number and Distribution of Doctors in North Carolina to the Committee on the Four-Year Medical School for the University and Hospital Facilities of the Governor's Commission, p. 6.
5. Report of the Committee on the Four-Year Medical School for the University and Hospital Facilities to the Governor's Commission, p. 44.
6. Ibid, p. 45.
7. Vernon, James W.: President's Address, North Carolina M. J. 5:177 (May) 1944.
8. Haywood, Hubert B.: Personal communication to Dr. Paul F. Whitaker.
9. Reference 4, p. 2.

in the coastal area, which has a population much above normal. I cannot help but think that this doctor and bed shortage is based on pure statistics and has no practical foundation.

Please note: North Carolina in 1940 had approximately one doctor for every 1575 population[7]. Gates County has one doctor for every 3500 people. Gates County's average death rate per year from 1935 to 1943 inclusive was 10.4 per 1000 population; the state death rate for the same years was 9.6. The average birth rate yearly in Gates County from 1935 to 1943 inclusive was 23.6 per 1000 population; the state birth rate for the same years was 23.3. The average maternal death rate per 1000 live births in Gates County from 1935 to 1943 inclusive was 3.0; the state maternal death rate for the same years was 5.13. I call these figures to your attention to show that even with only one doctor for over 3500 people, and in a strictly rural section, with a percentage of Negro population much higher than the state average, our statistics compare very well with those of the state as a whole.

It is not practical to assume that we should have such an excess of doctors and hospital beds that we could meet any severe epidemic or face a world war without causing a little overwork and overcrowding. To do so would leave, in normal times, a lot of vacant beds and a lot of doctors with nothing to do. This overhead would be a burden on the people. If a doctor has but little practice he must get a living out of these few patients, which would mean *increased cost of medical care;* here was born the child socialized medicine.

Four-Year Medical School

I am unable to see why it is necessary for the University of North Carolina to have a four-year medical school if we are licensing 145 doctors yearly and losing only 50. We must remember that Chapel Hill is a small town, in a rural section, located not far from two outstanding medical schools. How or where was this plan started? Where was it that Governor Broughton first publicly announced it? I can assure you that I am not prejudiced in this matter and hold no brief against Governor Broughton or the University. In a heated campaign in my section I did all I could in supporting Governor Broughton's nomination. As to the University, I think it is one of the nation's outstanding lege, but I am neither a Methodist nor a Baptist. I sent my only child to the University of North Carolina.

There are many other phases of this plan which I would like to discuss if time permitted, particularly the Iowa, Michigan and Louisiana programs. As I read and reason, they are shot full of faults. Our committees that investigated these programs, I sincerely believe, did the best they could under the circumstances; but they got their information almost wholly from the full time paid teachers and officers of these institutions. I see no real representation of the rural doctor, who is certainly the backbone of this nation's medical practice. We see in the reports that Duke is so well known nationally that North Carolina sons do not attend it in good number. We are told that Bowman Gray is a fine, outstanding, growing institution, but cannot, along with Duke, meet the medical needs of this state. They went over to the Medical College of Virginia in Richmond, a town of more than 200,000 population with an unlimited amount of clinical material, a recognized medical center, and say that it is a first-rate institution, and is doing a splendid job, but that "There is undoubtedly some disadvantage in its location away from close association with a university."[10] Why have we become so acutely concerned that we are ready to say that a medical school cannot render its best service unless it be situated on the campus of a state university? Let us not become medically clannish or undemocratic in this good state of ours.

Conclusion

I do not think that, in the midst of a terrible war, a few of our educational, political and medical leaders should insist on putting us statutorally on record for a thing that has many doubtful angles. It is only fair that we mark time and give this matter due consideration after we have returned to a period of normalcy. With this country giving the best medical service of any nation on earth and our state doing as good as the best, with the lowest death rate east of the Mississippi[11], I do believe that we are attempting to go too far in these unpredictable times. We should not let our heart run away with our head, but should plant our feet on firm ground of practical thinking.

10. Report of the Subcommittee To Visit State University Schools of Medicine to the Committee on the Four-Year Medical School for the University and Hospital Facilities of the Governor's Commission, p. 36.

News Notes From the State Board of Health

During the past twenty-five years, there have been more than 6,500 deaths from whooping cough in North Carolina. Epidemics have occurred in cycles, incidence in some years being comparatively light, in others extremely heavy.

According to Dr. C. P. Stevick, State Epidemiologist, "This disease is one of the most important causes of death in the United States in small children, and at present outranks all other infectious diseases except pneumonia. The case fatality rate for all ages combined is less than 1 per cent but may be as high as 25 per cent in infants. The disease is considerably more severe during the cold months, due to respiratory complications, and frequently in the hot months it is complicated by enteritis . . .

"Study of the age incidence of the cases during the past ten years shows that .95 per cent of the total occurred under 1 year of age, 83.1 per cent between the ages of 1 and 9 years, and 7.4 per cent over 9 years. Although the group of children under 1 year who have had whooping cough is comparatively small, this group has had 63.2 per cent of all deaths from the disease for the ten years, 1931-1940 . . .

"Many physicians are administering pertussis vaccine at every opportunity and many health departments are providing the immunization to varying extents, but a great deal remains to be done in educating the public to take advantage of the benefits of its use, and in setting up a state-wide program. The same decline should be brought about in this disease as has been obtained in diphtheria and typhoid."

* * * *

At a recent meeting of the North Carolina State Nutrition Committee, composed of representatives of more than thirty state, federal and local departments, institutions and agencies, the following resolution was passed:

"WHEREAS, an official report has been published to the effect that a larger percentage of men called in the Selective Service in North Carolina were disqualified because of physical conditions than in any other state, the percentage being given as 54 of each 100 called; and WHEREAS, this announcement has been received with both a deep concern and some skepticism;

"Therefore, the State Nutrition Committee of North Carolina composed of eighty-three members, representative of departments and divisions of State Government and other public and many voluntary groups of citizens, in meeting assembled, urge that the State Health Officer call upon the Selective Service Administration for additional data relative to this classification of the State. This Resolution is inspired to some extent by the feeling in some quarters that analysis of all factors may prove the relative standing of the State to be inaccurate; but it is inspired more powerfully by the belief that the facts are important enough to call for frank facing of them with the view to a constructive program looking to their improvement."

News Notes From the Bowman Gray School of Medicine of Wake Forest College

Dr. David Cayer, formerly of Duke University, has assumed his duties as Assistant Professor of Medicine at the Bowman Gray School of Medicine. He will continue his studies in gastro-enterology and on vitamins and their clinical application.

* * * *

Dr. George Harrell gave the annual Alpha Omega Alpha Medical Honor Society lecture at Harvard University on January 16. His subject was "Studies on the Pathogenesis of Sarcoid."

Watts Hospital Symposium

The Second Annual Medical and Surgical Symposium sponsored by the Watts Hospital Staff will be held at the Washington Duke Hotel in Durham February 14 and 15, 1945. This particular symposium is given in celebration of the fiftieth anniversary of the founding of Watts Hospital. For hotel reservations write the Manager, Washington Duke Hotel, Durham, North Carolina.

Edgecombe-Nash Counties Society

At the December meeting of the Edgecombe-Nash Counties Society Dr. C. T. Smith discussed "Sedimentation Rate." Officers elected or appointed for 1945 are as follows:

President.....Dr. Marvin L. Stone
1st Vice President.....Dr. John E. Wright
2nd Vice President.....Dr. Junius R. Vann
Secretary-Treasurer and Editor....Dr. James P. Bunn

Delegates to State Society:

(1) Dr. Newsom P. Battle
(2) Dr. Clarence W. Bailey

Alternate Delegates:

(1) Dr. Clairborne T. Smith
(2) Dr. James F. Crumpler

Board of Censors:

(1) Dr. Margaret Battle, Chairman
(2) Dr. Junius R. Vann
(3) Dr. Adam T. Thorp

Committees Appointed by President

Program.....(1) Dr. Clairborne T. Smith, Chairman
(2) Dr. Samuel H. Justa

Assistant Editor of Bulletin....Dr. J. Allen Whitaker

News Notes

Major Edward T. Harrison of High Point died at the Moore General Hospital, Swannanoa, in December.

* * * *

Captain Joy V. Sykes of Rocky Mount has received an honorable discharge from the army and has returned to his home.

* * * *

Dr. Lemuel W. Kornegay, one of the three founders of the Rocky Mount Sanatorium, died recently after a three year illness.

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Dr. Charles Z. Candler of Sylva, an Honorary Fellow of the Medical Society of the State of North Carolina, a member of the American College of Surgeons, and a Senior Fellow of the Southeastern Surgical Congress, died at his home on December 12.

* * * *

Colonel Lloyd J. Thompson, MC, Consultant in Neuropsychiatry, European Theater of Operations, is now in this country on a tour of temporary duty at the Office of The Surgeon General.

BULLETIN BOARD CONTINUED ON PAGE 60

BOOK REVIEWS

Heart Disease. By Paul Dudley White, M.D., Lecturer in Medicine, Harvard Medical School; Physician to the Massachusetts General Hospital, Boston, Massachusetts. Ed. 3. 1025 pages. Price, $9.00. New York: The Macmillan Company, 1944.

The general arrangement of this volume is unchanged in any important detail since the second edition appeared in 1937. Sections on graphic registration of heart sounds, precordial electrocardiographic leads, gastro-intestinal disorders simulating cardiac disease, military service, and pulmonary embolism are valuable additions. Of exceptional value and interest is a new chapter entitled "The Range of the Normal Heart," which deals with the frequently encountered and ever important question of differentiating between a normal heart and a diseased one.

Throughout, where structural diseases of the heart or vascular system are discussed, the approach is made by the fundamental consideration of etiology, pathology, altered physiology, diagnosis and treatment. As in the first and second editions, the author's extensive clinical experience, which is indispensable in cardiovascular research, is clearly in evidence.

Included in this edition are some of the excellently selected historical references which appeared in the first edition but were omitted from the second edition. Their return is welcome.

The bibliography is, if anything, more valuable than before. Classic references have been retained, obsolete ones omitted, and recent contributions listed separately at the end of each chapter.

All in all, this volume is recommended most highly to students, practitioners, and specialists in circulatory diseases.

Surgery of the Hand. By Sterling Bunnell, M.D. 734 pages with 597 illustrations. Price, $12.00. Philadelphia: J. B. Lippincott Company, 1944.

A truly great and lasting masterpiece has been produced in this book. The work is divided into four parts, the first dealing with phylogeny and comparative anatomy and with the normal hand. Except for a relative lack of drawings and photographs of the normal hand and its anatomical arrangement, part one of this excellent monograph is complete in every detail.

Part two, dealing with the reconstruction of the hand and giving detailed consideration to all the anatomical components of the part, is the finest treatise on the subject yet developed. The author draws heavily on his previous work concerning this phase of surgery of the hand, and his discussion reveals his extensive knowledge of all the recent work done in this field.

Injuries and infections of the hand are covered in great detail in the third part of the book. Of necessity much of the discussion is based on the old accepted anatomical and surgical precepts, to which the author has added many new ideas of great practical value.

Part four, dealing with the less common, but nonetheless important and interesting conditions affecting the hand, is interesting reading, and contains a relatively concise yet complete summary which will be used indefinitely for reference.

This reviewer has only two minor criticisms to offer. The first is that the section on phylogeny and comparative anatomy, although its importance is recognized, is somewhat less interesting to the general surgeon than is the remainder of the book, and might perhaps have been abbreviated slightly. Second, a few more good illustrations and actual photographs added to the excellent ones already present would increase the value of the book.

Surgery of the Hand should be classed with the great in its field, and should be read by all students of medicine and surgery, house officers, general practitioners, and surgeons. It will without doubt be used as a reference for many years by all men dealing with this important part of the anatomy.

Global Epidemiology. A Geography of Disease and Sanitation. By J. S. Simmons, M. D., Ph.D., Dr. P.H., Sc.D. (Hon.), Tom F. Whayne, M.D., G. W. Anderson, M.D., Dr. P.H., and H. M. Horack, M.D. 504 pages. Price, $7.00. Philadelphia: J. B. Lippincott Company, 1944.

The present war is being fought in the most unhealthy areas of the world, where diseases of all types are rampant. Many of these diseases are grouped under the term "tropical medicine." The transmission of such diseases is dependent on the habits of people and the habits of insects. The habits of people are reflected in the facilities they have prepared for maintenance of their health. The habits of insects are dependent on geography and climate, and may vary tremendously within very short distances, so that control measures directed toward one species will be totally ineffective against another. For these reasons, general information is not adequate to care for the health of people residing in a given area. This volume is the first attempt to gather together from all possible sources, medical and lay, accurate detailed information which will predict the problem and list the resources of different areas. It is essential for people entering these areas of the world as missionaries, health officers, or businessmen, to have this information at hand. The increasing number of diseases contracted in the tropics which will be seen in general medical practice after the war will necessitate some source book outlining the diseases encountered in localities where military personnel have been stationed. This volume fills this purpose admirably, pointing out the particular dangers to people who have been residents in such areas.

Plaster of Paris Technic. By Edwin O. Geckeler, M.D., Associate Professor of Orthopedic Surgery and Chief of the Fracture Service, Hahnemann Medical College and Hospital, Philadelphia. 220 pages with 208 illustrations. Price, $3.00. Baltimore: The Williams and Wilkins Co., 1944.

This book, a well written manual on "the art of using plaster of Paris skilfully," serves its purpose quite adequately. The author, in his preface, states that "orthopedic technic and the reduction of fractures have been intentionally avoided in this book, as its scope includes only the application of plaster of Paris." It begins where the standard works on orthopedics end.

The contents include discussions on general methods of applying plaster and the forms of plaster

used in surgery, a particularly valuable chapter on errors and difficulties in the application of plaster, a discussion of the technique of pattern plaster, and chapters on the application of plaster to the spine, the shoulder and upper limb, and the pelvis and lower limb. Discussions on the uses of plaster in war surgery and in the treatment of compound fractures, osteomyelitis, and burns are included.

Each chapter is followed by a series of photographic reproductions, illustrating steps in the application of plaster as discussed, and including illustrations of errors and poorly applied plaster. With trip-hammer regularity the author warns against common and frequent pitfalls which must be avoided.

This book is recommended to all medical students and particularly to house officers, to whom the problem of the application of plaster of Paris is one of great concern.

Control of Pain in Childbirth. By Clifford B. Lull, M.D., Clinical Professor of Obstetrics, Jefferson Medical College; Chief of Service, Obstetrics and Gynecology, Philadelphia Lying-In Unit, Pennsylvania Hospital; and Robert A. Hingson, M.D., Surgeon, U. S. Public Health Service; Director, Post-Graduate Medical Course, Philadelphia Lying-In Unit, Pennsylvania Hospital; with an introduction by Norris W. Vaux, Obstetrician-in-Chief, Philadelphia Lying-In Unit, Pennsylvania Hospital. 356 pages. 100 illustrations in black and white, 32 in color. Price, $7.50. Philadelphia: J. B. Lippincott Company, 1944.

The authors state that their purposes in writing this book were fourfold: "(1) The correlation of the pharmacologic action of the various drugs on both maternal and fetal organ structures; (2) the reevaluation of indicated and contraindicated drug combinations in cases with known maternal or fetal abnormality or disease; (3) the selection of the type of pain relief best suited to the mother's physical and emotional status; and (4) the perfection and simplification of technic through full utilization of the allied basic medical sciences to the end that the greatest possible maternal and fetal welfare may be atttained." They include a complete review of all the drugs which have been used in the control of pain in childbearing, and a full resume of the pharmacological action of each. The dosage and method of use of each drug are reviewed.

The section on caudal anesthesia occupies a large portion of the book, and contains a complete review of the literature on this new method of pain relief in obstetrics. A detailed outline of technique is given, and the various modifications which have been offered are covered. The contraindications to the use of caudal anesthesia are also considered.

A just criticism of this book is that the authors are overenthusiastic about almost all forms of obstetrical analgesia and anesthesia. In the section on "Technics for Seminarcosis and Twilight Sleep with Scopolamine" the principal disadvantage of this method is mentioned in one sentence: "the all-too-frequent birth of blue babies, some of whom died, induced the leading obstetricians to search for a substitute for morphine, which was felt to be the cause of this as well as a few other undesirable effects." This brief criticism is lost in the enthusiastic reports of Polak and Matthews, Kolde, Aranow, and others. The latest reference in this section is to an article by Moore which appeared in 1927; the majority are from journals of 1910-1918.

The section on control of pain in maternal complications is interesting; the authors touch upon numerous constitutional problems, including the toxemias of pregnancy, heart disease, and blood dyscrasia.

The book represents the most complete review of caudal anesthesia which has appeared, and is of particular value to one interested in this procedure.

AUXILIARY

JANE TODD CRAWFORD MEMORIAL

In these days when surgery is taken as a matter of course, very few people outside of the medical profession know the story of the first major surgical operation performed in this country.

On Christmas Day, 1809, in the town of Danville, Kentucky, Dr. Ephraim McDowell removed a tumor weighing 23 pounds from Mrs. Jane Todd Crawford. Mrs. Crawford, already the mother of four children, was thought by her doctors to be pregnant again. However, after a year passed and it was obvious that she was suffering from some malady, her physicians called in Dr. McDowell, who had studied in Scotland. Mrs. Crawford lived in Greensburg, 60 miles south of Danville—a great distance for a doctor to travel in 1809.

After examining Mrs. Crawford he said, "Madam, you cannot live in this condition." She begged him to help her for the sake of her children. He told her to come to Danville, where he would do something that had never been done before—make an incision in her abdomen and remove the growth. Jane Todd Crawford, realizing the seriousness of her condition, rode the 60 miles on horseback, trusting in God and Dr. McDowell. The operation was performed in his office, without an anesthetic. Mrs. Crawford sang hymns and repeated Psalms as the doctor worked.

When someone asked Dr. McDowell if he were not proud, he replied that he was humble and grateful to God that she was alive. Some said that another miracle had occurred on Christmas Day, just as now are happening daily miracles of courage and skill. Dr. Ephraim McDowell was a brave man and Jane Todd Crawford was a brave woman, truly called the "pioneer heroine of surgery."

American College of Surgeons Announces 1944 Approved List of Hospitals

The American College of Surgeons announces that 3,152 hospitals in the United States and Canada are included in the 1944 Approved List. The list is published in the annual Approval Number of the College Bulletin, issued December 31.

A total of 3,911 hospitals were included in the 1944 survey, and the approved hospitals represent 80.6 per cent.

Two hundred and thirty-one hospitals in the United States and Canada have been approved for graduate training in general surgery and the surgical specialties. As a result of the 1944 survey, nine additions to the Approved List were made.

Hospitals approved for graduate training in North Carolina are:

Durham

Duke Hospital—554 beds—General Surgery, Orthopedic Surgery, Urology, Obstetrics and Gynecology, Ophthalmology and Otolaryngology

Winston-Salem

North Carolina Baptist Hospital—270 beds —General Surgery

Nineteenth Annual Session of National Conference on Medical Service Set for Chicago February 11, 1945

Postwar distribution of medical care will be the theme for the nineteenth annual session of the National Conference on Medical Service to be held in the Red Lacquer Room of the Palmer House in Chicago, Sunday, February 11, 1945.

Medical legislation, physical fitness program, rehabilitation of veterans, latest word from the Washington front, relationship between labor and farm groups and medicine are among the topics to be discussed by nationally known speakers who will appear on the program. Also listed on the program will be an open discussion on prepayment medical plans, the principal advantages and defects of both service and indemnity types of insurance being presented. Congressman Arthur L. Miller of Nebraska, author of the Miller Bill to unify certain health services, is to be among the speakers.

All members of the American Medical Association are invited to attend.

Detailed programs of the conference are ready and may be obtained through any member of the executive committee or by writing Cleon A. Nafe, M.D., secretary, National Conference on Medical Service, 822 Hume Mansur Building, Indianapolis 4, Indiana.

Catalogue of Technical Books

A new catalogue of technical books has just been issued by The Chemical Publishing Co., Inc., 26 Court Street, Brooklyn 2, N. Y. This catalogue includes the latest books on chemistry, technology, physics, general science, mathematics, engineering, foods, formularies, drugs and cosmetics, gardening, medicine, metals, technical dictionaries, etc.

This catalogue, conforming with the requests of technical and scientific workers and librarians, gives the date of publication of each book as well as price, number of pages, detailed descriptions and full table of contents.

A copy of this catalogue will be sent free to everyone who is interested in keeping up with the latest technical and scientific progress.

Office of the Surgeon General

Reduction in the Medical Corps of the Army

A moderate reduction in numbers of Army Medical Corps officers is necessary in order to remain within presently allotted ceilings, the Office of The Surgeon General has announced. The need for Medical Corps Officers in senior grades who are assigned principally to administrative duties is less acute than formerly.

A Board of officers recently appointed in the Office of The Surgeon General is carefully considering the physical and other qualifications of all Medical Corps officers of the various components of the Army and their essentiality to the war effort.

As a result of this Board's study, it is anticipated that a number of separations of the above group will occur in the moderately near future. Regular Medical Corps officers will be accorded retirement privileges under the provisions of Section II, Ar. 605-245, June 17, 1941, and Reserve, National Guard, and AUS Medical Corps officers will be given the opportunity of returning to the practice of medicine in a civilian status by relief from active duty or discharge.

Honorary Degree for DDT Research Director

Geigy Company, Inc., New York dyestuff house, has received a cable from Switzerland announcing that Basle University has conferred the honorary degree of Doctor of Medicine upon Paul Laeuger, Technical Director of J. R. Geigy, the Swiss parent organization, which brought out the insecticidal properties of DDT. The award to Laeuger was made for his work in Gesarol, Neocid and other DDT compositions.

American Scientists Aid Egyptians

Dr. Maurice L. Tainter, director of research, and Dr. Chester M. Suter, director of chemical research of the Winthrop Chemical Company, Inc., Rensselaer, N. Y., and New York City, have arrived in Cairo to assist in new research on tropical diseases on invitation of the Egyptian government, it is announced by Dr. Theodore G. Klumpp, president. The two American scientists will spend several months abroad, he said. Their investigations will include studies on malaria, schistosomiasis, a liver infestation, and trachoma, an eye disease.

"Your Doctor Speaks"

War-busy physicians who would like to interpret many medical developments to their patients but are prevented by the sheer lack of available time, will be interested in the broad new educational campaign created by The Upjohn Company.

The campaign takes recent medical developments, often of life-saving value to the American public, and presents the facts simply and attractively. The effort is made to give information of immediate practical help, based on sound medical principles, and carrying a hopeful note.

Each educational piece is illustrated by a vividly characteristic painting, executed by a top American artist. These fine oil paintings will be reproduced in full color pages in **The Saturday Evening Post, Time, Life** and other national magazines. It is estimated that more than ten million people will see each message, and so receive timely advice to seek and help their doctor in the control of disease.

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COMPENSATION OF RENAL METABOLIC DYSFUNCTION

Treatment of Kidney Disease and Hypertensive Vascular Disease with Rice Diet, III

WALTER KEMPNER, M.D.

DURHAM

In kidney disease, there may be impairment of both the *excretory* and the *metabolic* functions of the kidney, or of either one alone.

In previous papers[1], experiments with the Warburg technique were published which show that the metabolic reactions of surviving isolated kidney cells—for example, deamination of amino acids, formation of ammonia, oxidation of keto-acids — can be altered quantitatively or qualitatively, reversibly or irreversibly (as by changes in the oxygen concentration of the cell milieu). On the basis of these experiments, the impairment of the renal *metabolic* function was emphasized as an important factor in conditions such as uremic azotemia and acidosis.

This view seems to be supported by clinical observation. Two case histories may serve as examples. A 21 year old girl with mercury bichloride poisoning, who subsequently made a very good recovery, was completely anuric for four days, and from the fifth to the seventh day passed an average of only 128 cc. of urine per day. In spite of the very limited excretion (a total of 385 cc. of urine in seven days), the nonprotein nitrogen, which was measured daily during these seven days, averaged only 87 mg. per 100 cc. of blood and was never higher than 120 mg. (on the seventh day). The second patient, who subsequently died, had chronic glomerulo-nephritis. He had a urine output of 1200-1500 cc. per day, but his nonprotein nitrogen was more than 200 mg. per 100 cc. of blood.

In the first patient, there was no impairment of the *metabolic* function of the kidney, though the *excretion* of urine was almost completely suppressed. There was no rise in blood pressure, no retinopathy. In the second patient, the *excretory* function of the kidney was relatively satisfactory; with a protein intake of about 20 Gm. in twenty-four hours, the urinary excretion in twenty-four hours was 3.7 Gm. of urea nitrogen, 5 Gm. of total nitrogen. The *metabolic* function of the kidney, however, was inadequate, and there resulted hypertension, retinopathy and a nonprotein nitrogen level considerably higher than that of the first patient, whose urinary nitrogen excretion was 0.

That renal excretory insufficiency does not play a decisive role in the production of renal hypertension was shown by the experimental work of Goldblatt[2]. Constriction of the main renal arteries may cause persistent hypertension without disturbance of renal

From the Department of Medicine, Duke University School of Medicine, Durham, N. C.

1. Kempner, W.: (a) Anoxemia of the Kidney as a Cause of Uremic Acidosis: Inhibitory Effect of Low Oxygen Tension on the Deamination of Amino Acids in Kidney Tissue, Am. J. Physiol. 123:117-118 (July) 1938; (b) Verminderter Sauerstoffdruck in der Niere als Ursache der "reversiblen" uraemischen Acidose, Klin. Wchnschr. 17:971-973 (July 9) 1938; (c) Inhibitory Effect of Low Oxygen Tension on the Deamination of Amino Acids in the Kidney, J. Biol. Chem. 124:229-235 (June) 1938; (d) The Role of Oxygen Tension in Biological Oxidations, Cold Spring Harbor Symposia on Quantitative Biology 7:269-283. New Bedford, Mass., The Darwin Press, 1939.

2. (a) Goldblatt, H., Lynch, J., Hanzal, R. F., and Summerville, W. W.: Studies on Experimental Hypertension I, J. Exper. Med. 59:347-379 (March) 1934; (b) Goldblatt, H.: Experimental Hypertension Induced by Renal Ischemia; Harvey Lecture, Bull. New York Acad. Med. 14:523-553 (Sept.) 1938.

excretory function. In some of the experimental hypertensive animals which had no apparent renal excretory insufficiency, degenerative disease of the retinal arterioles developed.

If, for the moment, we disregard the renal *excretory* function and consider the kidney only as an organ of *metabolism* we can assume, as a basis for experimental approach, that pathological conditions in the kidney *may* lead to the following changes:

(a) Substances which are normally removed by the kidney cell metabolism may increase in amount in the blood or tissue fluids.

(b) Substances which are normally produced by the kidney cell metabolism may decrease in amount.

(c) Some of the substances normally metabolized by the kidney cells may be metabolized vicariously by the liver cells, with a resulting increase in the metabolic products of the liver cells[1b,d;3].

(d) "Abnormal" substances may appear in blood or tissue fluids which under physiological conditions exist only in an intermediary, non-apparent phase of the kidney cell metabolism, since normally they are immediately further metabolized to harmless end products.

If we assume that some of these "abnormal" substances which appear when the metabolic function of the kidney cells is disturbed are "harmful" and play a role either directly or indirectly in the development of hypertension, vascular retinopathy, encephalopathy, heart lesions, and new kidney disease, the *working hypothesis* suggests itself: That the ordinary mixed diet may contain constituents which increase the production of these "abnormal," harmful substances by the diseased kidney cells.

Starting from this *working hypothesis*, we have tried to compensate renal metabolic dysfunction by replacing the ordinary mixed diet with a diet limited to rice, sugar, fruit and fruit juices, supplemented by vitamins and iron[4].* The purpose of this paper is to describe the effects obtained with this rice-fruit-sugar diet. The therapeutic possibilities and limitations of similar diets or diet combinations will not be discussed here.

It is not a new experience that special diets are burdensome, and require the faithful cooperation of physician and patient. The rice-fruit-sugar diet is certainly no exception, but it must be repeated that "if there is a choice between an unpleasant diet on the one side and cardiac failure, uremia, encephalopathy or blindness on the other side, the diet is the lesser evil."[4b]

The rice-fruit-sugar diet, which, for the sake of brevity, will be referred to as "the rice diet," contains in 2000 calories about 20 Gm. of protein, 5 Gm. of fat, 460 Gm. of carbohydrate, 0.2 Gm. of sodium and 0.15 Gm. of chloride. Patients with marked hypochloremia, or with symptoms of salt deprivation, are given extra sodium chloride in small amounts, or hydrochloric acid. The fluid intake is usually limited to 700-1000 cc. of fruit juices per day (no water).

Dry rice contains about 350 calories per 100 Gm. The average patient can eat 300 Gm., or 10 ounces daily, which will provide about 1050 calories; the remaining 900 or 1000 calories must be supplied by the liberal use of sugar and fresh or preserved fruits. All fruits are allowed, with the exception of nuts, dates, avocados, and any dried or canned fruit, or fruit derivatives, to which substances other than sugar have been added. *No salt is permitted.* All fruit juices are allowed, but tomato or vegetable juices are not. Brown or white sugar may be used *ad libitum.* Any kind of rice is used. The rice is boiled or steamed in plain water or fruit juices, without salt, milk or fat.

The palatability of rice depends to some extent upon the way in which it is cooked. Patients, of course, vary in their tastes; some prefer it dry, each grain standing apart, while others prefer it rather wet. If ordinary white rice is used, it may be added slowly to boiling water and boiled for about twenty minutes, then drained in a colander, washed with hot water, and either served at once or steamed for fifteen or twenty minutes. If wet rice is preferred, the washing with hot water is omitted. A little ingenuity in the use of sugar, sliced and preserved fruits, and so forth, will be rewarded. Some patients who object to the sweet taste find the use of lemon juice helpful. Most patients accustom themselves to the rice diet, and some even like it.

3. Kempner, W.: Discussion note, Clinico-Pathological Conference, North Carolina M. J. 4:227-228 (June) 1943.

4. Kempner, W.: (a) Treatment of Kidney Disease and Hypertensive Vascular Disease with Rice Diet, North Carolina M. J. 5:125-133 (April); (b) 273-274 (July) 1944.

*The patient should receive daily as minimal doses: Vitamin A, 5000 units; vitamin D, 1000 units; thiamine chloride, 5 mg.; riboflavin, 5 mg.; niacinamide, 25 mg.; calcium pantothenate, 2 mg.; ferrous sulfate, 0.6 Gm.

It is not unusual for the weight to decrease more or less markedly during the first twenty days. The reason for this weight loss may be that the amount of food given does not cover the caloric requirements; in such cases, the amount of food must be increased, unless reduction of weight is indicated. Another reason may be that the patient does not eat the full amount of his diet during the first period of adjustment. The most frequent cause is the loss of visible or invisible edema; one patient with marked edema, for example, lost 63 pounds within the first sixteen days on the diet.

During the first few weeks of the rice regime hospitalization greatly facilitates the study and treatment of the patient, but rest in bed, unless the severity of the disease demands it, is neither necessary nor desirable.

A great number of patients on the rice diet have experienced marked relief from giddiness, headache, mental sluggishness and depression, and easy fatigability. Such *subjective* improvement has not been accepted as evidence of successful therapy; only *objective* results, such as loss of edema and changes in urine and blood chemistry findings, in blood pressure, eyegrounds, heart size, and electrocardiograms, have been used to determine the effect of the treatment.

For some of the patients who had shown satisfactory improvement, the diet, after a time, was modified by the addition of nonleguminous vegetables or small amounts of potatoes, lean beef, chicken, fish, or eggs (everything prepared without salt or fat). This was usually done on the insistence of the patient. It must be borne in mind, however, that even these slight modifications change the character of the diet and may spoil the entire effect. Where a critical condition of kidney, heart or retina exists, any compromise may be too much, and the patient may have to pay for the few exceptions made with the reappearance of all the signs and symptoms of the disease. In such cases, the strict diet should be continued indefinitely, just as liver is continued in pernicious anemia and insulin in diabetes.

It must, however, be emphasized that even in the less serious cases the "modified" rice diet, though still preferable to other diets of low protein, fat and salt content, cannot replace in effectiveness the strict rice diet and should be used with caution. Each modified diet by being allowed only so much additional food as he can take without reacting unfavorably with changes in blood pressure, heart size, electrocardiogram, nonprotein nitrogen, and so forth. This will be further illustrated in the case histories and charts.

The diet was used in the treatment of 213 patients in whom *insufficiency of the metabolic function of the kidney* either was evident or could not be ruled out. Eighty-three patients had "primary" kidney disease (7 patients acute glomerulonephritis, 73 chronic glomerulonephritis, chronic pyelonephritis, or nephrolithiasis, 2 lupus erythematosus, and 1 polycystic kidney disease). One hundred and thirty patients were listed under the diagnosis of "hypertensive vascular disease"; 67 of them showed no conclusive evidence of renal *excretory* dysfunction, 63 had definite "secondary" kidney involvement—that is, one or several of the following findings: phenolsulfonphthalein excretion in two hours below 50 per cent, urea clearance below 50 per cent, nonprotein nitrogen above 40 mg. per 100 cc. of blood, more than 0.8 Gm. of albumin per 1000 cc. of urine, range in specific gravity (concentration-dilution test) of less than 0.012, 5 red blood cells or 3 granular casts per high power field. The diet was used for periods varying from four days to thirty-two months; after two to five months some of the modifications listed were permitted in most cases.

The diet has been ineffective in 75 of the 213 patients treated (35 per cent), if we judge according to rigid standards and include 27 patients who were in a critical condition when started on the diet and who died after an average period of twenty-five days. In 138 of the 213 patients (65 per cent) the diet has proved to be beneficial. In no instance has it been harmful; careful medical supervision, however, including control of blood and urine chemistry, is essential.

Protein Requirements of Patients on Rice Diet

We were afraid that the small amount of protein contained in the rice diet would lead to a depletion of the plasma proteins and to a decrease in hemoglobin; but we were willing to take these risks, since we thought that such deficiencies could be corrected at some later stage after the imminent danger

however, showed that the rice diet did not cause depletion of the plasma proteins or decrease in the hemoglobin.

Urinary nitrogen excretion

With the reduced protein and high carbohydrate intake of the rice diet, the total nitrogen excretion in the urine decreases to a level considerably below that found in complete fasting. Three hundred and three determinations of the total nitrogen excretion in the urine of 82 patients with kidney disease (whose nonprotein nitrogen was not above 50 mg. per 100 cc. of blood) or with "hypertensive vascular disease," before and after they had received the rice diet for varying periods of time, are summarized in table 1.

TABLE 1
Nitrogen Excretion in Urine

Period on rice diet	*Number of patients*	*Number of determinations*	*Gm. total nitrogen per 1000 cc. of urine (average)*	*Gm. total nitrogen excreted in 24 hours (average)*
0	55	64	7.09	7.60
1-14 days	52	90	5.10	4.83
15-30 days	46	55	3.59	3.60
1-2 months	26	33	3.12	2.93
Over 2 months	32	61	2.26	2.26

In many instances the protein intake before the beginning of the diet had been limited, either because the patients were too ill to eat the full amount of a mixed diet, or because they had received other low protein diets. (The regular hospital diet contains about 65 Gm. of protein.) Consequently, the nitrogen excretion in the urine before the beginning of the rice diet was relatively low, averaging 7.09 Gm. per 1000 cc., 7.6 Gm. in twenty-four hours.

After two months of rice diet, the nitrogen excretion in the urine averaged 2.26 Gm. per 1000 cc., 2.26 Gm. in twenty-four hours. If an allowance of 0.9 Gm. per twenty-four hours is made for the excretion of nitrogen other than that excreted in the urine, the total nitrogen loss in twenty-four hours is about 3.16 Gm. With a daily intake of $3.2 \times 6.25 = 20$ Gm. of protein, these patients are in protein equilibrium.

Plasma proteins

The rice diet does not cause depletion of the plasma proteins. The greatest decrease —from 7.7 to 5.9 Gm. of protein per 100 cc. of plasma—was found after twenty-four weeks of rice diet in a patient with chronic nephritis. This patient had had a number of gastro-intestinal upsets with diarrhea, during which he had been able to eat only part of the diet. (After three weeks of rice diet, the plasma proteins were 6.9 Gm. per 100 cc., after ten weeks 7.6 Gm., after eighteen weeks 6.35 Gm.) The greatest increase —from 5.4 to 7.2 Gm. of protein per 100 cc. of plasma—was found after twenty-two days of rice diet in a patient who was recovering from acute glomerulonephritis with marked edema. The average plasma protein concentration of 120 patients, many of whom were in a critical condition, was:

Before rice diet.....6.3 Gm. per 100 cc. of plasma
After 90 days (average) of rice diet .....6.3 Gm. per 100 cc. of plasma

Hemoglobin

The rice diet does not cause a decrease in the hemoglobin. The average hemoglobin value (per cent of 15.5 Gm.) in 165 patients, including 23 moribund patients with an average nonprotein nitrogen of 138 mg. per 100 cc. of blood, was:

Before rice diet .....79.9 per cent
After 75 days (average) of rice diet....80.1 per cent

The fact that the average values of the plasma proteins and hemoglobin do not decrease on the rice regime, but are maintained at a constant level, is in itself of positive significance when we consider how common progressive hypoproteinemia and progressive anemia are in kidney disease.

Urine Chlorides and Plasma Chlorides of Patients on Rice Diet

With the reduced chloride intake of the rice diet, the chloride excretion in the urine decreases. A typical example is given in table 2.

TABLE 2
Plasma and Urine Chlorides of a Patient on the Rice Diet

Period on rice diet (days)	*Plasma chlorides (milli-equivalents)*	*Urine chlorides (milli-equivalents)*
0 (regular hospital diet)	99	83
0 (regular hospital diet)		73
2		47
4		20.8
10		9
18	95	
21		2.7
26	95	3.2

The lowest urine chloride concentration found in this series (as compared to about 60 to 150 milli-equivalents in a person on a normal diet) was 1.35 milli-equivalents, with a total urinary excretion of 18 mg. of chloride per twenty-four hours, in a patient with "hypertensive vascular disease" without apparent renal excretory dysfunction

who had been on the rice diet for seventy days. The plasma chlorides were 93.1 milli-equivalents (as sodium chloride, 544 mg. per 100 cc. of plasma). The highest plasma chloride concentration found after more than two months of the rice regime was 102.3 milli-equivalents (as sodium chloride, 598 mg. per 100 cc. of plasma) in a patient with chronic nephritis in the nephrotic stage; the urine chloride concentration was about 5.2 milli-equivalents, the total urinary chloride excretion per twenty-four hours, 160 mg.

The average values of 381 determinations of the plasma chlorides in 91 non-uremic patients (nonprotein nitrogen below 75 mg. per 100 cc. of blood) were:

Before rice diet .....97.0 milli-equivalents (as sodium chloride, 567 mg. per 100 cc. of plasma)

After 44 days (average) of rice diet .....91.7 milli-equivalents (as sodium chloride, 536 mg. per 100 cc. of plasma)

The rice diet as such—within the periods studied—does not cause a reduction of the plasma chlorides below the critical level. Since critical hypochloremia, however, is frequent in patients with kidney disease, symptoms such as muscle cramps, increased nervousness, and anorexia must be watched for and the chloride concentration in the plasma must be checked frequently.

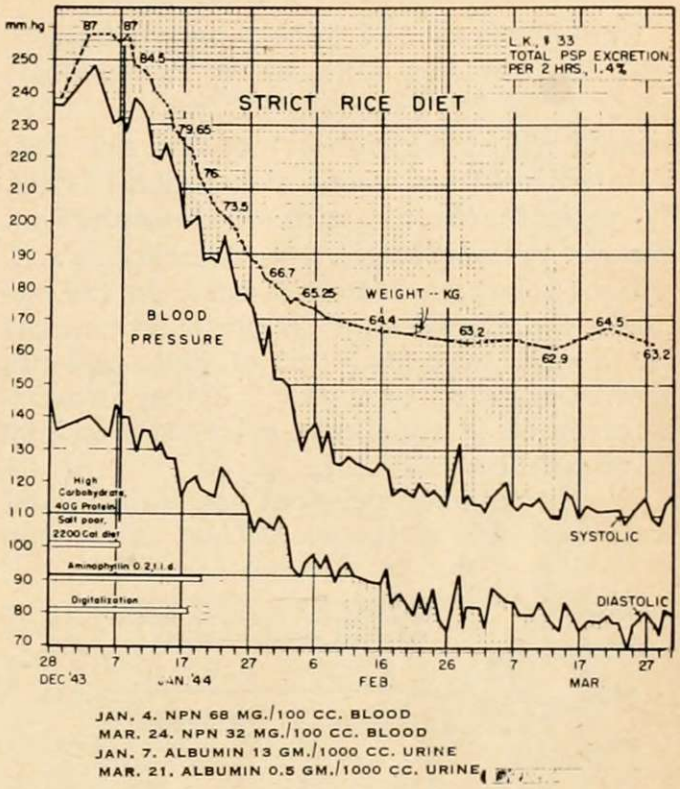


Fig. 1. L.K. (f., 33). Terminal stage of chronic nephritis with cardiorenal failure and uremic pericarditis. No decrease of hypertension and edema after ten days of high carbohydrate, 40 Gm. protein, salt-poor diet, with aminophylline and digitalis. Decrease of blood pressure to normal and loss of 50 pounds of edema on rice diet.

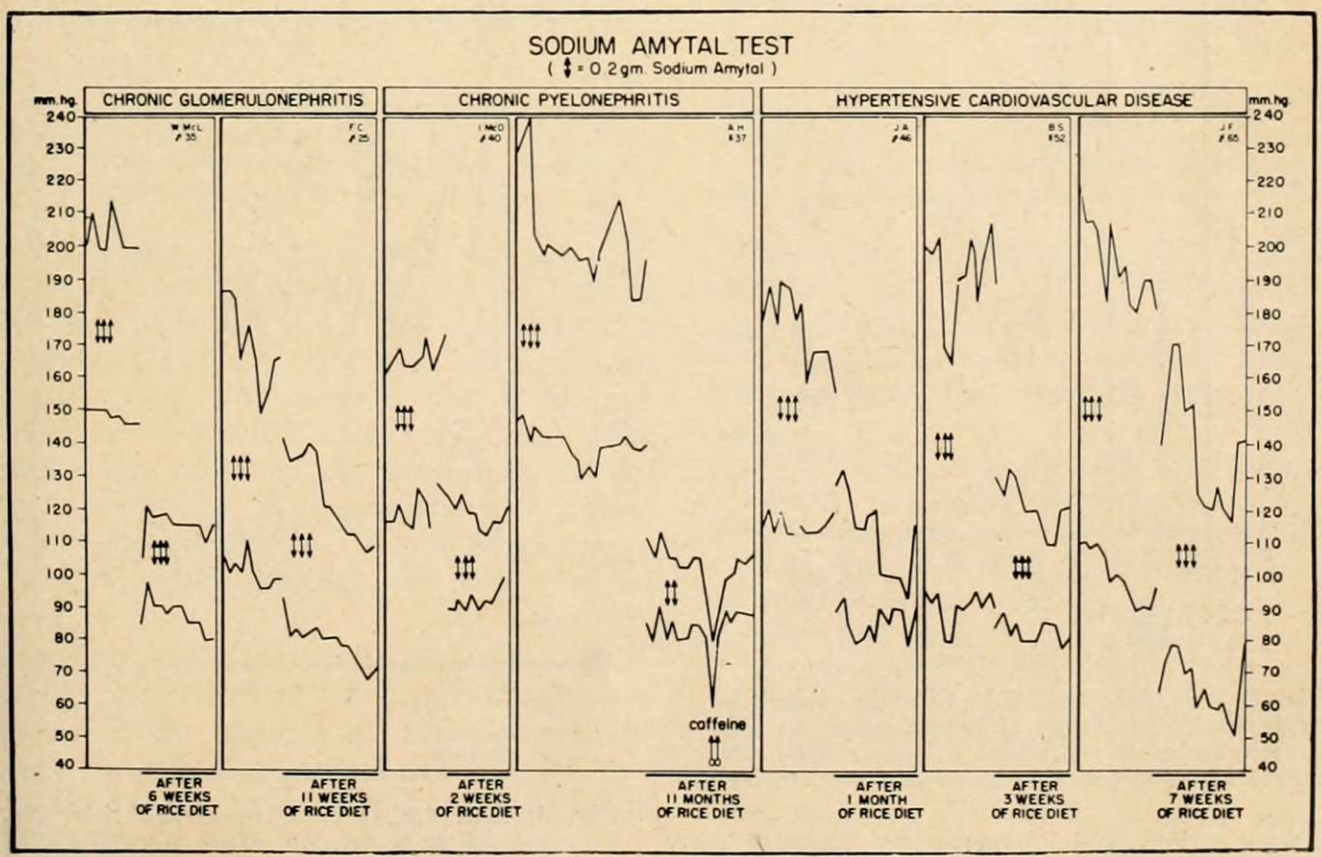


Fig. 2. Effect of 0.6 Gm. of sodium amytal on the blood pressure of patients with chronic nephritis and "hypertensive vascular disease" before and after rice diet.

Hypertension

One hundred and ninety-two patients[5] with hypertension (115 males, 77 females), aged 8 to 75 (average 41 years), were treated with the strict or modified rice diet. Five patients had acute glomerulonephritis, 57 patients chronic glomerulonephritis, chronic pyelonephritis, or nephrolithiasis, 1 patient polycystic kidney disease. In 129 patients, the diagnosis of "hypertensive vascular disease" was made; 63 of these patients showed signs of "secondary" kidney involvement; in 66, no conclusive evidence of kidney involvement was found.

Eleven patients were not hospitalized and were seen only in the out-patient clinic. One hundred and eighty-one patients received the rice diet in the hospital. A great number of patients were in a hopeless condition when they were started on the diet, and were given as much as they were able to take. Of these, 25 died after six to eighty-one days on the strict diet (average twenty-five days). Of the remaining 156 hospital patients, 42 were on the diet (first admission) for four to fourteen days (average ten days); 114 patients (first admission) for fifteen to eighty-four days (average thirty-one days). Sixty-three of the 156 patients were readmitted to the hospital for one to eight re-examinations and 13 patients were periodically re-examined in the clinic, after continuing the diet (more or less strictly) at home for periods varying from two weeks to five months.

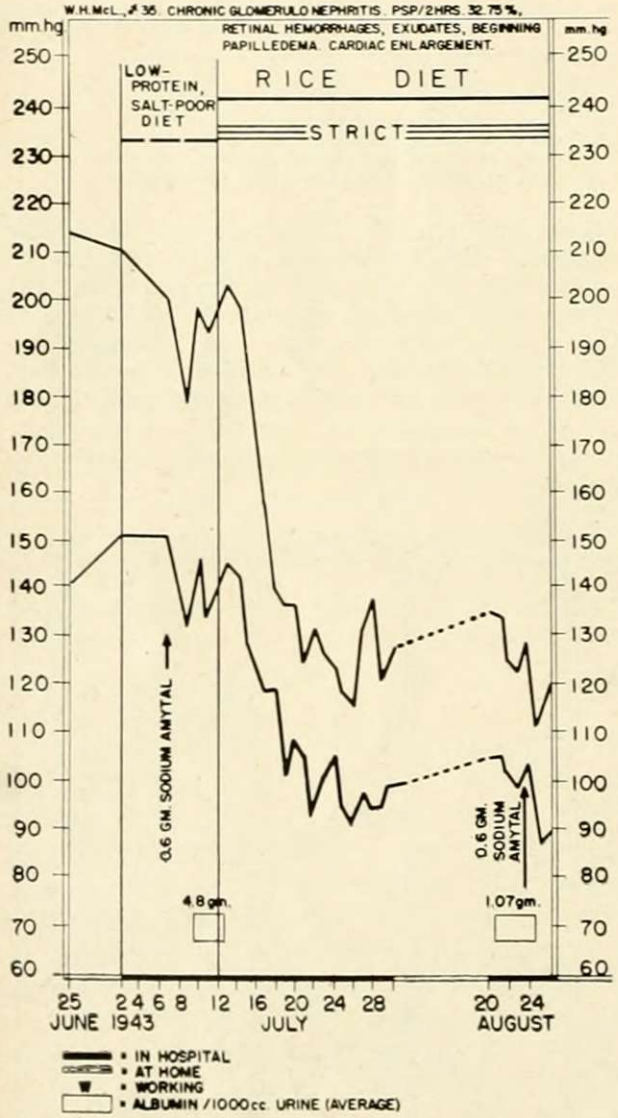


Fig. 3. W.H.McL. (m., 35). Chronic glomerulonephritis. No decrease of hypertension on high carbohydrate, low protein, salt-poor diet. Decrease of blood pressure to normal on rice diet.

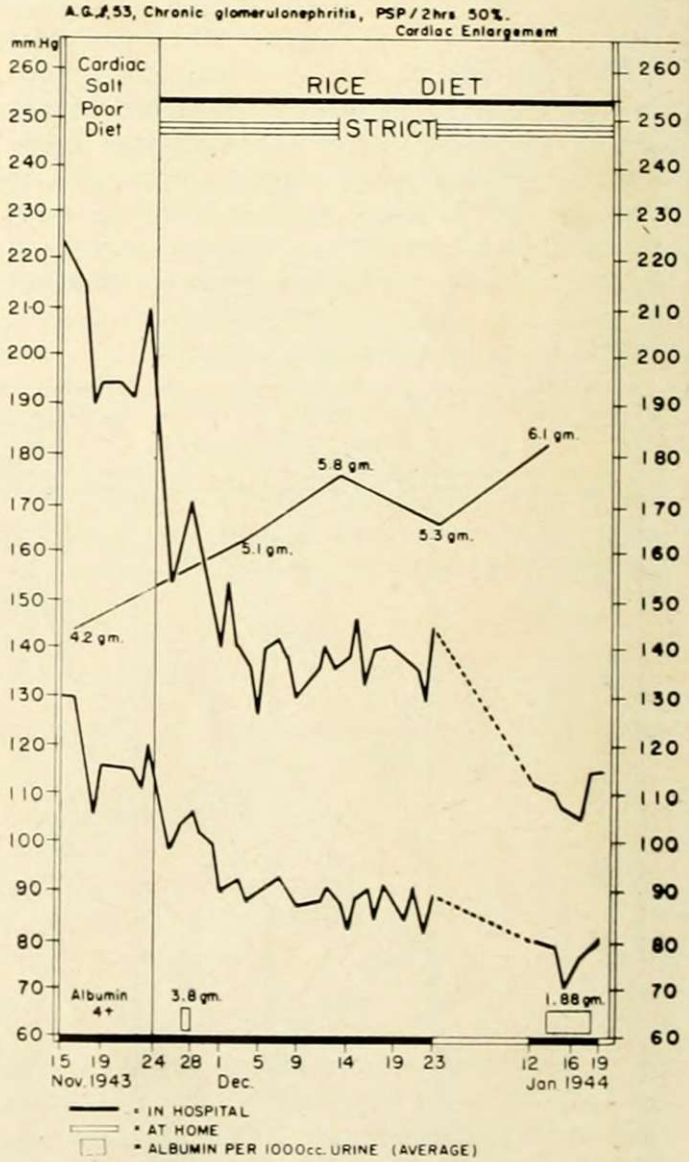


Fig. 4. A.G. (m., 53). Chronic nephritis. No decrease of hypertension after nine days of "cardiac salt-poor" diet. Decrease of blood pressure to normal on rice diet, with increase of plasma proteins.

5. One patient with "hypertensive vascular disease" is not included because the rice diet had been started at home several weeks before the first examination in this hospital.

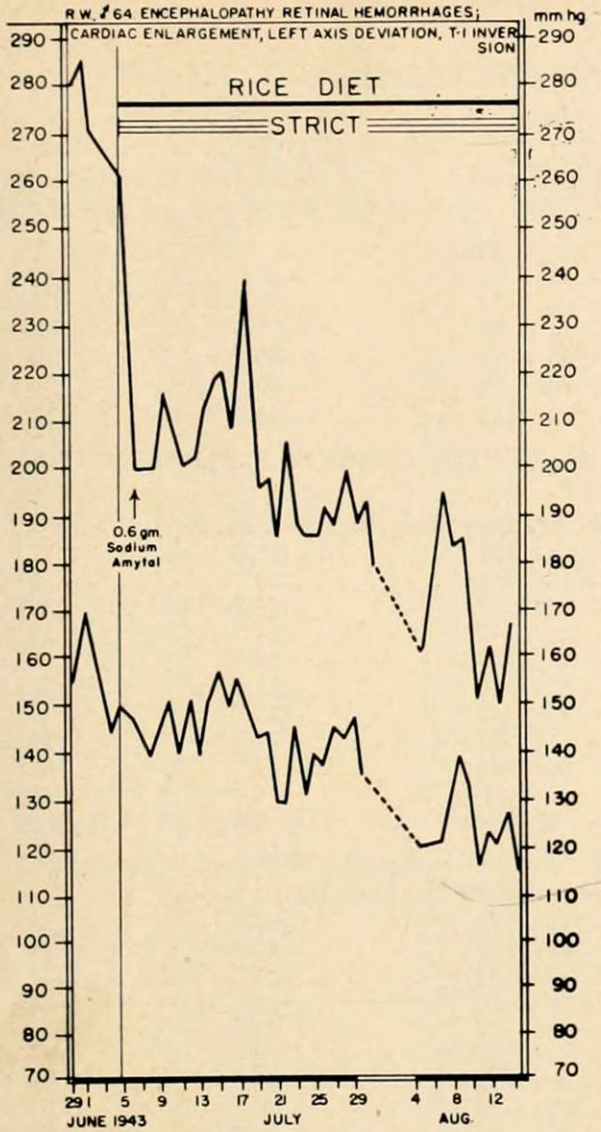


Fig. 5. R.W. (m., 64). "Hypertensive vascular disease." No decrease of hypertension after five days of 60 Gm. protein hospital diet. Decrease of blood pressure on rice diet.

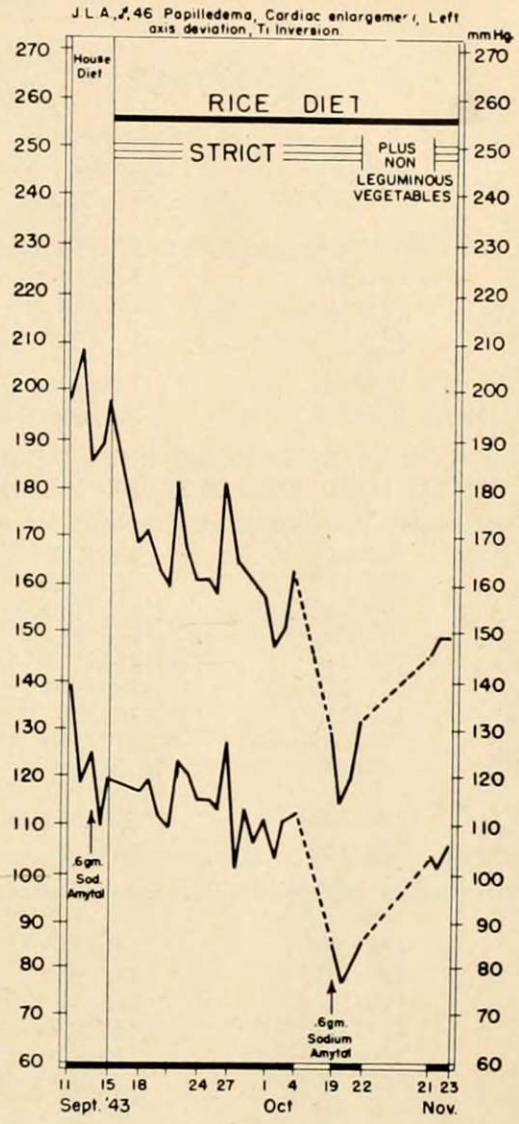


Fig. 6. J.L.A. (m., 46). "Hypertensive vascular disease." Decrease of blood pressure to normal on rice diet. Increase of blood pressure on addition of non-leguminous vegetables.

The routine blood pressure readings were taken at about the same time each day by the same examiner, with the patient in a recumbent position and after a period of about twenty minutes' rest. For the sodium amytal test, blood pressure readings were made every hour during the sodium amytal sleep, as well as during a six hour period both before and after it. Six-tenths of a gram of sodium amytal was used for the test.

In 5 patients with *acute glomerulonephritis* and hypertension, the blood pressure decreased from a level of 170 systolic, 109 diastolic (average) to 108 systolic, 66 diastolic (average), within an average period of fifteen days on the rice diet.

Of the 58 patients with hypertension and *chronic glomerulonephritis, chronic pyelonephritis, nephrolithiasis, or polycystic kidney disease,* 11 died after seven to fifty-one days (average thirty days) on the strict rice diet. The initial blood pressure readings in these patients averaged 208 systolic, 137 diastolic.

In 10 of the remaining 47 patients (21 per cent) the hypertension was not improved; the decrease in the mean arterial pressure was less than 20 mm. of mercury, the average blood pressure decreasing from a level of 208 systolic, 132 diastolic to a level of 192 systolic, 124 diastolic after sixty-seven days (average) on the rice diet.

In 37 of the 47 patients (79 per cent) the hypertension was improved, the average blood pressure decreasing from a level of 194 systolic, 124 diastolic to a level of 140 systolic, 96 diastolic after an average of seventy-seven days on the diet. (Table 3).

TABLE 3

EFFECT OF RICE DIET ON BLOOD PRESSURE

	Blood Pressure before Rice Diet (mm. Hg.)	*Blood Pressure after Rice Diet (mm. Hg.)*	*Change in Systolic and Diastolic Blood Pressure (mm. Hg.)*	*Change in Mean Arterial Pressure (mm. Hg.)*	*Days on Rice Diet*
HYPERTENSION ON BASIS OF ACUTE GLOMERULONEPHRITIS					
1.	165/97	103/70	— 62/—27	—44.5	13
2.	167/112	120/55	—47/—57	—52	22
3.	182/107	108/78	— 74/—29	—51.5	23
4.	150/125	95/50	— 55/—75	—65	10
5.	184/104	114/76	— 70/—28	—49	6
Average	**170/109**	**108/66**	**— 62/—43**	**—52.5**	**15**
HYPERTENSION ON BASIS OF CHRONIC GLOMERULONEPHRITIS, CHRONIC PYELONEPHRITIS, NEPHROLITHIASIS, OR POLYCYSTIC KIDNEY DISEASE					
Hypertension not improved (Decrease of mean arterial pressure less than 20 mm. Hg.)					
1.	168/117	152/106	— 16/—11	—13.5	7
2.	202/117	187/112	— 15/— 5	—10	8
3.	209/137	191/130	— 18/— 7	—12.5	12
4.	169/98	148/91	— 21/— 7	—14	19
5.	244/144	210/150	— 34/+ 6	—14	7
6.	211/169	189/156	— 22/—13	—17.5	10
7.	185/115	165/98	— 20/—17	—18.5	7
8.	225/129	210/115	— 15/—14	—14.5	16
9.	240/150	(154/108	— 86/—42	—64	166)
		240/142	0/— 8	— 4	548
10.	228/143	225/139	— 3/— 4	— 3.5	36
Average	**208/132**	**192/124**	**— 16/— 8**	**—12**	**67**
Hypertension improved (Decrease of mean arterial pressure 20-96.5 mm. Hg.)					
1.	250/174	131/100	—119/—74	—96.5	90
2.	189/125	139/100	— 50/—25	—37.5	313
3.	193/118	150/107	— 43/—11	—27	34
4.	169/93	121/77	— 48/—16	—32	20
5.	218/146	125/89	— 93/—57	—75	29
6.	200/140	115/85	— 85/—55	—70	24
7.	167/120	115/81	— 52/—39	—45.5	63
8.	157/111	122/88	— 35/—23	—29	34
9.	171/105	131/72	— 40/—33	—36.5	77
10.	201/130	163/125	— 38/— 5	—21.5	24
11.	277/157	213/121	— 64/—36	—50	25
12.	222/148	179/127	— 43/—21	—32	11
13.	227/135	165/114	— 62/—21	—41.5	20
14.	155/98	128/74	— 27/—24	—25.5	135
15.	202/116	111/78	— 91/—38	—64.5	53
16.	188/111	124/85	— 64/—26	—45	412
17.	172/99	120/86	— 52/—13	—32.5	19
18.	158/107	122/79	— 36/—28	—32	95
19.	228/145	113/79	—115/—66	—90.5	180
20.	166/109	134/88	— 32/—21	—26.5	35
21.	169/110	114/82	— 55/—28	—41.5	55
22.	237/139	117/81	—120/—58	—89	48
23.	222/136	198/120	— 24/—16	—20	23
24.	160/94	120/80	— 40/—14	—27	30
25.	154/111	123/92	— 31/—19	—25	14
26.	200/120	165/112	— 35/— 8	—21.5	12
27.	190/139	120/94	— 70/—45	—57.5	43
28.	180/121	127/83	— 53/—38	—45.5	65
29.	189/136	161/116	— 28/—20	—24	21
30.	257/153	230/130	— 27/—23	—25	240
31.	189/147	161/103	— 28/—44	—36	25
32.	230/160	191/131	— 39/—29	—34	356
33.	165/108	122/92	— 43/—16	—29.5	95
34.	164/89	127/86	— 37/— 3	—20	14
35.	172/103	121/88	— 51/—15	—33	24
36.	210/127	147/97	— 63/—30	—46.5	80
37.	166/115	129/99	— 37/—16	—26.5	9
Average	**194/124**	**140/96**	**— 54/—28**	**—41**	**77**

TABLE 3—Continued

	Blood Pressure before Rice Diet (mm. Hg.)	*Blood Pressure after Rice Diet (mm. Hg.)*	*Change in Systolic and Diastolic Blood Pressure (mm. Hg.)*	*Change in Mean Arterial Pressure (mm. Hg.)*	*Days on Rice Diet*
"HYPERTENSIVE VASCULAR DISEASE" WITH "SECONDARY" RENAL INVOLVEMENT					
Hypertension not improved (Decrease of mean arterial pressure less than 20 mm. Hg.)					
1.	227/155	215/135	— 12/—20	— 16	64
2.	242/151	210/152	— 32/+ 1	—15.5	13
3.	223/130	222/118	— 1/—12	— 6.5	13
4.	229/113	207/102	— 22/—11	—16.5	216
5.	176/103	151/92	— 25/—11	—18	35
6.	240/159	230/159	— 10/ 0	— 5	12
7.	244/147	231/152	— 13/+ 5	— 4	28
8.	186/114	170/110	— 16/— 4	—10	25
9.	196/98	181/95	— 15/— 3	— 9	5
10.	194/133	175/117	— 19/—16	—17.5	32
11.	225/124	216/121	— 9/— 3	— 6	7
12.	211/126	222/134	+ 11/+ 8	+ 9.5	10
13.	233/140	216/144	— 17/+ 4	— 6.5	25
14.	170/110	167/112	— 3/+ 2	— 0.5	4
15.	240/150	225/145	— 15/— 5	—10	19
16.	236/134	206/128	— 30/— 6	—18	19
17.	200/126	194/130	— 6/+ 4	— 1	88
18.	199/148	206/154	+ 7/+ 6	+ 6.5	30
19.	183/94	161/93	— 22/— 1	—11.5	5
20.	222/134	229/145	+ 7/+11	+ 9	18
21.	226/156	209/141	— 17/—15	—16	126
22.	171/96	148/92	— 23/— 4	—13.5	68
Average	**212/129**	**200/126**	**— 12/— 3**	**— 7.5**	**39**
Hypertension improved (Decrease of mean arterial pressure 20-77 mm. Hg.)					
1.	195/121	147/102	— 48/—19	—33.5	67
2.	242/144	176/119	— 66/—25	—45.5	58
3.	179/136	148/114	— 31/—22	—26.5	9
4.	164/100	112/76	— 52/—24	—38	82
5.	240/128	168/91	— 72/—37	—54.5	82
6.	195/120	144/89	— 51/—31	—41	585
7.	210/120	186/101	— 24/—19	—21.5	8
8.	240/140	197/124	— 43/—16	—29.5	57
9.	225/130	153/93	— 72/—37	—54.5	38
10.	200/108	142/69	— 58/—39	—48.5	228
11.	236/156	203/141	— 33/—15	—24	19
12.	188/122	157/106	— 31/—16	—23.5	84
13.	236/120	190/85	— 46/—35	—40.5	59
14.	227/120	189/110	— 38/—10	—24	29
15.	214/138	151/109	— 63/—29	—46	53
16.	204/150	172/108	— 32/—42	—37	34
17.	184/102	136/87	— 48/—15	—31.5	60
18.	211/134	149/111	— 62/—23	—42.5	14
19.	233/138	190/106	— 43/—32	—37.5	79
20.	225/124	159/94	— 66/—30	—48	21
21.	245/139	171/107	— 74/—32	—53	30
22.	235/135	200/110	— 35/—25	—30	17
23.	211/94	128/76	— 83/—18	—50.5	80
24.	251/128	203/121	— 48/— 7	—27.5	81
25.	244/119	193/86	— 51/—33	—42	38
26.	200/129	125/88	— 75/—41	—58	60
27.	220/150	168/118	— 52/—32	—42	31
28.	275/156	155/122	—120/—34	—77	40
Average	**219/128**	**165/102**	**— 54/—26**	**—40**	**73**
"HYPERTENSIVE VASCULAR DISEASE" WITHOUT CONCLUSIVE EVIDENCE OF "SECONDARY" RENAL INVOLVEMENT					
Hypertension not improved (Decrease of mean arterial pressure less than 20 mm. Hg.)					
1.	183/122	171/120	— 12/— 2	— 7	25
2.	200/104	172/101	— 28/— 3	—15.5	21
3.	177/115	166/109	— 11/— 6	— 8.5	12
4.	165/108	148/92	— 17/—16	—16.5	38
5.	203/127	188/115	— 15/—12	—13.5	72
6.	165/107	146/107	— 19/ 0	— 9.5	60
7.	215/124	192/115	— 23/— 9	—16	34

TABLE 3—Continued

	Blood Pressure before Rice Diet (mm. Hg.)	*Blood Pressure after Rice Diet (mm. Hg.)*	*Change in Systolic and Diastolic Blood Pressure (mm. Hg.)*	*Change in Mean Arterial Pressure (mm. Hg.)*	*Days on Rice Diet*
8.	163/106	149/99	— 14/— 7	—10.5	65
9.	225/93	194/86	— 31/— 7	—19	70
10.	190/115	166/104	— 24/—11	—17.5	16
11.	171/107	153/96	— 18/—11	—14.5	134
12.	182/121	154/113	— 28/— 8	—18	10
13.	170/96	158/96	— 12/— 0	— 6	17
14.	163/95	154/92	— 9/— 3	— 6	17
15.	177/96	154/80	— 23/—16	—19.5	18
16.	179/114	158/106	— 21/— 8	—14.5	41
17.	178/104	189/115	+ 11/+11	+11	24
18.	156/103	132/92	— 24/—11	—17.5	8
19.	172/100	146/93	— 26/— 7	—16.5	16
20.	190/107	157/103	— 33/— 4	—18.5	20
21.	185/109	155/100	— 30/— 9	—19.5	4
22.	188/110	168/99	— 20/—11	—15.5	16
23.	163/110	141/100	— 22/—10	—16	24
24.	170/93	150/87	— 20/— 6	—13	4
25.	160/90	138/89	— 22/— 1	—11.5	5
26.	164/118	176/140	+ 12/+22	+17	22
27.	168/92	149/85	— 19/— 7	—13	24
28.	187/128	159/118	— 28/—10	—19	20
Average	**179/108**	**160/102**	**— 19/— 6**	**—12.5**	**30**
Hypertension improved (Decrease of mean arterial pressure 20-66 mm. Hg.)					
1.	171/116	130/84	— 41/—32	—36.5	240
2.	200/155	170/128	— 30/—27	—28.5	26
3.	200/92	148/76	— 52/—16	—34	61
4.	214/118	174/96	— 40/—22	—31	27
5.	235/148	168/118	— 67/—30	—48.5	19
6.	188/114	142/93	— 46/—21	—33.5	56
7.	188/112	158/95	— 30/—17	—23.5	38
8.	207/123	162/96	— 45/—27	—36	19
9.	260/138	204/140	— 56/+ 2	—27	69
10.	214/110	162/96	— 52/—14	—33	20
11.	225/124	162/96	— 63/—28	—45.5	33
12.	158/98	125/82	— 33/—16	—24.5	9
13.	201/129	168/112	— 33/—17	—25	50
14.	215/134	175/134	— 40/— 0	—20	15
15.	246/136	165/97	— 81/—39	—60	38
16.	201/110	145/99	— 56/—11	—33.5	43
17.	165/89	129/79	— 36/—10	—23	256
18.	169/110	132/95	— 37/—15	—26	21
19.	171/95	131/85	— 40/—10	—25	118
20.	154/102	121/83	— 33/—19	—26	14
21.	233/123	177/110	— 56/—13	—34.5	4
22.	165/101	130/84	— 35/—17	—26	51
23.	190/88	145/74	— 45/—14	—29.5	48
24.	215/130	183/114	— 32/—16	—24	32
25.	196/127	164/115	— 32/—12	—22	28
26.	194/112	155/89	— 39/—23	—31	79
27.	194/144	124/82	— 70/—62	—66	21
28.	180/100	126/83	— 54/—17	—35.5	26
29.	200/100	120/84	— 80/—16	—48	4
30.	240/120	200/110	— 40/—10	—25	105
31.	173/103	140/94	— 33/— 9	—21	16
32.	176/112	155/92	— 21/—20	—20.5	29
33.	212/110	142/93	— 70/—17	—43.5	84
34.	162/98	126/81	— 36/—17	—26.5	10
35.	198/122	153/108	— 45/—14	—29.5	22
36.	193/125	139/95	— 54/—30	—42	33
37.	180/99	143/94	— 37/— 5	—21	14
Average	**197/115**	**151/97**	**— 46/—18**	**—32**	**48**

Some results that were important to the individual patient necessarily fail to appear in such a summary. In one patient with chronic nephritis and almost complete blindness, who was moribund when he was started on the diet, the blood pressure decreased from 240 systolic, 150 diastolic to 160 systolic, 110 diastolic within forty days. After five and one half months of diet, the blood pressure was 154 systolic, 108 diastolic, and after fourteen months 155 systolic, 110 diastolic. The eyesight improved so much that the patient could read fine print and was able to resume his work. One would be justified in the conclusion that the diet had a beneficial effect on the course of this patient's nephritis. In the blood pressure and nonprotein nitrogen tables, however, this case had to be listed as a negative result, because at the time of the last examinations (after fifteen to eighteen months of rice diet), following a number of intercurrent infections and an automobile accident which resulted in a fractured pelvis, the blood pressure had again risen to the initial level.

Of the 63 patients on whom the diagnosis of *"hypertensive vascular disease" with "secondary" kidney involvement* was made, 13 died after six to eighty-one days (average twenty days) on the strict rice diet. The initial blood pressure readings in these patients averaged 226 systolic, 150 diastolic.

In 22 of the remaining 50 patients (44 per cent), the hypertension was not improved; the decrease in the mean arterial pressure was less than 20 mm. of mercury, the average blood pressure decreasing from a level of 212 systolic, 129 diastolic to a level of 200 systolic, 126 diastolic in an average time of thirty-nine days.

In 28 of the 50 patients (56 per cent) the hypertension was improved, the average blood pressure decreasing from a level of 219 systolic, 128 diastolic to a level of 165 systolic, 102 diastolic after seventy-three days (average) on the rice diet.

Of 66 patients whose condition was diagnosed as *"hypertensive vascular disease," without conclusive evidence of renal excretory dysfunction,* 1 patient died after thirty-six days on the strict diet. His initial blood pressure average was 248 systolic, 138 diastolic.

In 28 of the remaining 65 patients (43 pressure was less than 20 mm. of mercury, the average blood pressure decreasing from a level of 179 systolic, 108 diastolic to a level of 160 systolic, 102 diastolic after an average of thirty days on the rice diet.

In 37 of the 65 patients (57 per cent) the hypertension was improved, the average blood pressure decreasing from a level of 197 systolic, 115 diastolic to a level of 151 systolic, 97 diastolic in an average time of forty-eight days.

Since, according to our hypothesis, the rice diet acts by compensating renal metabolic dysfunction, one may assume that in those cases in which the blood pressure decreased under treatment the hypertension was not "essential," but was due to some impairment of the metabolic function of the kidney, even though no conclusive sign of kidney disease could be demonstrated. On the other hand, in the patients who did not respond to the diet (exclusive of those with a too rapid down-hill course and those in whom irreversible anatomical lesions had already taken place), one may assume that the hypertension must have originated not from any renal dysfunction, but from some extra-renal condition. On this premise, it would be advisable (for instance, if sympathectomy is being considered) to use the rice diet as a therapeutic test which, if negative, may help to confirm the diagnosis of "neurogenic" or "essential" hypertension.

Histories 1-10 and figures 1-6, 14, 15, 19-23, 25-30, 33-35, 37-40, 42-44, 46-49, 51-58 illustrate the response of patients with various types of hypertension to the diet.

Electrocardiogram and Heart Size

Cardiac enlargement, inversion of T_1, and left axis deviation are reversible in patients with *acute* nephritis. In patients with *chronic* nephritis and hypertensive vascular disease we expected that the rice regime, at best, might prevent the usual progressive course of the disease, the further increase in heart size, the deeper inversion of T_1, and the greater deviation of the electrical axis.

However, the chest films and electrocardiograms show that, even in chronic nephritis and hypertensive vascular disease, the rice diet may lead to such an improvement of the heart that it may become normal in size and that the inverted T_1 may become upright, and the left axis deviation may dis-

and electrocardiograms of every patient have been repeated after treatment, but electrocardiograms of 82 patients and chest films of 72 patients are available for study. None of these patients whose electrocardiograms and chest films are under consideration received digitalis or any other medication.

The 82 patients on whom the electrocardiograms were made received the strict or modified rice diet for one to thirty-two months. All electrocardiograms were made with the patient in a recumbent position.

Electrical axis

In 76 patients, the electrical axis could be evaluated. In the remaining 6 patients $R_1 + S_1$, plus the absolute value of $R_3 + S_3$, was less than 10 mm. An angle of the electrical axis of more than +30 degrees was found:

Before the diet .....in 19 patients
After the diet .....in 31 patients

An angle of the electrical axis of 0 to +30 degrees was found:

Before the diet .....in 29 patients
After the diet .....in 27 patients

An angle of the electrical axis of less than 0 degrees was found:

Before the diet .....in 28 patients
After the diet .....in 18 patients

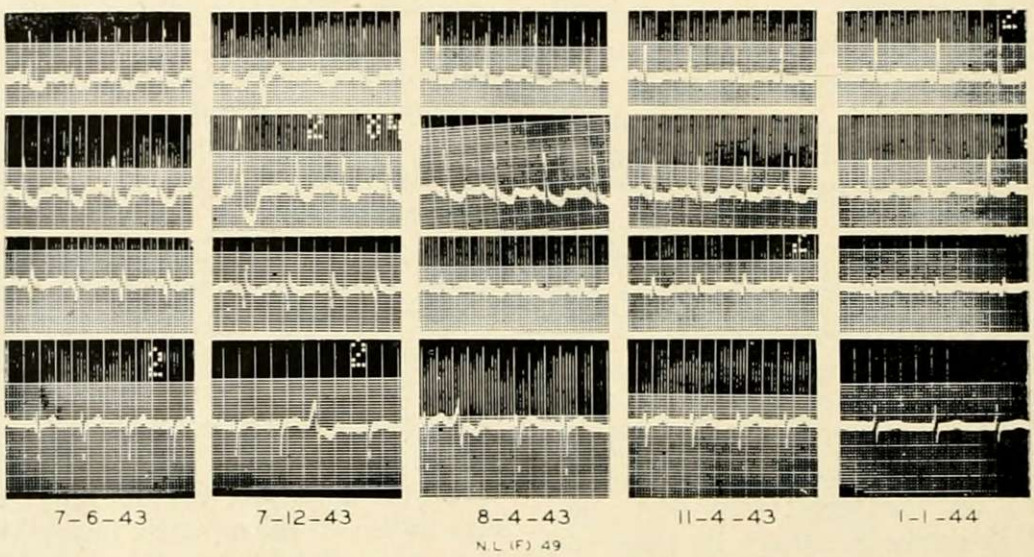
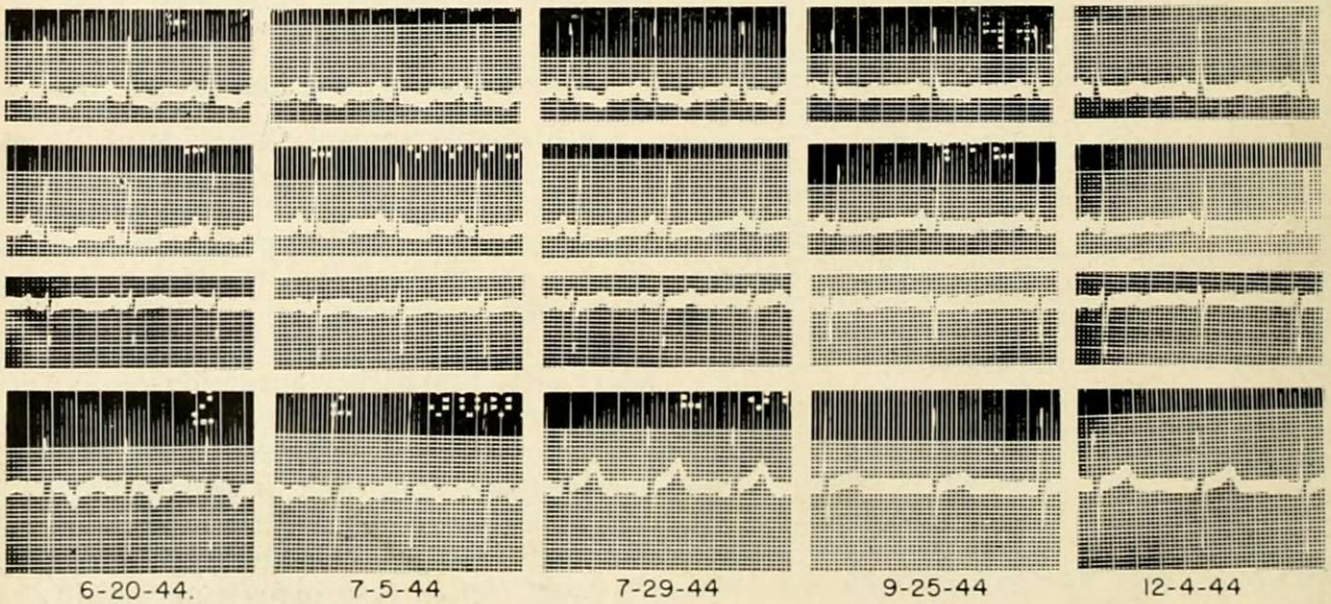


Fig. 7. N.L. (f., 49). "Hypertensive vascular disease." Rice diet since June 29, 1943. No bedrest after September, 1943. No digitalis. Depressed S-T segments have become normal; inverted T_1 has become upright.



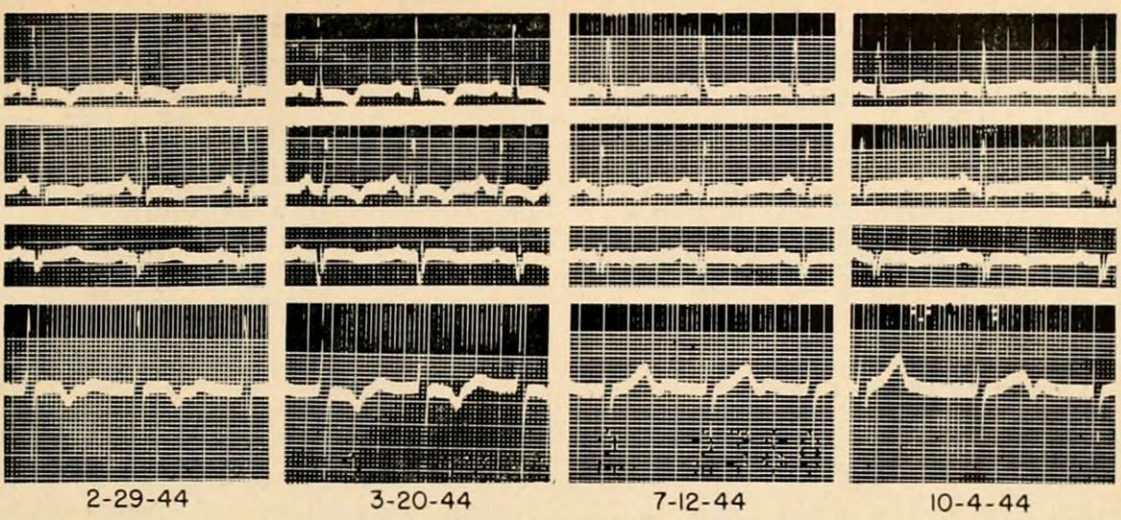


Fig. 9. J.M. (m., 49). "Hypertensive vascular disease." Rice diet since March 10, 1944. No bedrest. No digitalis. Inverted T_1 has become upright.

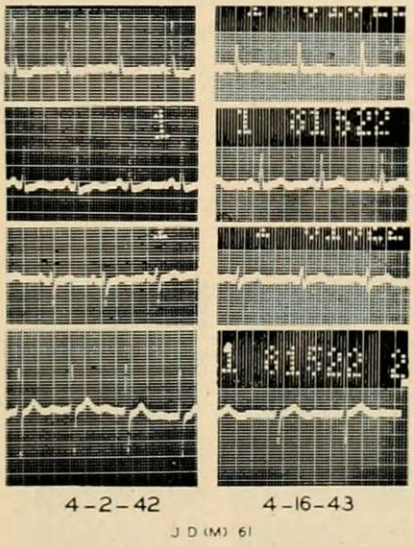


Fig. 10. J.D. (m., 61). "Hypertensive vascular disease." Rice diet since April 13, 1942. No digitalis. No bedrest. Angle of electrical axis has increased from +12° to +40°. Diphasic T_1 has become upright.

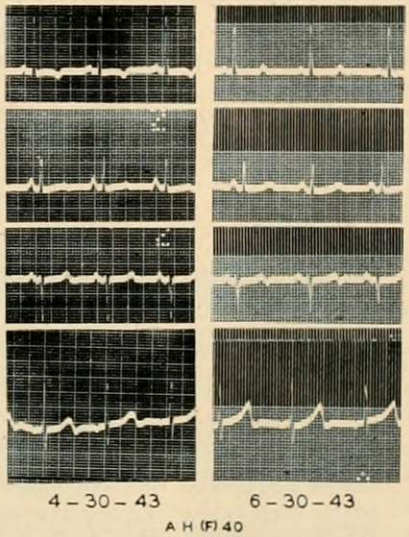
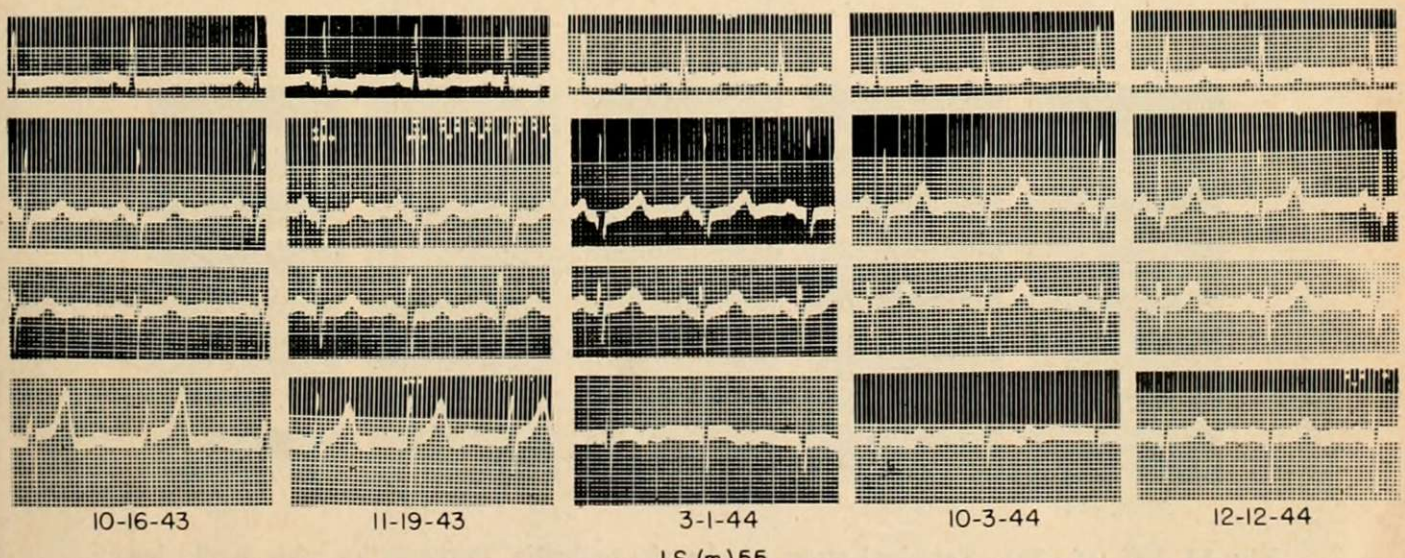


Fig. 11. A.H. (f., 40). "Hypertensive vascular disease." Rice diet since April 28, 1943. No digitalis. Bedrest part of the time. Inverted T_1 has become upright.



In 43 of the 76 patients there were no changes, or only minor changes (less than ±15 degrees) in the electrical axis. In 20 of the 76 patients there was a change in the angle of the electrical axis in the range of +15 to +25 degrees or −15 to −25 degrees. In 13 of the 76 patients there was a change in the angle of the electrical axis of ±26 or more degrees.

TABLE 4

Change in Electrical Axis

Number of patients	*Angle of electrical axis (degrees)* — *Range of change*	*Before Diet*	*After Diet*	*Change*	*Period on rice diet (months)*
1	more than −25	+37.0	+ 2.0	−35.0	4
5	−15 to −25	+14.8	− 2.4	−17.2	5
18	− 1 to −14	+19.4	+12.8	− 6.6	5
3	± 0	−25.3	−25.3	± 0	2
22	+ 1 to +14	+19.9	+27.8	+ 7.9	6
15	+15 to +25	+ 7.4	+26.1	+18.7	5
12	more than +25	− 6.1	+30.0	+36.1	7

Of the 33 patients with definite changes in the electrical axis during the rice diet, 6 showed a decrease, 27 an increase in the angle of the electrical axis.

The T wave in lead I

In 82 patients the T_1 waves could be evaluated.

In 59 patients, there was no change in T_1 during the period of treatment with the rice diet (average four months).

In 28 of the 59 patients, T_1 was normally upright.

In 31 of them, T_1 or ST_1 was abnormal.

In 8 of the 31 patients T_1 was low upright.
In 1 diphasic.
In 20 inverted.
In 2 ST_1 was depressed, with upright T_1.

In 23 patients there was a change in T_1 during the period of treatment (average four months); in 3 the change was in the direction from upright to inverted, in 20 in the direction from inverted to upright.

In 2 patients, the upright T_1 became flat.
In 1 patient, the upright T_1 became diphasic.

In 8 patients, the flat T_1 became upright.
In 4 patients, the diphasic T_1 became upright.
In 2 patients, the inverted T_1 became diphasic.
In 6 patients, the inverted T_1 became upright.

(Fig. 7-13, 36, 41, 50)

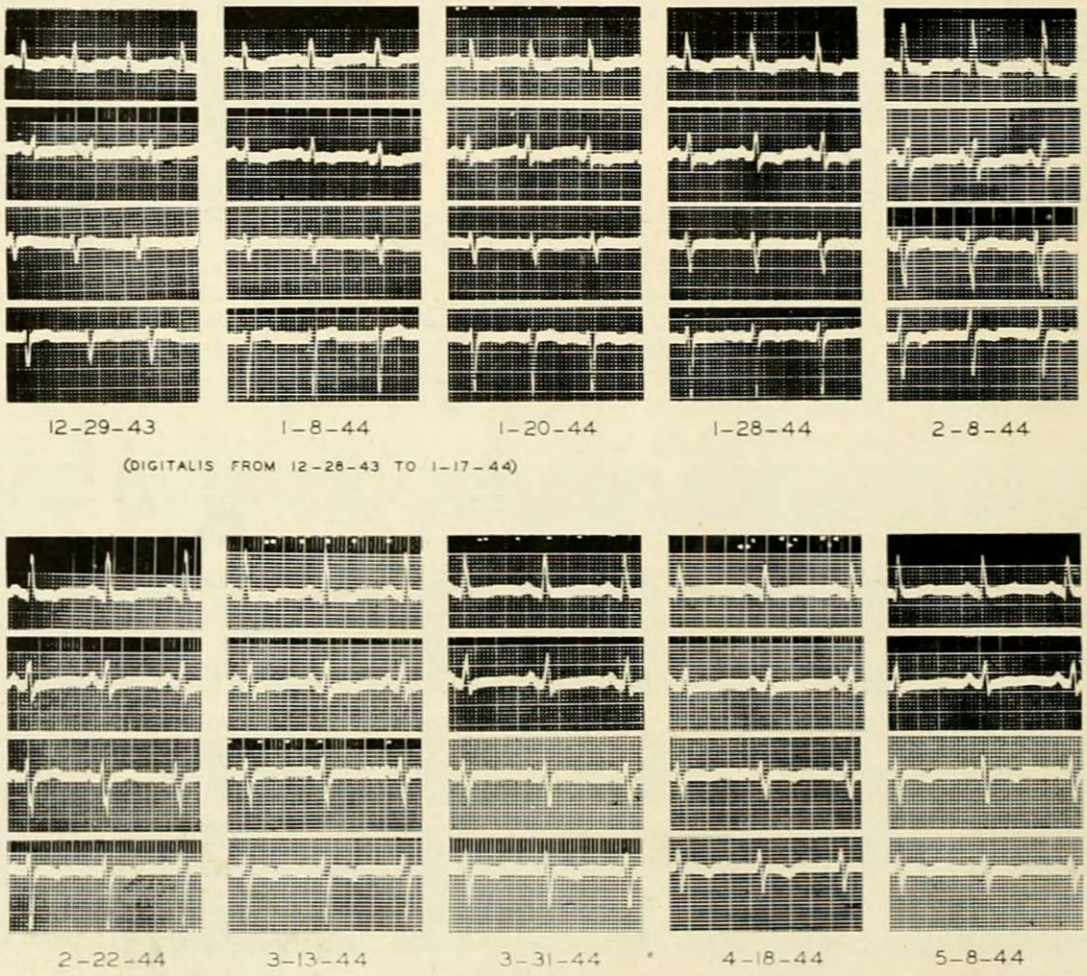


Fig. 13. L.K. (f., 33). Terminal stage of chronic nephritis. Retinopathy with papilledema, hemorrhages, exudates. Rice diet since January 7, 1944. Bedrest until March 1, 1944. No digitalis after January 17, 1944. Inverted T_1 has become upright.

Heart size

Table 5 lists the measurements of the transverse diameter of the heart in 25 patients with chronic glomerulonephritis, chronic pyelonephritis, or nephrolithiasis, 1 patient with lupus erythematosus disseminatus, and 46 patients with "hypertensive vascular disease," who received the strict or modified rice diet for periods varying from eleven days to twenty-two months.

In 6 of the 72 patients the heart became larger. In these the transverse diameter of the heart increased by 0.9 to 4.9 per cent, the average increase being 3.2 per cent. The average chest diameter increased by 1.5 per cent.

In 66 of the 72 patients the heart became smaller. In these the transverse diameter of the heart decreased by 1.8 per cent to 51.8 per cent, the average decrease being 13.3 per cent. The average chest diameter decreased by less than 0.4 per cent.

(Fig. 14-23, 33, 35, 40, 46, 49, 53, 57)

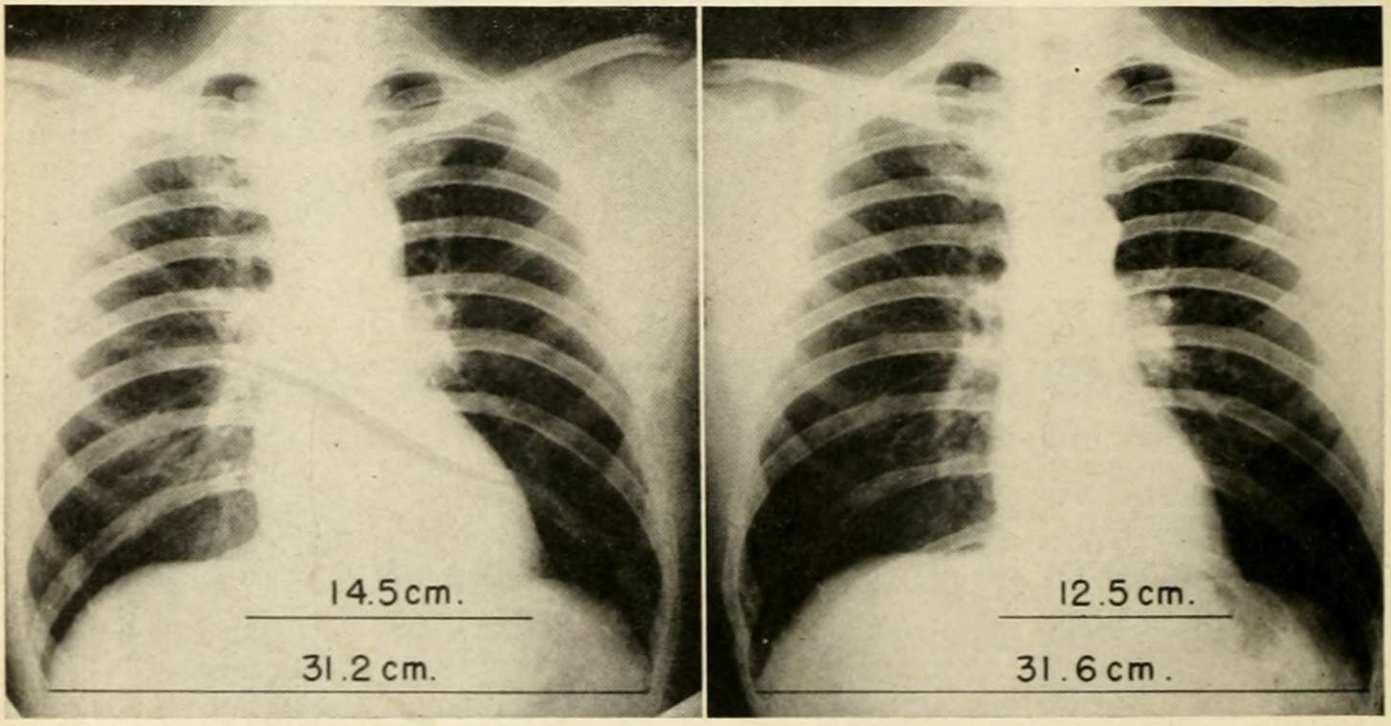
TABLE 5

EFFECT OF RICE DIET ON HEART SIZE

	Period of Rice Diet (Days)	Diameter of Chest Before Diet (Cm.)	Diameter of Chest After Diet (Cm.)	Tranverse Diameter of Heart Before Diet (Cm.)	Tranverse Diameter of Heart After Diet (Cm.)	Change in Transverse Diameter of Heart Cm.	Change in Transverse Diameter of Heart Per Cent (Transverse diameter of smaller heart = 100%)
CHRONIC GLOMERULONEPHRITIS, CHRONIC PYELONEPHRITIS, OR NEPHROLITHIASIS							
1.	312	30.1	29.8	15.9	12.35	−3.55	−28.8
2.	22	31.25	31.75	14.0	13.75	−0.25	− 1.8
3.	48	32.0	32.0	16.5	14.2	−2.3	−16.2
4.	65	25.35	25.75	10.8	9.8	−1.0	−10.2
5.	234	30.0	29.9	14.4	12.6	−1.8	−14.3
6.	19	32.4	32.7	14.2	13.8	−0.4	− 2.9
7.	28	23.2	25.4	10.6	10.9	+0.3	+ 2.8
8.	99	30.2	31.1	13.6	12.3	−1.3	−10.6
9.	50	29.3	29.3	10.35	7.9	−2.45	−31.0
10.	677	28.5	28.5	16.7	12.6	−4.1	−32.5
11.	336	27.4	28.3	11.95	10.15	−1.8	−17.7
12.	24	29.95	29.45	17.45	16.0	−1.45	− 9.1
13.	483	27.1	26.25	9.4	9.15	−0.25	− 2.7
14.	122	28.7	28.3	15.8	13.9	−1.9	−14.3
15.	119	30.8	29.9	15.8	11.8	−4.0	−33.9
16.	40	31.2	31.6	14.5	12.5	−2.0	−16.0
17.	534	30.0	27.9	16.7	11.0	−5.7	−51.8
18.	61	32.2	32.0	14.0	11.5	−2.5	−21.7
19.	58	27.65	26.9	11.4	10.85	−0.55	− 5.1
20.	67	28.6	28.0	13.05	12.0	−1.05	− 8.7
21.	95	31.2	31.2	12.9	10.3	−2.6	−25.2
22.	27	29.9	29.0	17.7	14.1	−3.6	−25.5
23.	94	28.9	28.6	12.4	11.9	−0.5	− 4.2
24.	68	28.0	28.45	11.95	11.6	−0.35	− 3.0
25.	155	31.4	31.3	12.3	12.75	+0.45	+ 3.7
Average	**153**	**29.41**	**29.33**	**13.77**	**11.99**	**−1.78**	**−15.23**
LUPUS ERYTHEMATOSUS DISSEMINATUS							
1.	165	26.8	25.5	12.8	9.9	−2.9	−29.3
"HYPERTENSIVE VASCULAR DISEASE"							
1.	67	33.8	33.8	15.0	12.8	−2.2	−17.2
2.	100	31.2	30.6	13.4	12.2	−1.2	− 9.8
3.	20	31.3	29.8	13.5	11.75	−1.75	−14.9
4.	66	28.2	27.55	15.9	14.4	−1.5	−10.4
5.	43	30.9	29.95	16.2	14.6	−1.6	−10.9
6.	71	31.9	31.9	16.4	14.0	−2.4	−17.1
7.	64	28.6	28.4	14.3	15.0	+0.7	+ 4.9
8.	215	24.7	24.45	12.25	11.15	−1.1	− 9.9
9.	174	31.8	31.4	16.7	15.5	−1.2	− 7.7
10.	32	29.1	29.3	19.1	17.8	−1.3	− 7.3
11.	588	30.0	29.2	11.9	10.9	−1.0	− 9.2
12.	50	28.4	29.9	16.3	15.3	−1.0	− 6.5
13.	32	29.8	29.3	15.4	14.2	−1.2	− 8.0
14.	62	28.3	30.3	18.0	13.4	−4.6	−34.3

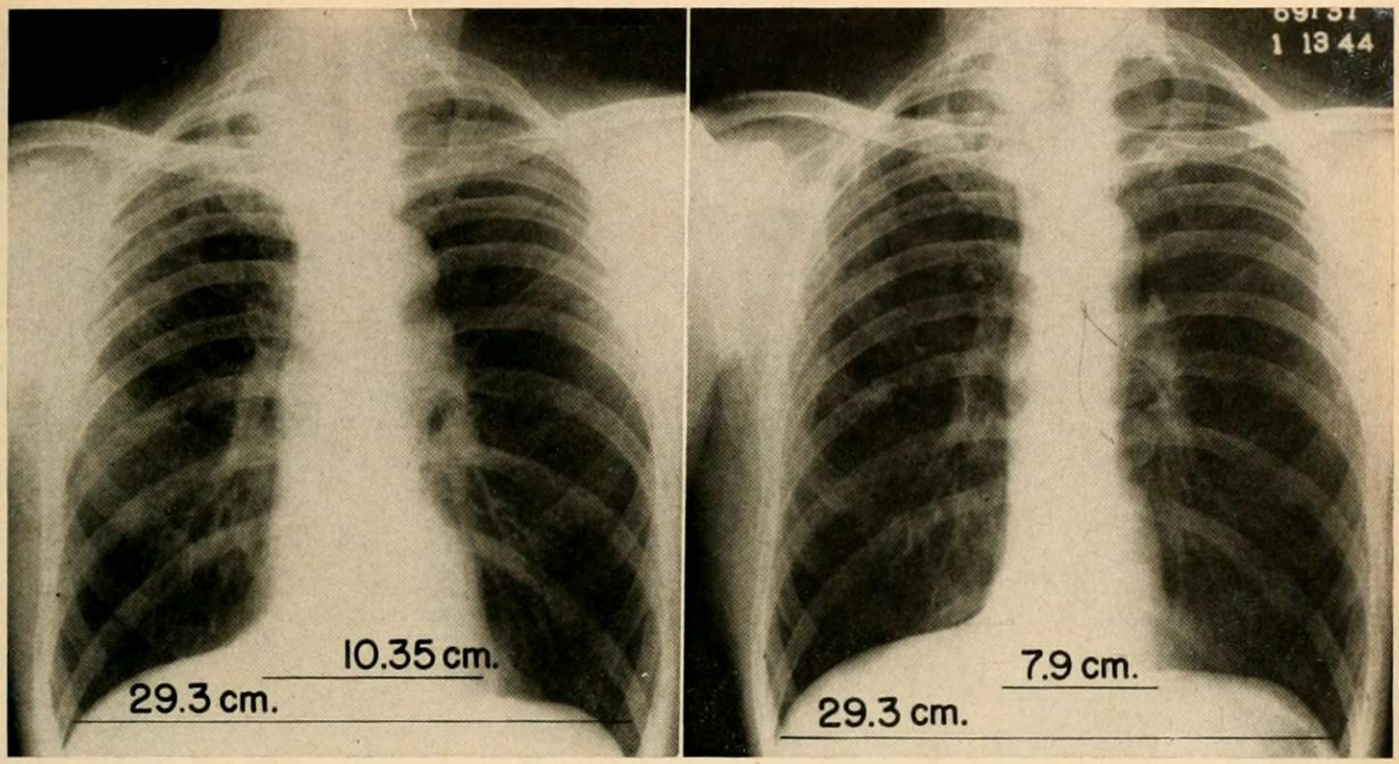
TABLE 5—Continued

	Period of Rice Diet (Days)	Diameter of Chest Before Diet (Cm.)	Diameter of Chest After Diet (Cm.)	Transverse Diameter of Heart Before Diet (Cm.)	Transverse Diameter of Heart After Diet (Cm.)	Change in Transverse Diameter of Heart Cm.	Change in Transverse Diameter of Heart Per Cent (Transverse diameter of smaller heart = 100%)
18.	37	31.8	32.0	16.8	15.7	−1.1	− 7.0
19.	54	24.05	24.25	14.0	12.65	−1.35	−10.7
20.	25	26.55	26.8	17.15	15.2	−1.95	−12.8
21.	129	32.3	31.8	15.4	14.1	−1.3	− 9.2
22.	125	31.7	31.8	15.3	13.4	−1.9	−14.2
23.	43	32.4	32.8	16.5	13.8	−2.7	−19.6
24.	253	28.4	27.5	10.75	10.5	−0.25	− 2.4
25.	32	23.95	24.75	13.85	13.5	−0.35	− 2.6
26.	86	26.0	25.6	13.8	12.6	−1.2	− 9.5
27.	173	26.5	26.25	13.9	12.8	−1.1	− 8.6
28.	32	31.1	31.9	15.6	14.4	−1.2	− 8.3
29.	116	24.85	25.45	10.6	10.7	+0.1	+ 0.9
30.	55	30.2	30.4	14.2	12.4	−1.8	−14.4
31.	18	32.2	32.6	16.2	15.5	−0.7	− 4.5
32.	34	24.75	24.5	12.25	11.75	−0.5	− 4.3
33.	24	32.7	32.4	14.6	13.25	−1.35	−10.2
34.	30	30.7	30.2	15.7	14.6	−1.1	− 7.5
35.	53	26.1	25.95	11.55	10.35	−1.2	−11.6
36.	36	25.1	24.8	12.5	11.2	−1.3	−11.6
37.	43	26.8	26.2	13.8	14.4	+0.6	+ 4.3
38.	28	27.0	27.3	11.7	12.0	+0.3	+ 2.6
39.	115	29.8	30.25	14.9	13.25	−1.65	−12.5
40.	20	26.4	25.15	12.7	11.3	−1.4	−12.4
41.	412	29.0	29.1	14.0	13.2	−0.8	− 6.1
42.	40	26.9	27.0	15.9	14.0	−1.9	−13.6
43.	98	22.05	22.05	12.10	10.75	−1.35	−12.6
44.	22	34.65	33.7	17.6	16.35	−1.25	− 7.6
45.	21	28.4	31.45	15.65	14.1	−1.55	−11.0
46.	174	29.7	31.1	14.7	12.7	−2.0	−15.8
Average	**93**	**29.04**	**29.02**	**14.67**	**13.38**	**−1.29**	**− 9.68**



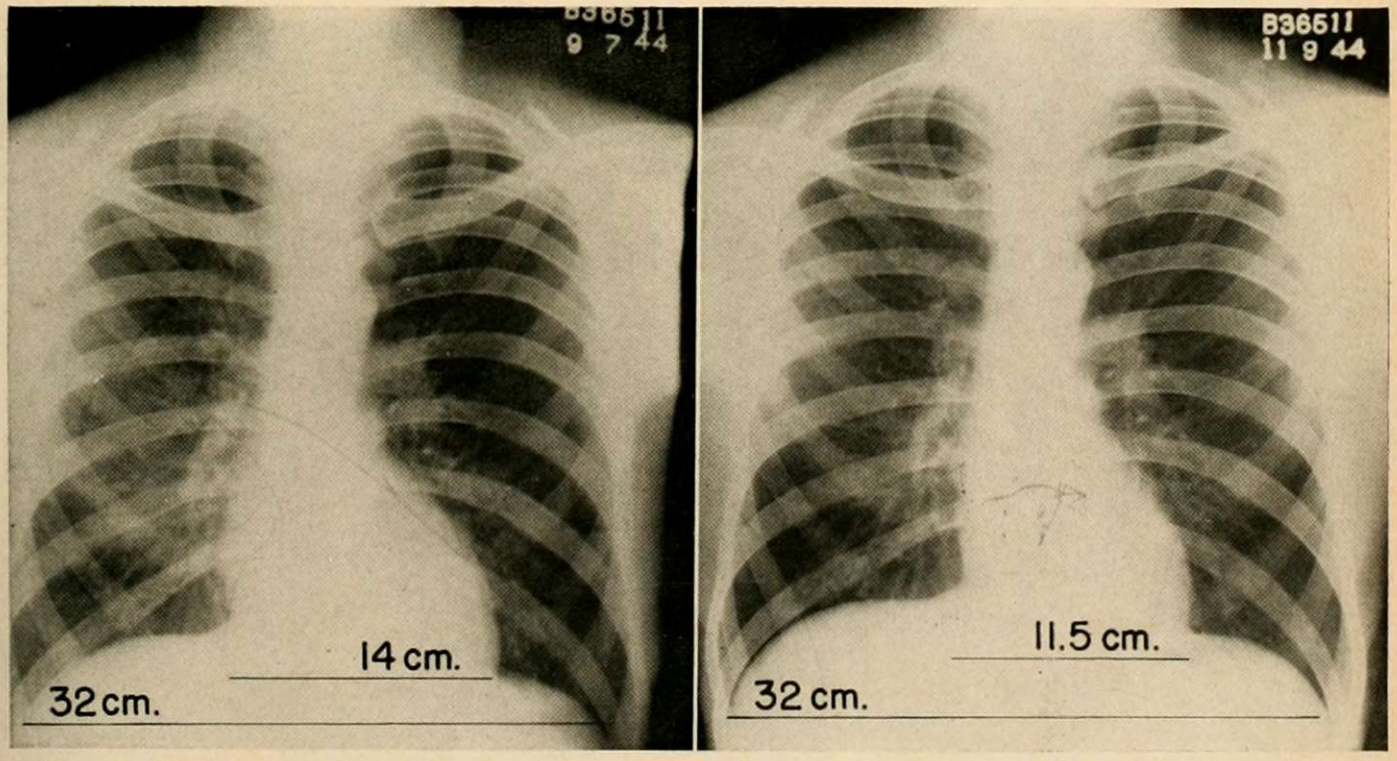
7-12-43 197/139 mm. Hg. 8-21-43 134/104 mm. Hg.

Fig. 14. W.McL. (m., 35). Chronic glomerulonephritis. Retinopathy with hemorrhages and exudates. Phenolsulfonphthalein excretion in two hours, 31 per cent. Rice diet since July 12, 1943. Bedrest. No digitalis. Reduction in heart size with change in transverse diameter of 16 per cent.



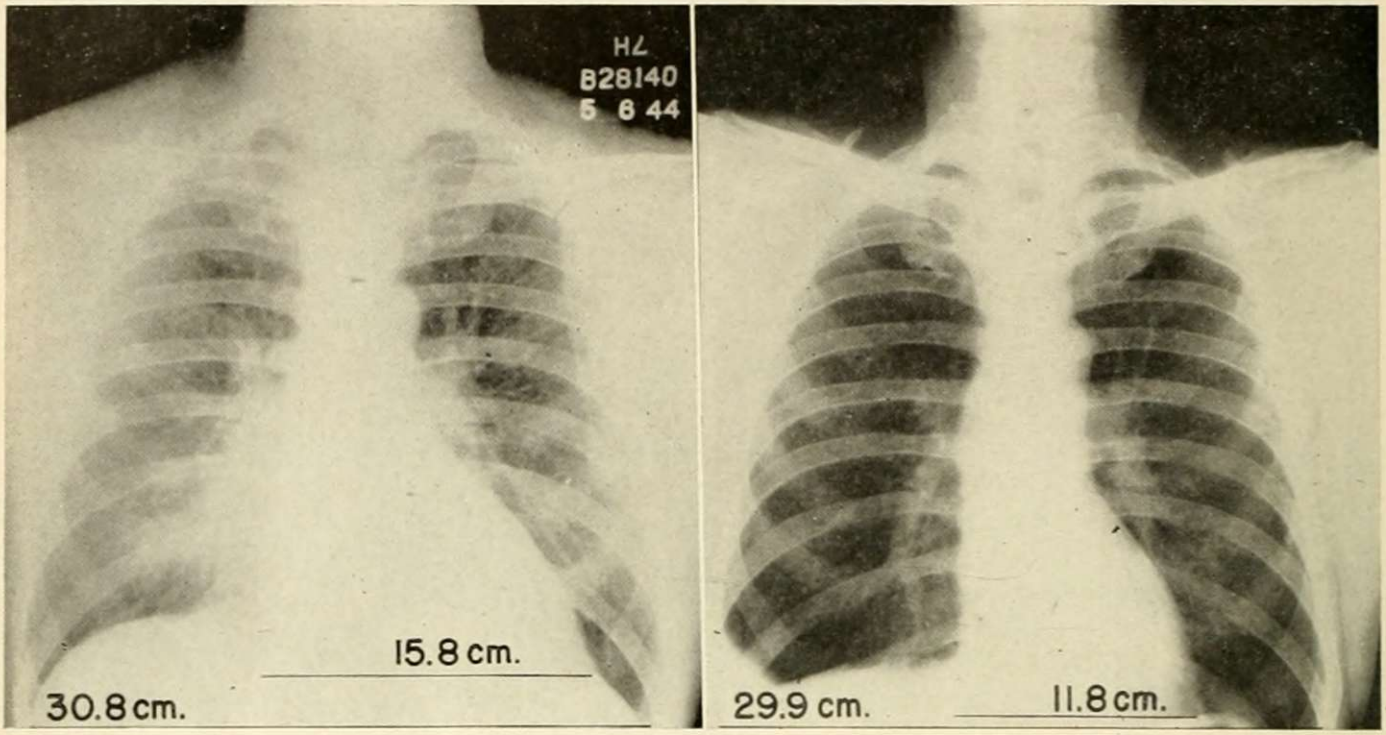
11-16-43 220/130 mm. Hg. 1-13-44 111/79 mm. Hg.

Fig. 15. A.G. (m., 53). Chronic glomerulonephritis. Phenolsulfonphthalein excretion in two hours, 50 per cent. Rice diet since November 24, 1943. Bedrest part of the time. No digitalis. Reduction in heart size with change in transverse diameter of 31 per cent.



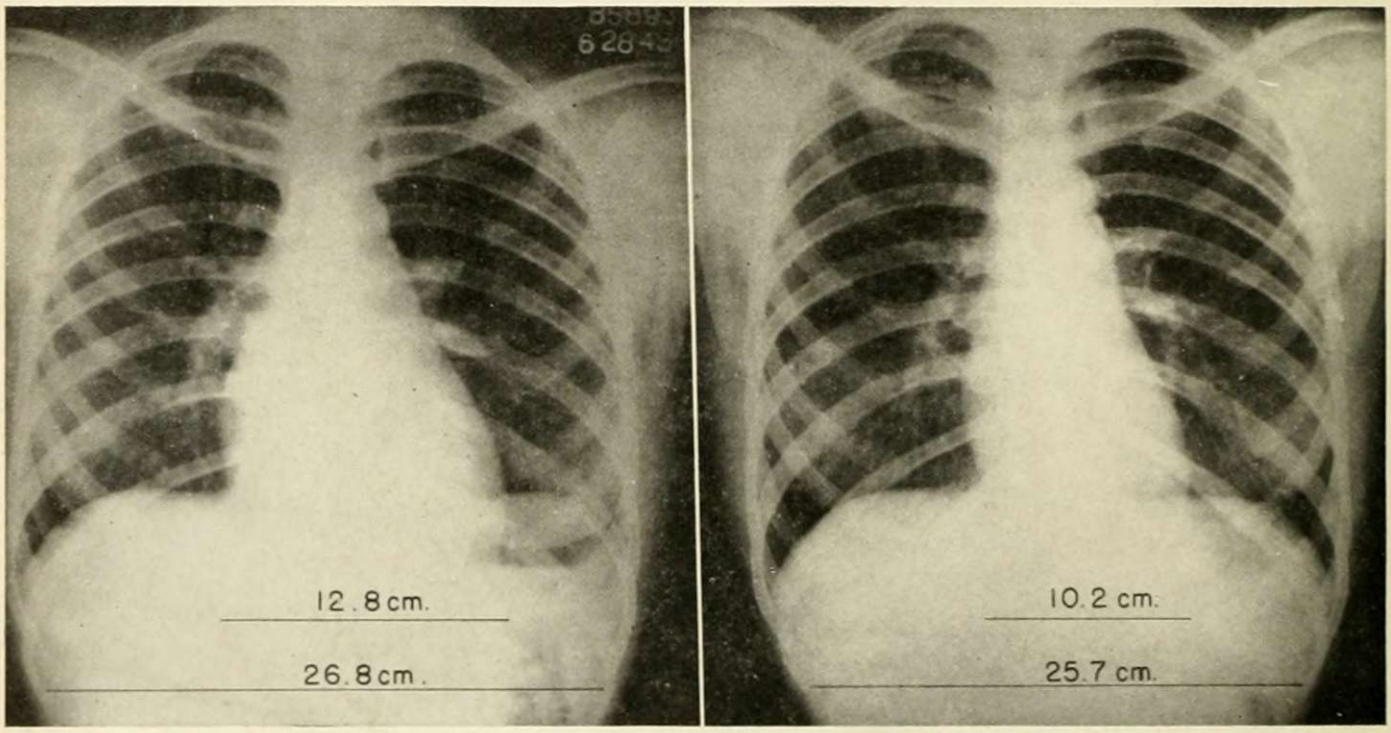
9-7-44 140/96 mm. Hg. 11-9-44 146/80 mm. Hg.

Fig. 16. B.M. (m., 31). Chronic nephritis. Phenolsulfonphthalein excretion in two hours, 7 per cent. Rice diet since September 9, 1944. No bedrest. No digitalis. Reduction in heart size with change in transverse diameter of 21 per cent.



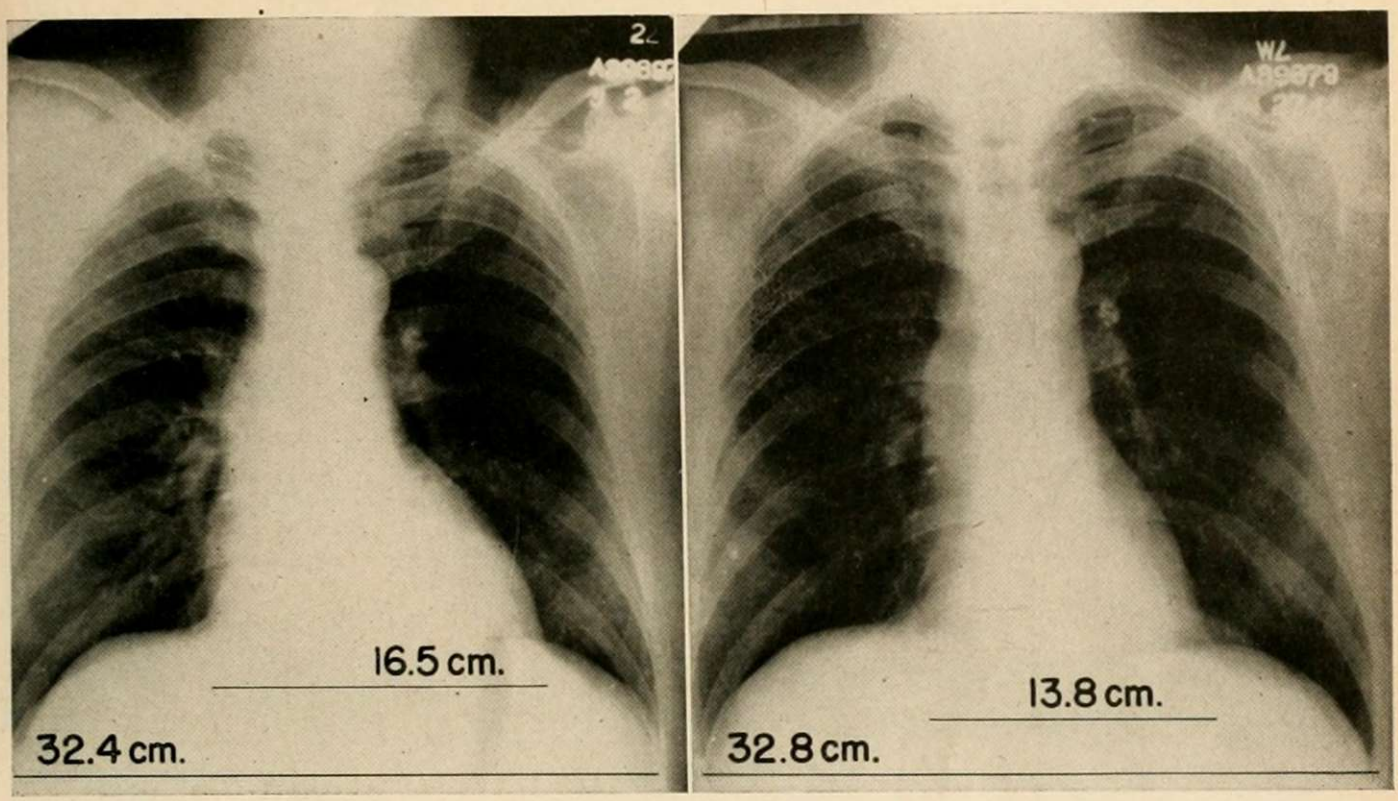
5-6-44 144/84 mm. Hg. 9-9-44 130/80 mm. Hg.

Fig. 17. B.K. (m., 43). Terminal stage of chronic nephritis. Phenolsulfonphthalein excretion in two hours, 0.56 per cent. Rice diet since May 13, 1944. No digitalis. Bedrest part of the time. Reduction in heart size with change in transverse diameter of 34 per cent.



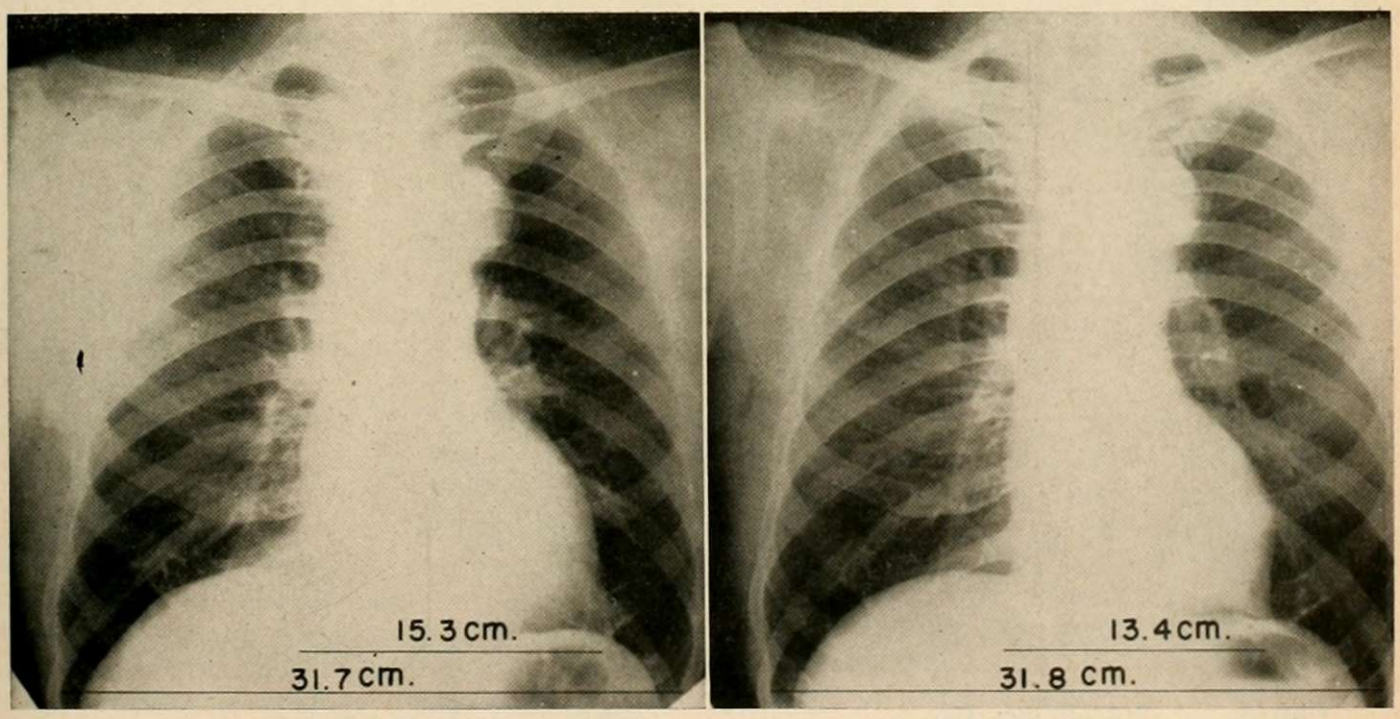
6-28-43 110/60 mm. Hg. 9-3-43 94/60 mm. Hg.

Fig. 18. T.A. (f., 20). Lupus erythematosus disseminatus. Exudative retinopathy. Phenolsulfonphthalein excretion in two hours, 75 per cent. Rice diet since July 19, 1943. Bedrest. No digitalis. Reduction in heart size with change in transverse diameter of 25 per cent.



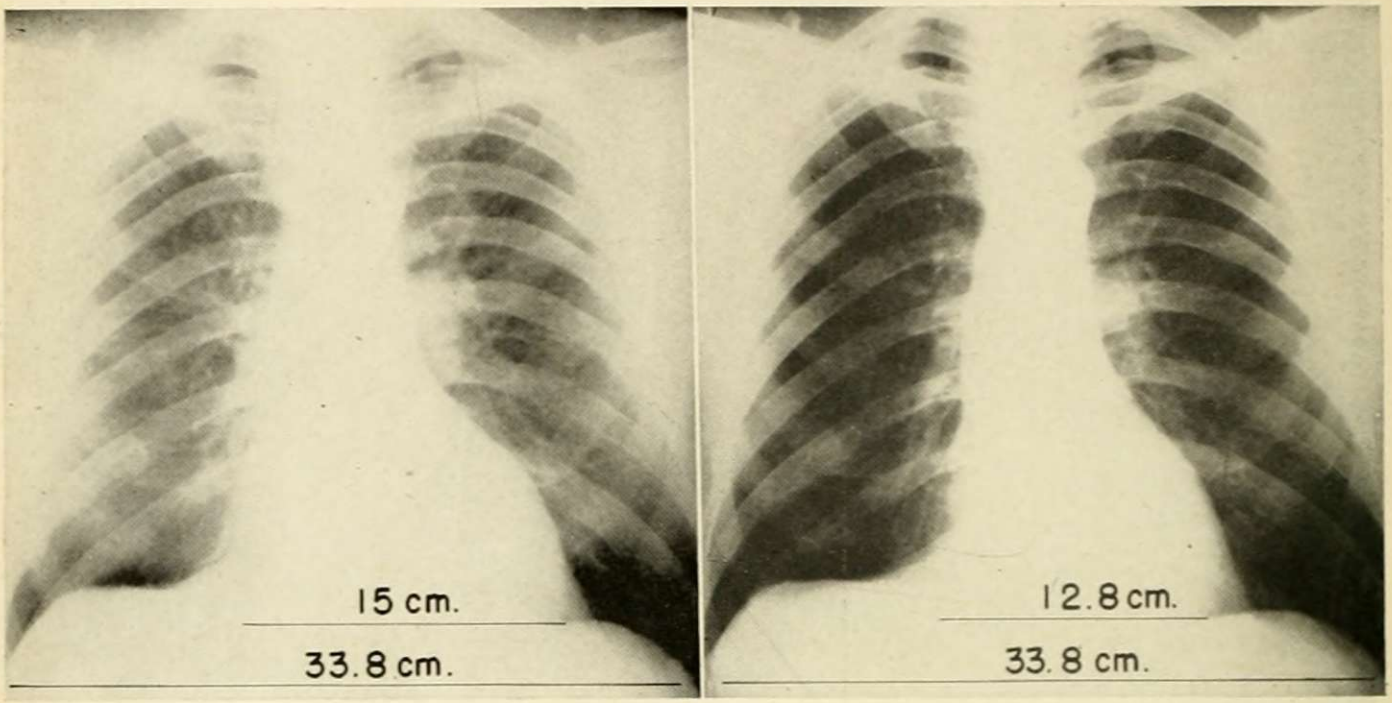
3-2-44 220/124 mm. Hg. 4-27-44 140/97 mm. Hg.

Fig. 19. J.K. (m., 48). "Hypertensive vascular disease." Phenolsulfonphthalein excretion in two hours, 63 per cent. Rice diet since March 14, 1944. No digitalis. No bedrest. Reduction in heart size with change in transverse diameter of 20 per cent.



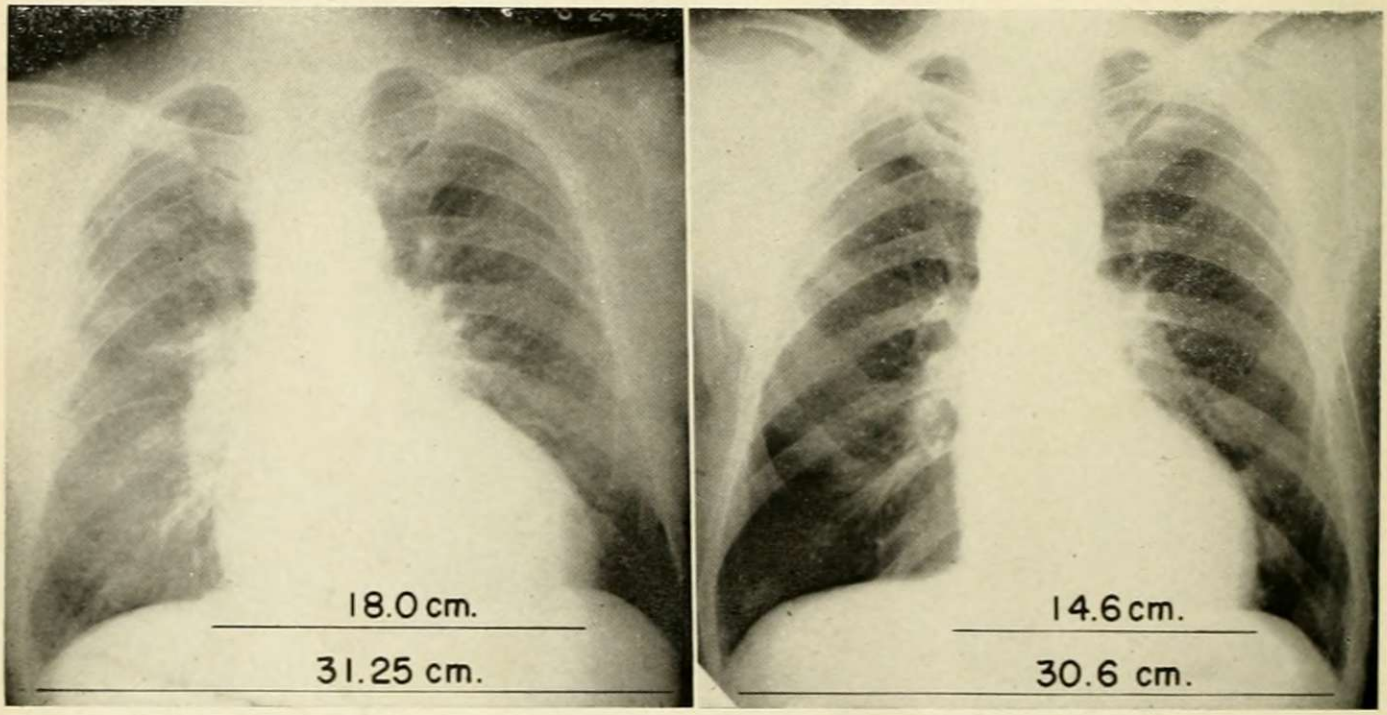
9-28-43 220/150 mm. Hg. 2-1-44 152/110 mm. Hg.

Fig. 20. J.L. (m., 54). "Hypertensive vascular disease." Phenolsulfonphthalein excretion in two hours, 50 per cent. Rice diet since October 3, 1943. No digitalis. No bedrest (three months of bedrest before admission because of coronary infarction). Reduction in heart size with change in transverse diameter of 14 per cent.



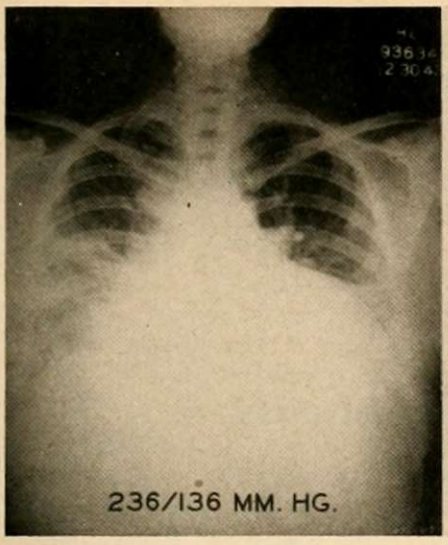
9-13-43 208/118 mm. Hg. 11-22-43 148/100 mm. Hg.

Fig. 21. J.L.A. (m., 46). "Hypertensive vascular disease." Retinopathy with papilledema. Phenolsulfonphthalein excretion in two hours, 54 per cent. Rice diet since September 16, 1943. Bedrest. No digitalis. Reduction in heart size with change in transverse diameter of 17 per cent.

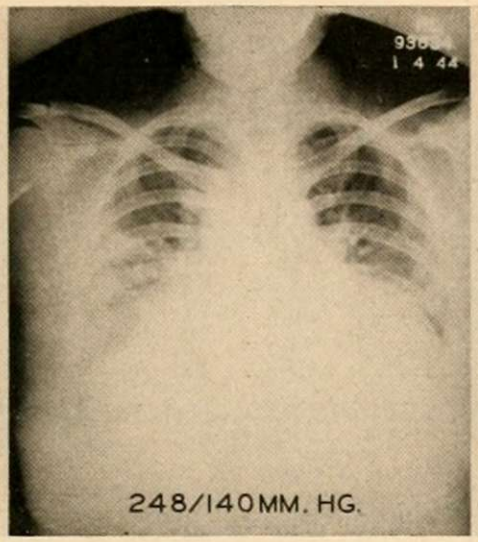


3-24-43 212/110 mm. Hg. 7-28-43 137/63 mm. Hg.

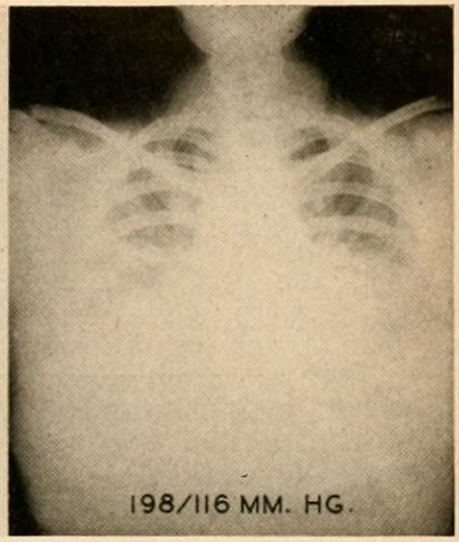
Fig. 22. J.F. (m., 65). "Hypertensive vascular disease." Phenolsulfonphthalein excretion in two hours, 43 per cent. Rice diet since April 2, 1943. No bedrest. No digitalis. Reduction in heart size with change in transverse diameter of 23 per cent.



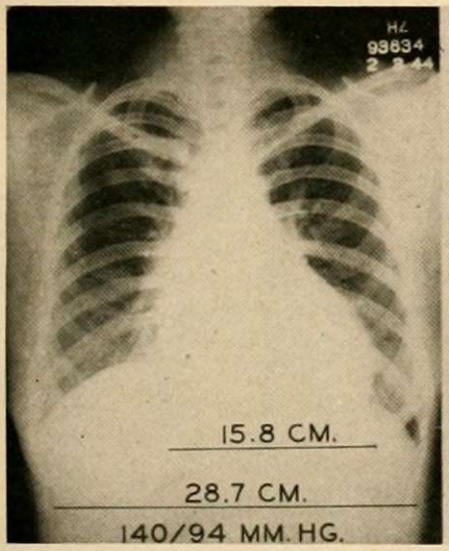
12-30-43



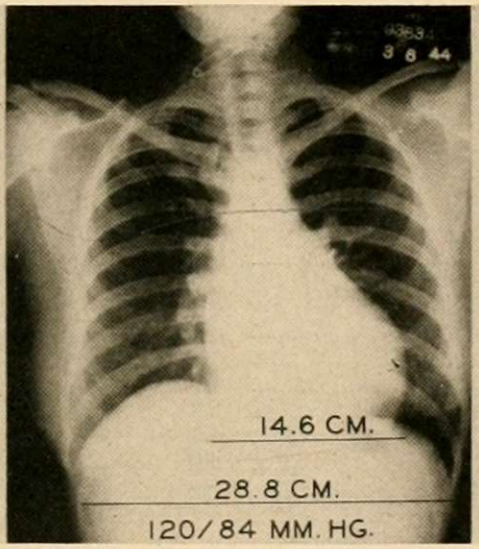
1-4-44
(Venous pressure (1-8-44): 215 mm. saline)



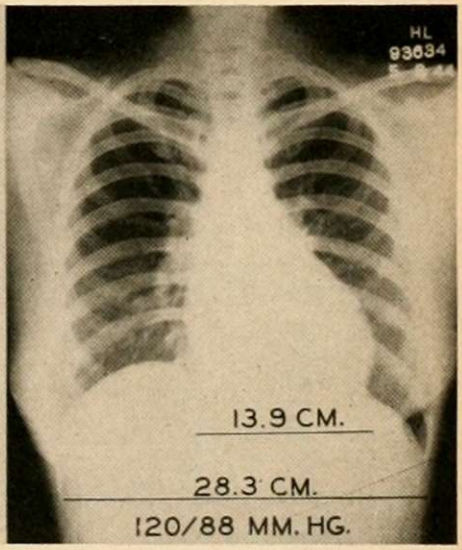
1-17-44
(Venous pressure (1-20-44): 141 mm. saline)



2-3-44
(Venous pressure (2-2-44): 80 mm. saline)



3-6-44



5-8-44

Fig. 23. L.K. (f., 33). Terminal stage of chronic nephritis, with pericarditis and retinopathy with papilledema, hemorrhages, exudates. Phenolsulfonphthalein excretion in two hours, 1.4 per cent. Rice diet since January 7, 1944. Bedrest until March 1, 1944. No digitalis after January 17, 1944. After the pericarditis cleared up, the heart size was reduced, with a change in the transverse diameter of 14 per cent.

Nonprotein Nitrogen

Table 6 shows the effect of the rice diet on the nonprotein nitrogen of 171 patients who received the strict or modified diet for periods varying from four days to thirty-two months. Five patients had acute glomerulonephritis, 66 patients chronic glomerulonephritis, chronic pyelonephritis, nephrolithiasis, or polycystic kidney disease, 2 patients lupus erythematosus, 55 patients "hypertensive vascular disease" with "secondary" renal involvement, 43 patients "hypertensive vascular disease" without conclusive evidence of renal excretory dysfunction.

Twenty-two patients died after six to eighty-one days (average twenty-five); 1 patient died after thirty months:

Average nonprotein nitrogen:
Before diet .....115 mg. per 100 cc. of blood
Before death .....186 mg. per 100 cc. of blood

The nonprotein nitrogen of 35 patients increased or did not decrease during the period of rice diet:

Average nonprotein nitrogen:
Before diet .....42.7 mg. per 100 cc. of blood
After 63 days of diet 50.2 mg. per 100 cc. of blood

The nonprotein nitrogen of 113 patients decreased during the period of diet:

Average nonprotein nitrogen:
Before diet .....53.1 mg. per 100 cc. of blood
After 78 days of diet 36.0 mg. per 100 cc. of blood

TABLE 6

EFFECT OF RICE DIET ON NONPROTEIN NITROGEN

	Phenolsulfonphthalein Test (Total Excretion in 2 Hours) Per Cent	*Nonprotein Nitrogen (mg. per 100 cc. blood)*			
		Before Rice Diet	*After Rice Diet*	*Change*	*Days on Rice Diet*
ACUTE GLOMERULONEPHRITIS					
1.	75, 60	73	31	−42	153
2.	55, 61	37	28	− 9	11
3.	78	54	26	−28	32
4.	78, 85, 71	33	27	− 6	180
5.	40, 50	32	28	− 4	83
Average		**46**	**28**	**−18**	**92**
CHRONIC GLOMERULONEPHRITIS, CHRONIC PYELONEPHRITIS, NEPHROLITHIASIS, OR POLYCYSTIC KIDNEY DISEASE					
NPN Increased or Unchanged					
Initial NPN 39-238 mg. per 100 cc. blood					
1.*	30	174	360	+186	37
2.*	2	90	138	+ 48	9
3.*		132	375	+243	38
4.*	less than 9	78	203	+125	50
5.	2, 1.2	138	170	+ 32	36
6.	3, 7, 14.5, 12, 10, 9, 1	77	78	+ 1	710
7.*	less than 3	190	355	+165	16
8.	5, 10	132	150	+ 18	27
9.*	19, 33, 24	42	145	+103	595
10.*	less than 5	190	208	+ 18	30
11.*	20	87	143	+ 56	10
12.*	0	238	300	+ 62	32
13.	51, 51	43	46	+ 3	210
14.	54, 57.5	39	46	+ 7	8
Average		**118**	**194**	**+ 76**	**129**
Initial NPN 22-35 mg. per 100 cc. blood					
15.*	45	28	76	+ 48	35
16.	80	22	32	+ 10	20
17.	62.5	30	32	+ 2	19
18.	55, 50	33	42	+ 9	14
19.	45, 39, 38	35	35	0	21
20.*	55, 43,	35	204	+169	42
Average		**30**	**70**	**+ 40**	**25**
NPN Decreased					
Initial NPN 39-242 mg. per 100 cc. blood					
1.	17.5	87	38	− 49	90
2.	50, 33	43	31	− 12	62
3.	77	41	28	− 13	70
4.	15	118	108	− 10	16
5.	20, 12	60	44	− 16	65
6.	30, 22	42	29	− 13	30
7.	22.5, 27.5, 30, 22.5, 25	72	33	− 39	160
8.	4.5, 4, 4.3, 5	143	46	− 97	252
9.	20, 22.5, 35, 21, 25, 22. 23	58	32	− 26	406
10.	12.5, less than 22.5, 25, 9, 18, 19	46	32	− 14	198
11.	less than 2, 1.4, 3.2, 3.3, less than 1	68	47	− 21	137
12.	Faint trace	156	84	− 72	27
13.		175	102	− 73	29
14.	40, 38, 17.5, 27.5	85	80	− 5	45
15.	25, 27.5, 16, 15, 18.5, 23, 21	54	36	− 18	236
16.	8	78	63	− 15	7
17.	5, 10, 7, 10	73	41	− 32	240
18.*	0, less than 1, less than 1	138	104	− 34	42
19.	25, 20, 18, 30, 25, 12, 16	66	62	− 4	348
20.	47, 55, 40	55	31	− 24	72
21.	40, 40	53	48	− 5	67
22.	70	175	35	−140	38
23.	22	44	27	− 17	80
24.	55	46	26	− 20	14
25.	0.1	168	102	− 66	42
26.	65	48	27	− 21	17

* Death after 6-595 days.

TABLE 6—Continued

	Phenolsulfonphthalein Test (Total Excretion in 2 Hours) Per Cent	*Nonprotein Nitrogen (mg. per 100 cc. blood)*			
		Before Rice Diet	*After Rice Diet*	*Change*	*Days on Rice Diet*
27.	less than 1, less than 1, less than 1, 0	125	84	— 41	119
28.	5.5, 2.2	82	60	— 22	21
29.	70	39	32	— 7	6
30.	4, 7, 10.5	87	46	— 41	59
31.		93	71	— 22	31
32.	3	71	46	— 25	7
33.	71, 68	42	34	— 8	58
34.	10.2, 4.7	140	87	— 53	49
35.	less than 1	242	84	—158	51
Average		**89**	**54**	**— 35**	**91.5**
Initial NPN 27-38 mg. per 100 cc. blood					
36.	70	27	23	— 4	7
37.	72	31	29	— 2	24
38.	65	33	31	— 2	28
39.	64	30	25	— 5	15
40.	55	34	30	— 4	22
41.	38, 19, 24	36	34	— 2	190
42.	49, 52	32	27	— 5	19
43.		31	24	— 7	25
44.	67	29	25	— 4	98
45.	45	38	28	— 10	16
46.	75, 69, 77	33	28	— 5	215
Average		**32**	**28**	**— 4**	**60**
LUPUS ERYTHEMATOSUS					
1.	65, 85	55	45	— 10	91
2.	65, 57	69	34	— 35	27
Average		**62**	**39.5**	**— 22.5**	**59**
"HYPERTENSIVE VASCULAR DISEASE" WITH "SECONDARY" RENAL INVOLVEMENT					
NPN Unchanged or Increased					
Initial NPN 42-277 mg. per 100 cc. blood					
1.*	0	230	260	+ 30	22
2.	2.3	67	108	+ 41	8
3.*	18	80	111	+ 31	81
4.*	15.5	61	108	+ 47	27
5.*		202	252	+ 50	10
6.	5	51	75	+ 24	18
7.*	11, 7	54	102	+ 48	15
8.*		110	198	+ 88	14
9.	25	42	46	+ 4	25
10.	30	42	44	+ 2	32
11.		78	109	+ 31	22
12.*	60	48	74	+ 26	6
13.*		66	104	+ 38	17
14.*		277	292	+ 15	7
15.*	28, 32	57	126	+ 69	7
16.	45	48	54	+ 6	48
Average		**95**	**129**	**+ 34**	**22.5**
Initial NPN 27-37 mg. per 100 cc. blood					
17.	70, 45, 48	35	35	0	66
18.*		36	45	+ 9	10
19.	47, 65	29	49	+ 20	78
20.	20	34	37	+ 3	29
21.	42, 43, 51	33	33	0	86
22.	70, 85	27	40	+ 13	30
23.	46	37	40	+ 3	15
Average		**33**	**40**	**+ 7**	**45**
NPN Decreased					
Initial NPN 39-63 mg. per 100 cc. blood					
1.	75	57	41	— 16	68
2.	45, 42.5	40	21	— 19	9
3.	67, 75, 48, 51	44	24	— 20	209
4.	47, 69.5	40	25	— 15	32
5.	40	40	30	— 10	82

* Death after 6-595 days.

TABLE 6—Continued

	Phenolsulfonphthalein Test (Total Excretion in 2 Hours) Per Cent	*Nonprotein Nitrogen (mg. per 100 cc. blood)*			
		Before Rice Diet	*After Rice Diet*	*Change*	*Days on Rice Diet*
6.	49	58	38	— 20	10
7.	44	42	32	— 10	35
8.	40, 45	49	44	— 5	103
9.	44, 48, 54	39	24	— 15	121
10.	50	50	37	— 13	28
11.	45	52	38	— 14	32
12.	64	51	32	— 19	7
13.	28	50	33	— 17	32
14.		57	34	— 23	9
15.	45	58	44	— 14	13
16.		48	41	— 7	7
17.	45	53	24	— 29	6
18.	55, 50	46	31	— 15	79
19.	45, 68	47	34	— 13	77
20.		63	44	— 19	40
21.	50, 65	40	37	— 3	22
Average		**49**	**34**	**— 15**	**49**
Initial NPN 28-38 mg. per 100 cc. blood					
22.	57	33	28	— 5	47
23.	57, 28, 30	36	34	— 2	15
24.	58, 54, 65, 53	29	18	— 11	970
25.	32	35	32	— 3	60
26.	60, 60, 55	29	26	— 3	90
27.	47	38	33	— 5	20
28.	32, 52, 67	35	23	— 12	113
29.	37, 64	33	24	— 9	198
30.	30	36	28	— 8	15
31.	66, 64, 47, 58	33	25	— 8	177
32.	59, 44	28	25	— 3	127
Average		**33**	**27**	**— 6**	**167**
"HYPERTENSIVE VASCULAR DISEASE" WITHOUT CONCLUSIVE EVIDENCE OF RENAL INVOLVEMENT					
NPN Unchanged or Increased					
Initial NPN 23-40 mg. per 100 cc. blood					
1.	65	35	40	+ 5	13
2.	83, 60	26	28	+ 2	61
3.	53	33	34	+ 1	26
4.		26	28	+ 2	11
5.	69	35	35	0	13
6.	55, 49	34	36	+ 2	132
7.	69, 87, 91	27	28	+ 1	252
8.	61	23	25	+ 2	14
9.	63	32	38	+ 6	12
10.		31	36	+ 5	7
11.	52	28	28	0	36
12.	64	26	32	+ 6	4
13.	55	40	41	+ 1	4
14.	57	28	28	0	86
Average		**30**	**32.5**	**+ 2.5**	**48**
NPN Decreased					
Initial NPN 25-40 mg. per 100 cc. blood					
1.	74, 71, 72	33	27	— 6	239
2.	97	34	32	— 2	16
3.		37	26	— 11	48
4.	67, 75	34	25	— 9	72
5.	59	31	24	— 7	57
6.	92	30	28	— 2	60
7.	59	34	29	— 5	112
8.	52	37	33	— 4	32
9.	65	25	23	— 2	21
10.	62, 69	29	21	— 8	55
11.	53	27	20	— 7	38
12.	70	30	28	— 2	22
13.	55, 55	30	29	— 1	65
14.	58	40	30	— 10	82
15.	69	26	25	— 1	28

TABLE 6—Continued

	Phenolsulfonphthalein Test (Total Excretion in 2 Hours) Per Cent	Nonprotein Nitrogen (mg. per 100 cc. blood) Before Rice Diet	After Rice Diet	Change	Days on Rice Diet
16.	67	28	24	— 4	18
17.	82, 90, 71	30	26	— 4	22
18.	64, 86	30	24	— 6	113
19.	72	31	26	— 5	20
20.	53	31	29	— 2	18
21.	55	35	27	— 8	45
22.	72, 63	36	32	— 4	26
23.	73	35	25	— 10	149
24.	88	30	24	— 6	34
25.	70	39	27	— 12	4
26.	78	28	22	— 6	17
27.	63, 87	29	24	— 5	96
28.	81	30	25	— 5	23
29.	69	39	30	— 9	18
Average		**32**	**26**	**— 6**	**53**

An erroneous impression might be conveyed by the figures in table 6, because only the nonprotein nitrogen values before the start of treatment and the last ones recorded after treatment are compared. Since many patients with chronic kidney disease, however, do not realize the seriousness of their condition before manifestations of terminal renal failure become apparent, they frequently come to the hospital at a time when the nonprotein nitrogen is no longer at a constant level, but is rising rapidly. The effect of the diet in such instances might therefore be seen more correctly in the difference between the patient's nonprotein nitrogen at the end of the treatment and his highest nonprotein nitrogen value, even if this value was found after he was already on the diet (fig. 24).

The lowering of the nonprotein nitrogen in the greater number of patients is not the only point of significance in table 6; the length of time on the rice diet is also important, for it shows that in spite of even critical decrease in renal excretory function, as indicated by the low phenolsulfonphthalein excretion, the usually progressive increase of the nonprotein nitrogen and actual uremia may be prevented for years.

Histories 1-3, 5-7 and figures 24, 34, 38, 45, 47 illustrate the response of the nonprotein nitrogen to the diet.

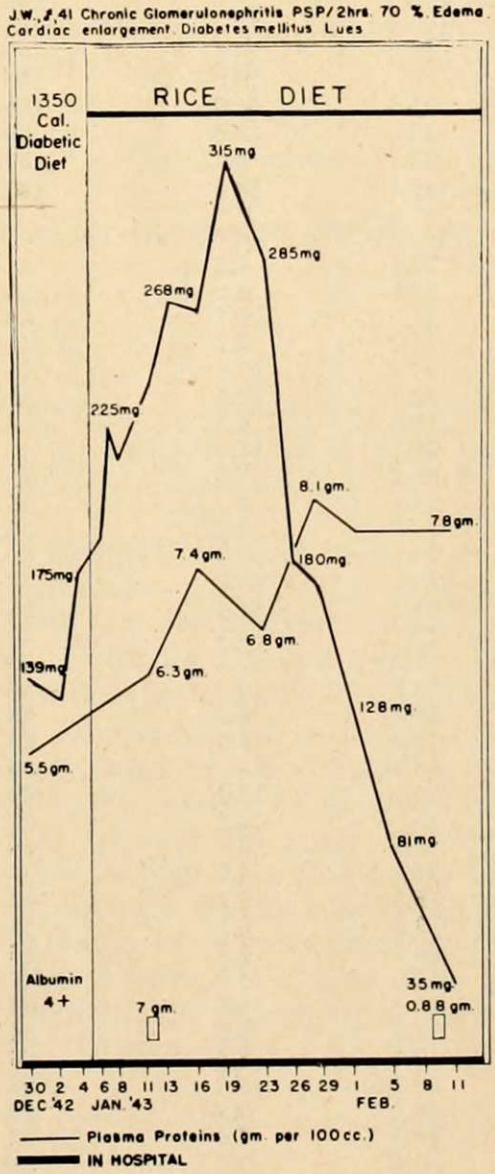


Fig. 24. J.W. (m., 41). Blood nonprotein nitrogen (mg. per 100 cc.) of nephritic patient with rapidly developing uremia.

Urea

Table 7 shows the effect of the strict or modified rice diet on the blood urea nitrogen concentration and on the urea nitrogen-nonprotein nitrogen ratio in 63 patients.

TABLE 7

EFFECT OF RICE DIET ON BLOOD UREA NITROGEN

	UREA NITROGEN (mg. per 100 cc. blood)		*NONPROTEIN NITROGEN (mg. per 100 cc. blood)*		*UREA RATIO %*		
	Before Rice Diet	*After Rice Diet*	*Before Rice Diet*	*After Rice Diet*	*Before Rice Diet*	*After Rice Diet*	*Days on Rice Diet*
I. Urea Nitrogen Increased							
Initial urea nitrogen 32-116 mg. per 100 cc. blood							
1.	116	130.8	138	163	84.1	80.2	28
2.	47.4	56.8	90	93	52.7	61.1	53
3.	32.7	77.4	61	108	53.6	71.7	27
4.	50	51.8	70	114	71	45.4	15
5.	89.1	181.7	110	198	81	91.8	14
Average	**67**	**99.7**	**94**	**135**	**68.5**	**70**	**27**
Initial urea nitrogen 10 mg. per 100 cc. blood							
6.	10.1	14.9	30	40	34	37.2	14
II. Urea Nitrogen Decreased							
Initial urea nitrogen 33-110 mg. per 100 cc. blood							
1.	36.8	27.3	60	44	61.3	62.5	62
2.	108	70.3	168	102	64.3	68.9	47
3.	42.3	24.2	68	47	62.2	51.5	166
4.	105	48.4	156	84	67.3	57.6	27
5.	109.6	42.4	148	84	74.1	50.5	118
6.	49.9	26.4	87	48	57.4	55	42
7.	34	14.9	50	31	68	48.1	92
8.	91.5	61.6	140	87	65	70.8	48
9.	43.5	22.8	80	48	54.4	47.5	42
10.	33	10.7	50	33	66	32.4	32
Average	**65.4**	**34.9**	**100.7**	**60.8**	**64**	**54.5**	**68**
Initial urea nitrogen 7-29 mg. per 100 cc. blood							
11.	20.4	4.2	44	31	46.4	13.5	131
12.	12.6	6.2	31	29	40.6	22.8	23
13.	21	9.1	36	34	58.3	27	190
14.	15.2	4.2	41	26	37.1	16.2	190
15.	28.9	12.6	55	31	52.5	40.6	70
16.	25.7	12.4	42	34	61.2	36.5	57
17.	10.8	4.2	34	28	31.8	15	210
18.	21.4	14.4	42	30	51	48	189
19.	21.2	7.8	35	35	60.6	22.3	36
20.	18.4	9	36	36	51.1	25	146
21.	15.6	7.8	33	25	47.3	31.2	32
22.	18.1	3.6	36	18	50.3	20	970
23.	19.2	12.7	37	38	51.9	33.4	46
24.	24.2	14.4	51	32	47.5	45	224
25.	18	4.3	39	24	46.2	17.9	153
26.	8.9	7.8	29	26	30.7	30	79
27.	17.2	10	38	33	45.3	30.3	20
28.	10.8	8.3	35	24	30.9	34.6	200
29.	10.2	2.3	33	18	30.9	12.8	460
30.	16.5	6	46	31	36	19.7	77
31.	20	14.9	47	35	42.6	42.6	240
32.	14	4.2	37	21	37.8	20	20
33.	9.9	5	29	25	34.1	20	72
34.	11.3	6.6	30	25	37.7	26.4	125
35.	15.8	6.1	34	29	46.5	21	112
36.	13.8	6.6	36	21	38.3	31.4	55
37.	10.2	1.8	26	25	39.2	7.2	191
38.	11.9	6	27	20	44.1	30	38
39.	14.2	4.5	40	30	35.5	15	82
40.	11.8	7.2	34	36	34.7	20	129
41.	7.7	1.8	26	29	29.6	6.2	172
42.	10.4	3.6	28	24	37.1	15	81
43.	8.1	5.5	32	30	25.3	18	68
44.	11.9	7.8	32	38	37.2	20.5	11
45.	10.9	6.6	31	30	35.2	22	120
46.	11.4	7.7	31	29	36.8	26.6	18
47.	12.6	6.6	35	27	36.1	24.4	45
48.	14	5.4	28	28	50	19.3	36
49.	13.8	2.4	36	32	38.3	7.5	26
50.	10.8	5.4	30	25	36	21.6	10

TABLE 7—Continued

	UREA NITROGEN (mg. per 100 cc. blood)		NONPROTEIN NITROGEN (mg. per 100 cc. blood)		UREA RATIO %		
	Before Rice Diet	After Rice Diet	Before Rice Diet	After Rice Diet	Before Rice Diet	After Rice Diet	Days on Rice Diet
51.	9.5	4.8	28	30	33.9	16	85
52.	9.1	4.2	30	25	30	16.8	23
53.	12.6	7.8	28	24	44.1	32.5	26
54.	16.8	4.2	36	30	46.7	14	35
55.	12.6	2.4	33	26	38.2	9.2	251
56.	13.7	9	36	34	38.1	26.5	23
57.	7.1	1.2	28	25	25.4	4.8	127
Average	**14.5**	**6.6**	**35**	**28**	**40.8**	**22.9**	**122**

In 6 of the 63 patients the blood urea nitrogen increased (group I). Two of these died after fourteen and twenty-seven days.

	Urea N (average) (mg. per 100 cc. of blood)	Urea N-NPN ratio (average) (per cent)
Initial urea nitrogen 32-116 mg. per 100 cc. of blood (I, patients 1-5)		
Before diet	67	68.5
After 27 days of diet	99.7	70.0
Initial urea nitrogen 10 mg. per 100 cc. of blood (I, patient 6)		
Before diet	10.1	34
After 14 days of diet	14.9	37.2

In 57 of the 63 patients the blood urea nitrogen decreased (group II).

	Urea N (average) (mg. per 100 cc. of blood)	Urea N-NPN ratio (average) (per cent)
Initial urea nitrogen 33-110 mg. per 100 cc. of blood (II, patients 1-10)		
Before diet	65.4	64
After 68 days of diet	34.9	54.5
Initial urea nitrogen 7-29 mg. per 100 cc. of blood (II, patients 11-57)		
Before diet	14.5	40.8
After 122 days of diet	6.6	22.9

Of 48 patients whose initial urea nitrogen concentration was normal or almost normal (7-29 mg. per 100 cc. of blood), only 1 patient had an increase of the blood urea nitrogen concentration, whereas 47 patients had an average decrease of the blood urea nitrogen concentration of 55 per cent.

The lowest urea nitrogen values we found were 1.2 mg. per 100 cc. of blood in 1 patient, and 1.8-2.4 mg. per 100 cc. of blood in 4 patients. The urea nitrogen-nonprotein nitrogen ratio in these 5 patients ranged from 4.8 to 12.4 per cent[6].

This finding again shows that patients on the rice diet are in protein equilibrium, since in fasting and inanition the urea nitrogen concentration of the blood is increased.

6. Dr. Haywood Taylor of the Department of Biochemistry is engaged in a study to determine the nature of those nonprotein nitrogen substances, the increase of which makes up for the decreased urea ratio in the blood of patients on the rice diet.

Two hundred and eighty-one determinations of the urea nitrogen excretion per twenty-four hours in the urine of 96 patients with kidney disease (with a nonprotein nitrogen not above 50 mg. per 100 cc. of blood), or with "hypertensive vascular disease," before and after they had received the rice diet for varying periods of time, are summarized in table 8.

TABLE 8

Urea Excretion in Urine

Period on rice diet	Number of patients	Number of determinations	Gm. urea nitrogen excreted in 24 hours (average)
0*	49	60	5.4
1-14 days	46	73	2.9
15-30 days	36	47	1.9
1-2 months	22	35	1.6
Over 2 months	30	66	1.1

* In many instances the protein intake before the beginning of the rice diet had been limited, either because the patients were too ill to eat the full amount of a mixed diet, or because they had received other low protein diets. The regular hospital diet contains about 65 Gm. of protein.

The twenty-four hour urinary urea nitrogen excretion on a 100 Gm. protein diet is about 12 Gm., in complete starvation about 6 Gm., after an average period of two or more months on the rice diet about 1.1 Gm.

The excretion of urea constitutes one of the main tasks of the kidney. According to Addis[7], the excretion of 10 Gm. of urea nitrogen requires 677 gram calories of work from the kidney. Borsook[8] has calculated that ordinarily 76 per cent of all the work of the kidney is spent on urea excretion. The fact that the rice diet causes an 80 or 90 per cent reduction in urinary urea excretion may not be without effect upon the "metabolic situation" of the kidney cells.

This article will be concluded in the March issue of the JOURNAL.

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8. Borsook, H., and Winegarden, H. M.: The Work of the Kidney in the Production of Urine, Proc. Nat. Acad. Sc. 17:3-13, 1931.

THE TREATMENT OF FRACTURES OF THE HUMERUS WITH THE HANGING CAST

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For about two years we have treated almost all fractures of the humerus above the supracondylar level with the hanging cast and shoulder exercises. The results have been highly satisfactory in most cases, but we have also had several poor results. The hanging cast treatment, when used in properly selected cases, is most economical for patient and surgeon; it is therefore important to recognize what types of fractures are satisfactorily treated by the hanging cast and in what types other methods of treatment are preferable. It was with the hope of answering this question that a review of our cases was undertaken.

The principle of the hanging cast is not new. Many older textbooks of surgery illustrate the treatment of a fractured humerus by the traction of a weight suspended from the flexed elbow and by the support of some type of coaptation splinting about the arm. The application of the ordinary arm cast for this purpose, however, is fairly recent. It was first used extensively by Dr. John Caldwell of Cincinnati, who reported his experience with it in 1933[1]. Since that time a great many favorable reports on the use of the hanging cast have been published, and a number of minor modifications of the treatment have been suggested. Some observers have restricted the use of the hanging cast to fractures of the humeral shaft proper, while others have described favorable results from its use in fractures of the surgical neck.

Technique

As ordinarily used, the hanging cast is applied without anesthesia and with or without gentle manipulation to help align the fragments. It extends high on the arm; it supports the wrist but restricts the thumb and fingers very little (fig. 1). It should be quite thin, and may be unpadded or lightly padded. Two loops of traction rope incorporated in the final turns of plaster provide attachment for a muslin neck-wrist sling if

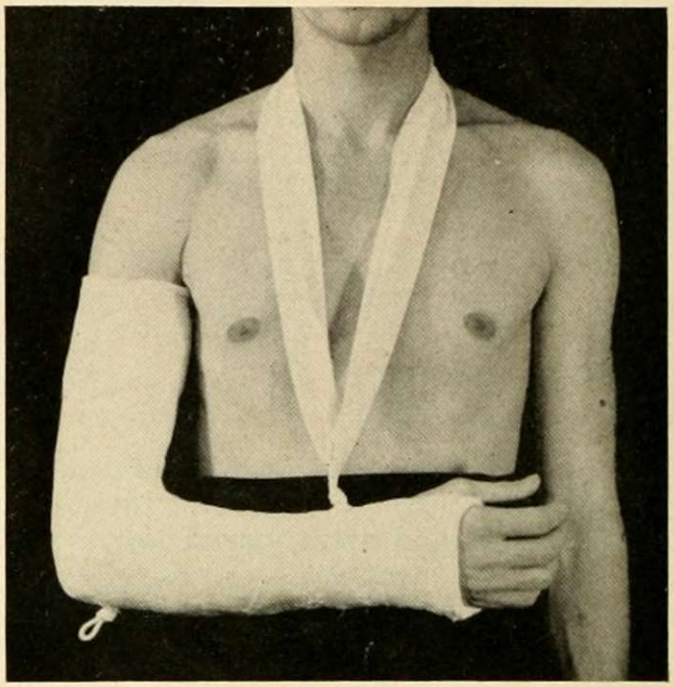
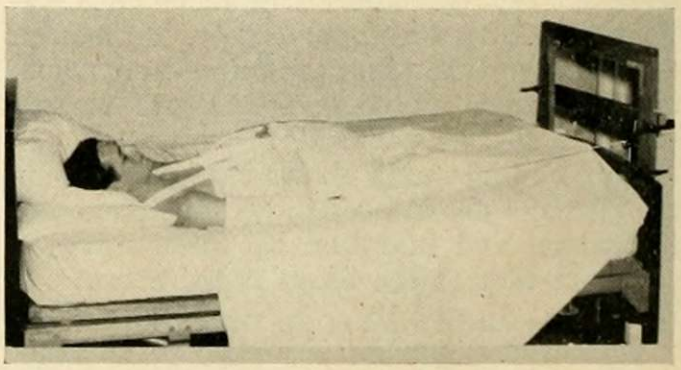


Fig. 1. The hanging cast as ordinarily applied. It is quite thin and light. The elbow loop is used when the patient must be recumbent because of additional injuries.

the patient is ambulatory, or direct traction to the foot of the bed if the patient must be recumbent because of other injuries (fig. 2). The necessity of allowing the pull to act continuously is explained to the patient, and his cooperation is secured. The ambulatory patient is asked to sleep in a sitting or a Fowler's position during the first week or ten days. The amount of traction on his arm may be adjusted by placing the wrist loop in a somewhat more proximal or more distal position.

Careful x-ray follow-up is essential. Usually the first check-up films, taken with the patient standing, are made a week after the cast is applied; this period of time is allowed for gravity, acting through soft tissue attachments, to effect reduction. If modification of the cast is necessary to improve the



From the Orthopedic Division of the Department of Surgery, Duke University School of Medicine, Durham, N. C. Read

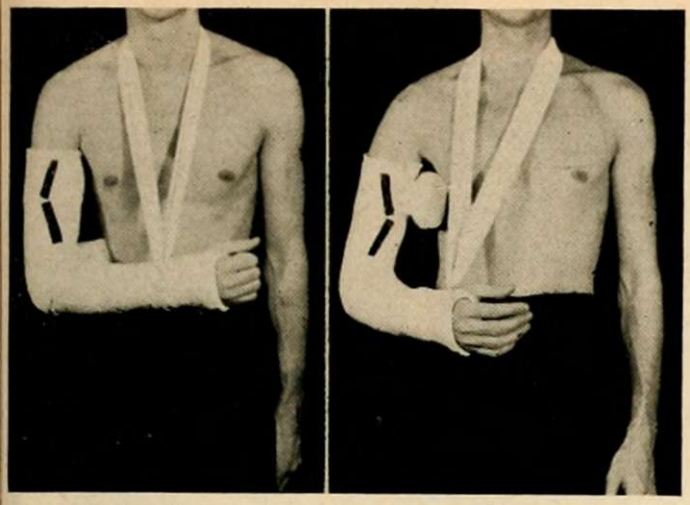


Fig. 3. Elbow pad and dorsal wrist loop tend to correct anterolateral angulation. Axillary pad and volar wrist loop tend to correct posteromedial angulation.

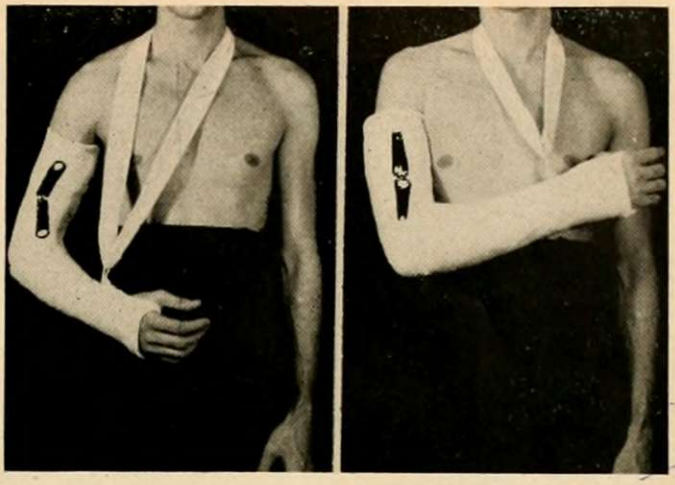
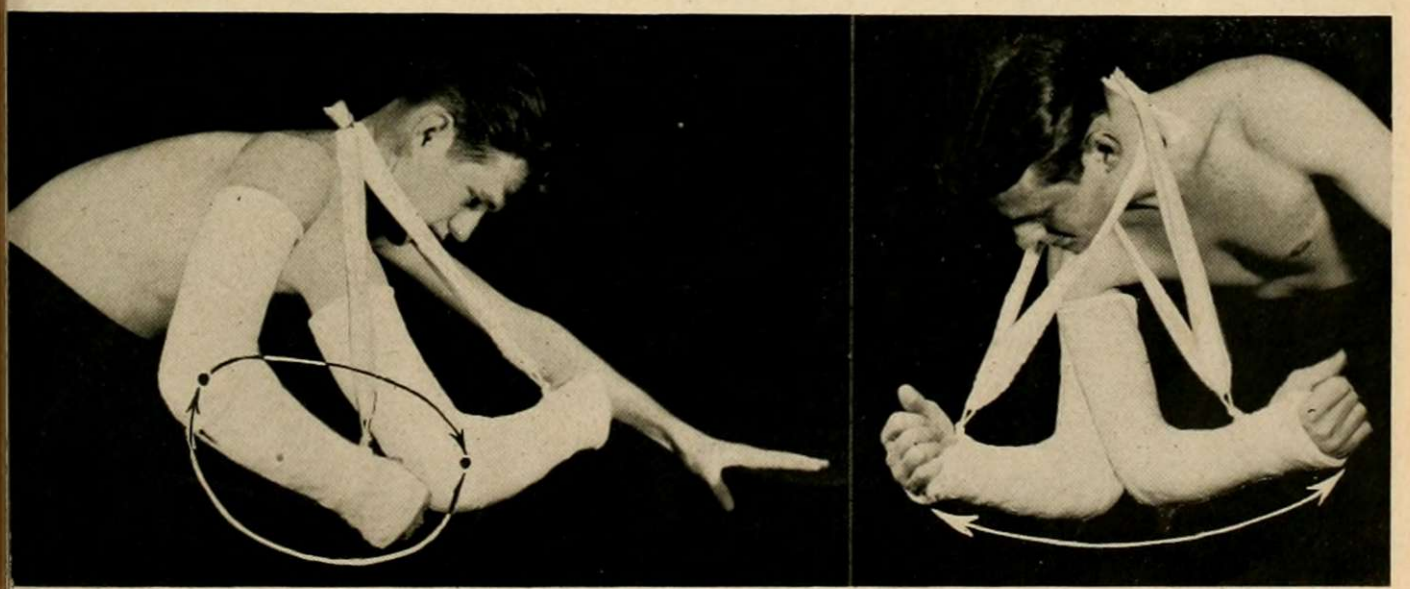


Fig. 4. A long sling tends to correst posterior angulation; a short sling tends to correct anterior angulation.

alignment of the fragments, frequent x-ray re-examinations are imperative. This is particularly true in the second to the fourth week, when the fragments are beginning to unite.

The relative positions of the fragments in the hanging cast may be altered in several ways. In the cast the humerus lies in partial internal rotation. Its anterior surface is therefore directed anteromedially. Anterolateral angulation may be counteracted by placing an abduction pad of felt between elbow and chest; posteromedial angulation may be counteracted by a pad between upper arm and chest. Placing the wrist loop dorsally helps correct lateral angulation; placing it on the volar aspect counteracts medial angulation (fig. 3). Another method of exerting corrective force after application of the cast is changing the length of the sling (fig. 4). A long sling tends to correct posterior angulation; a short sling acts to decrease anterior angulation. Such modifications are indicated when slowly progressive improvement in the position of displaced fragments fails to take place. Repeated alterations of the cast, however, are undesirable and in most cases are unnecessary.

Active exercises form an essential part of the hanging cast treatment (fig. 5). The patient is urged to carry these out twice daily, beginning in a gentle fashion immediately after application of the cast, and continuing more vigorously until full function of the extremity is restored. The shoulder exercises are of two types, circumduction and rotation, and are carried out with the patient standing and leaning forward. In doing the



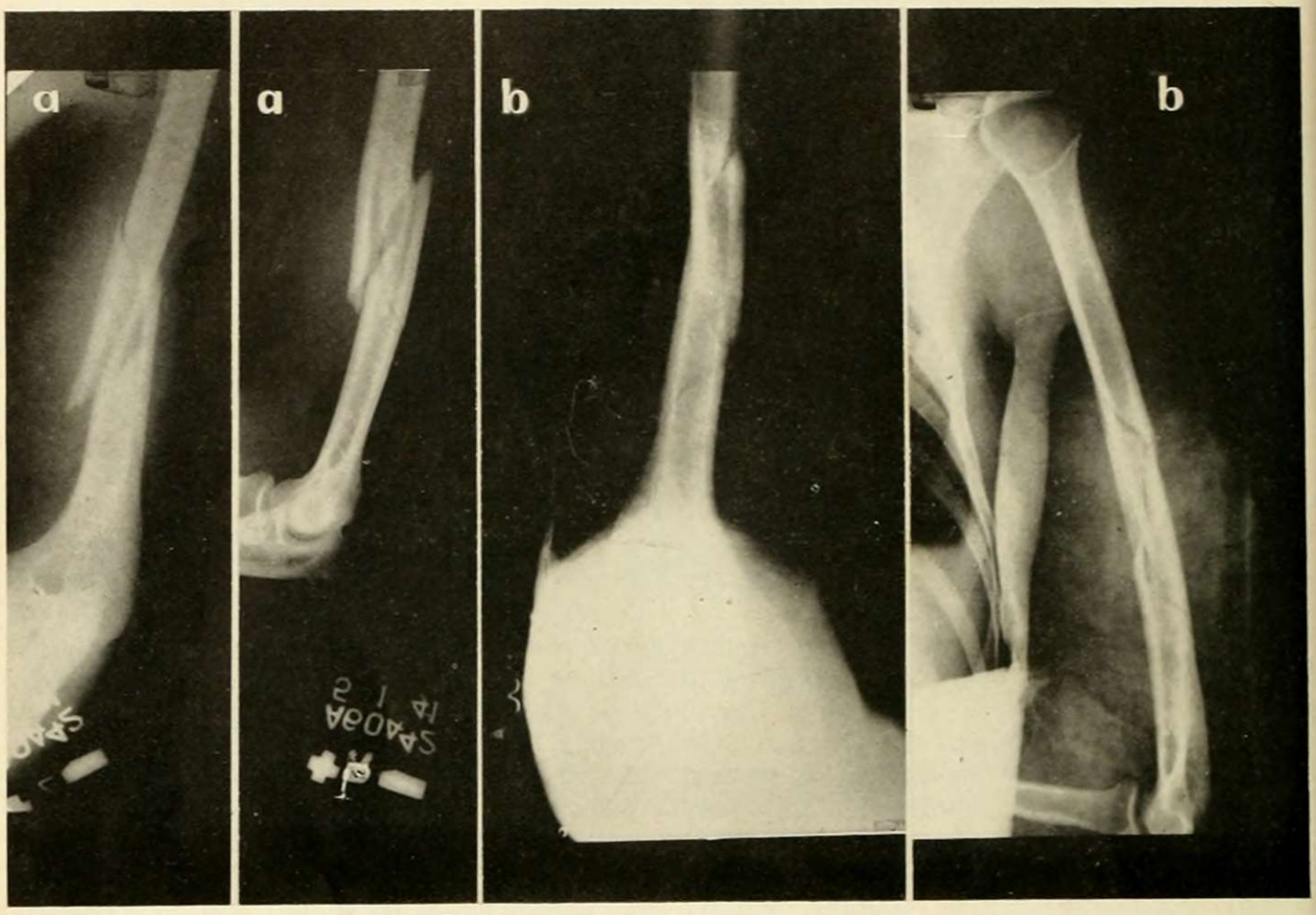


Fig. 6. (A) Comminuted oblique fracture of the middle third of the shaft. (B) After several weeks in the cast, the alignment is improved and union has begun.

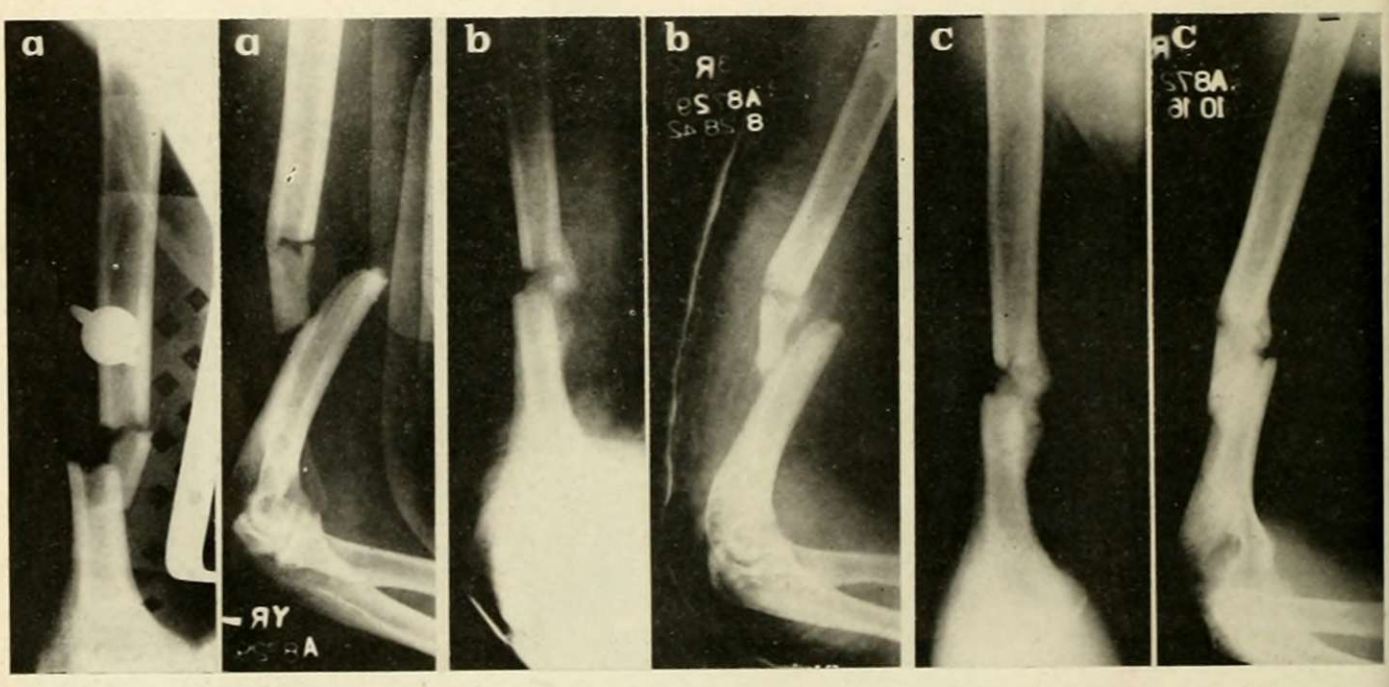


Fig. 7. Comminuted fracture of the shaft with distraction of the major fragments. X-rays made (A) on the day of injury, (B) seven weeks after injury, and (C) on removal of the cast thirteen

circumduction exercise, the patient swings the entire extremity around in as large a circle as he can make. In doing the rotation exercise, he turns the extremity about the longitudinal axis of the humerus through as great an angle as possible. After removal of the cast—at a period varying widely from about two to about twelve weeks after its application — exercise of the shoulder in other positions is added, as are exercises of the elbow and wrist.

Results

In our total of 30 cases treated by the hanging cast, only 20 patients had sufficient follow-up to warrant analysis of the end result. Many of our patients live at a considerable distance from Durham and find transportation difficult. In evaluating the end results we considered the most important criteria to be union, the final joint mobility, and, least important, the final x-ray alignment. We had no case of delayed union or of non-union.

Eight fractures of the shaft of the humerus were treated by this method (figs. 6 and 7), and an excellent clinical and x-ray result was obtained in 3 cases. An entirely satisfactory clinical result with imperfect x-ray alignment was secured in 4 cases. In

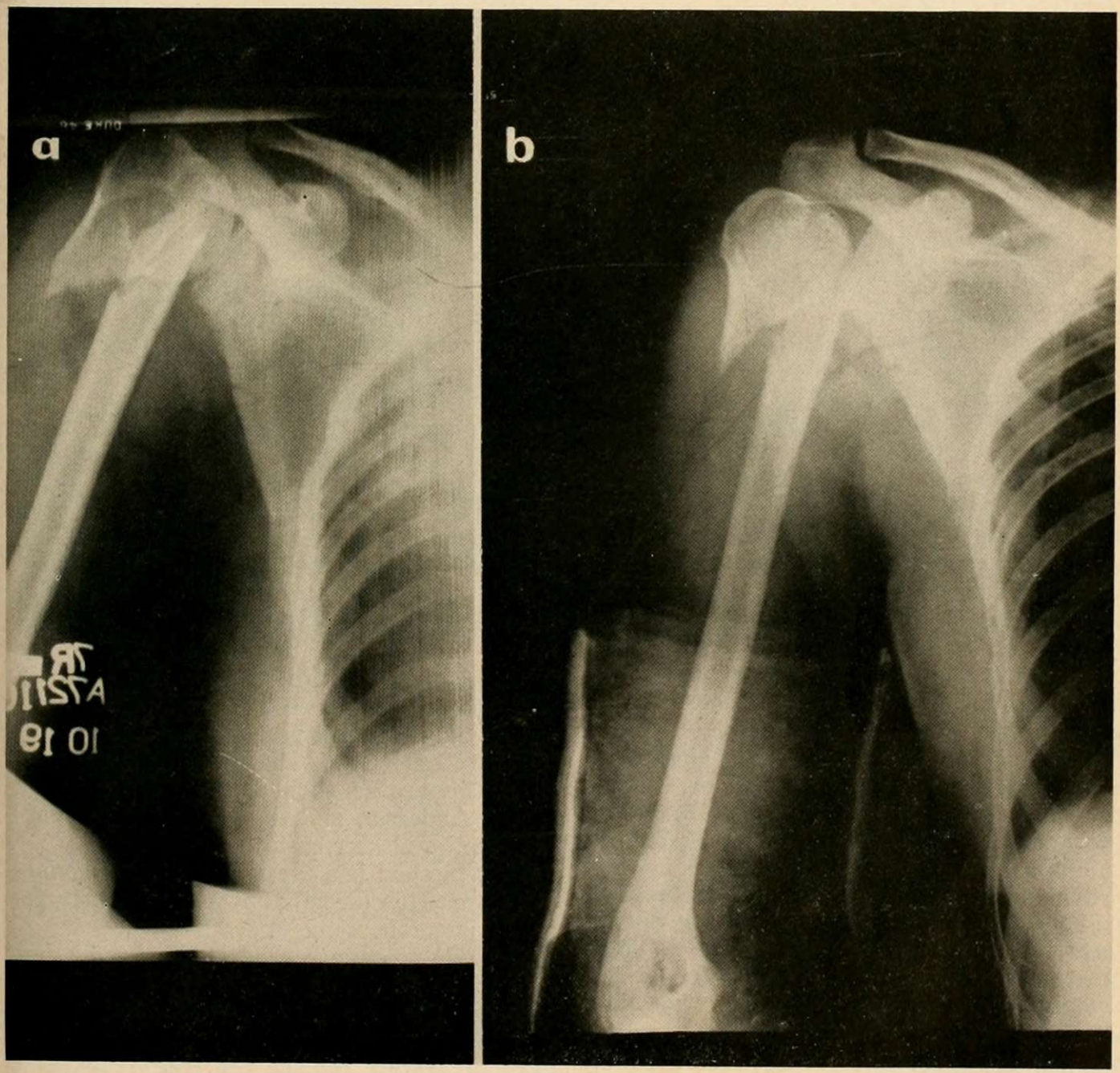


Fig. 8. (A) Displaced fracture of the surgical neck. (B) Three weeks after injury and application of cast, the displacement has not been corrected. The clinical result in this case was entirely satisfactory.

the remaining case the result was satisfactory in all respects except that slight impairment of mobility of the shoulder persisted. This patient was a colored woman of 40 years who sustained multiple rib fractures and a compound fracture of the tibia and fibula in addition to the fractured humerus. She was confined to bed for seven weeks by complications of the chest injury.

In 12 fractures of the surgical neck of the humerus treated only by the hanging cast and shoulder exercises, an excellent clinical and x-ray result was obtained in 4 cases, an entirely satisfactory clinical result with imperfect x-ray alignment in 5 cases (fig. 8), and a poor result in 3 cases. These last 3 patients had severe comminuted fractures which were not reduced by the hanging cast; they developed subluxation of the head of the humerus, necessitating change to a different type of treatment.

Conclusions

We have concluded that application of the hanging cast, followed immediately by active exercise of the shoulder, is an excellent treatment for fractures of the shaft of the humerus regardless of obliquity, comminution, and displacement. A possible exception to this is the uncommon transverse fracture accompanied by distraction of the fragments in the longitudinal axis of the humerus. We have had little experience in treating compound fractures by this method but feel that the hanging cast would provide good treatment following debridement of the wound. We have also found that the hanging cast makes a satisfactory support after internal fixation of fractures of the humeral shaft.

In fractures of the surgical neck, the hanging cast is an excellent method of treatment if the fracture is incomplete, undisplaced, or impacted in good alignment. When the displacement is slight or when a perfect anatomical result is not important, the hanging cast treatment is satisfactory. In our hands the hanging cast alone has not provided uniformly good results in displaced fractures of the surgical neck. We do not feel that it can be relied upon to effect reduction in these cases; when reduction is considered necessary, it should be secured by other means before a hanging cast is applied. We feel, however, that in these fractures impaired mobility of the shoulder is due more cast treatment will often minimize shoulder stiffness. Demonstrable weakness of the soft tissues at the shoulder, post-traumatic or otherwise, contraindicates use of the hanging cast because of the danger of subluxation of the shoulder joint.

Appreciation is expressed to Dr. Lenox D. Baker for assistance in the clinical work on which this paper is based.

A SIMPLE METHOD OF FRACTURE FIXATION WITH THE KIRSCHNER WIRE

DONNELL B. COBB, M.D., M.S., F.A.C.S.
GOLDSBORO

The manifold apparatuses used for fracture fixation are sufficient evidence that no universally satisfactory procedure has yet been evolved. In the reduction and fixation of any fracture, the simplest method that yields good results is always to be preferred.

A fracture that can be reduced and firmly held by the closed method should certainly be treated by that method. A fracture that cannot be satisfactorily reduced by the closed method should have some form of internal fixation applied. There are many types of fractures that always require operation and internal fixation, and in these cases it is folly to waste time in attempting closed reductions.

There is an increasing trend toward open reduction of fractures. Impetus has been given to this by the introduction of the so-called non-irritating metals for internal fixation.

The methods and materials available for internal fixation are varied. The use of Steinmann pins passed through the bone above and below the fracture has been popular in recent years. The fracture is reduced in an apparatus such as that designed by Roger Anderson and the pins are incorporated in the plaster cast.

This method has the advantage of obviating an incision directly down to the fracture, but it is cumbersome and difficult to use. A preferable procedure, where closed reduction cannot be accomplished, is to expose the fracture site, remove any soft tissue that may be between the broken ends of the bone, very accurately replace the fragments, and

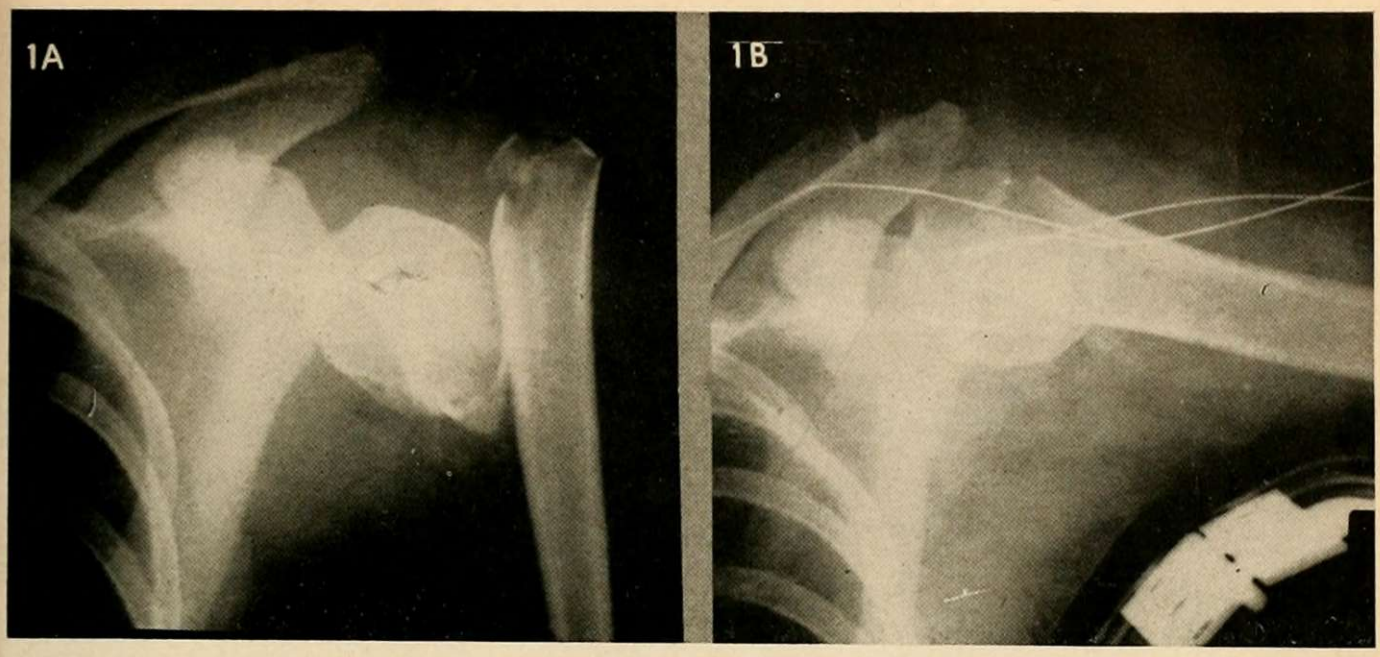


Fig. 1. (A) Fracture-dislocation of the shoulder. (B) Open reduction of the dislocation and fracture, and fixation by three Kirschner wires passed obliquely through the fracture line.

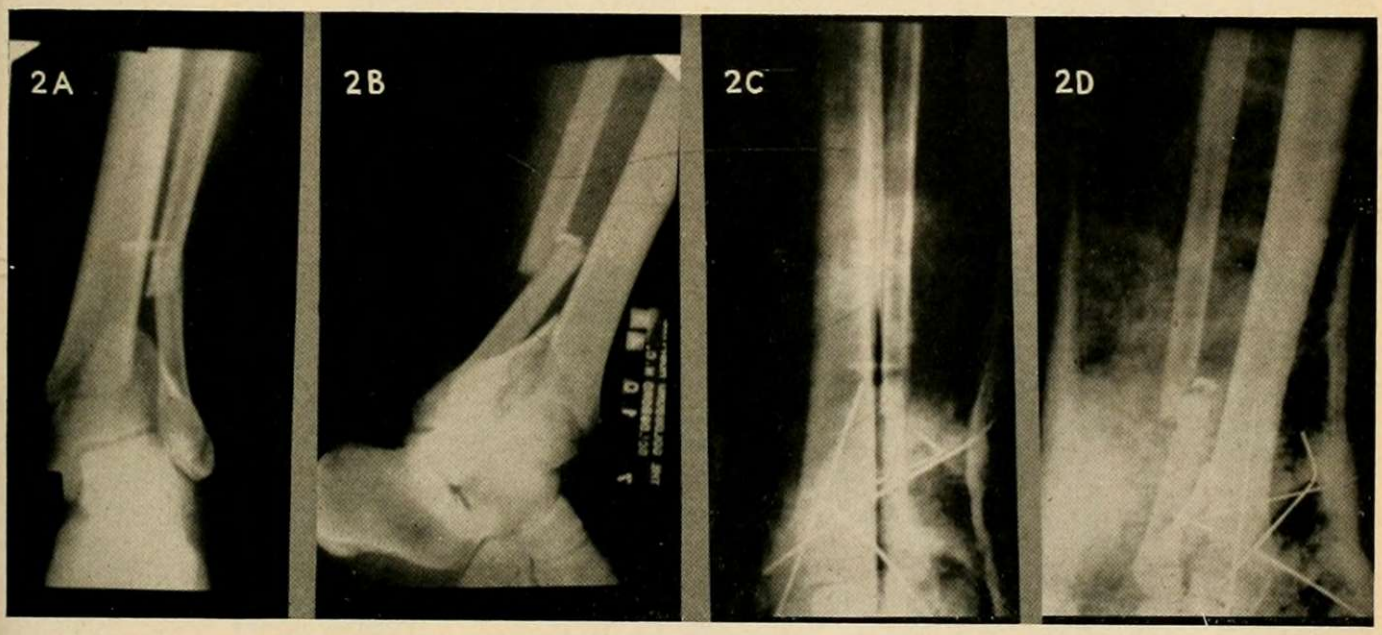


Fig. 2. (A and B) Comminuted fracture about the ankle joint. (C and D) Satisfactory reduction and fixation with four wires.

a nail, a screw, a metal plate, a Parham band, a bone graft, a wire suture, or very occasionally a chromic gut or kangaroo tendon suture. As Dr. Paul Magnuson[1] said, "One point to be kept in mind constantly is that every fracture differs from every other fracture that one has ever seen." The material used for fixation must depend upon the judgment of the surgeon. It should not be irritating to the bone or the surrounding tissue; its application should entail as little disturbance to the periosteum as possible; it should be as small as is compatible with firm fixation, so that a minimum amount of foreign material is left in the wound; and its removal should be simple.

In a number of cases requiring open reduction we have fixed the fracture satisfactorily by passing one or more Kirschner wires diagonally from one fragment into the other, obliquely traversing the fracture line. This method utilizes the crossed-nail locking principle well known to carpenters, holds the fracture firmly in place, results in a minimum of disturbance to the periosteum, and leaves but a small amount of foreign material in the wound. The distal end of the wire should penetrate the cortex of the second fragment of bone. There is no need

1. Magnuson, Paul B.: Simplicity in Fracture Treatment, Bull. Am. Coll. Surgeons 28:135-137 (June) 1943.

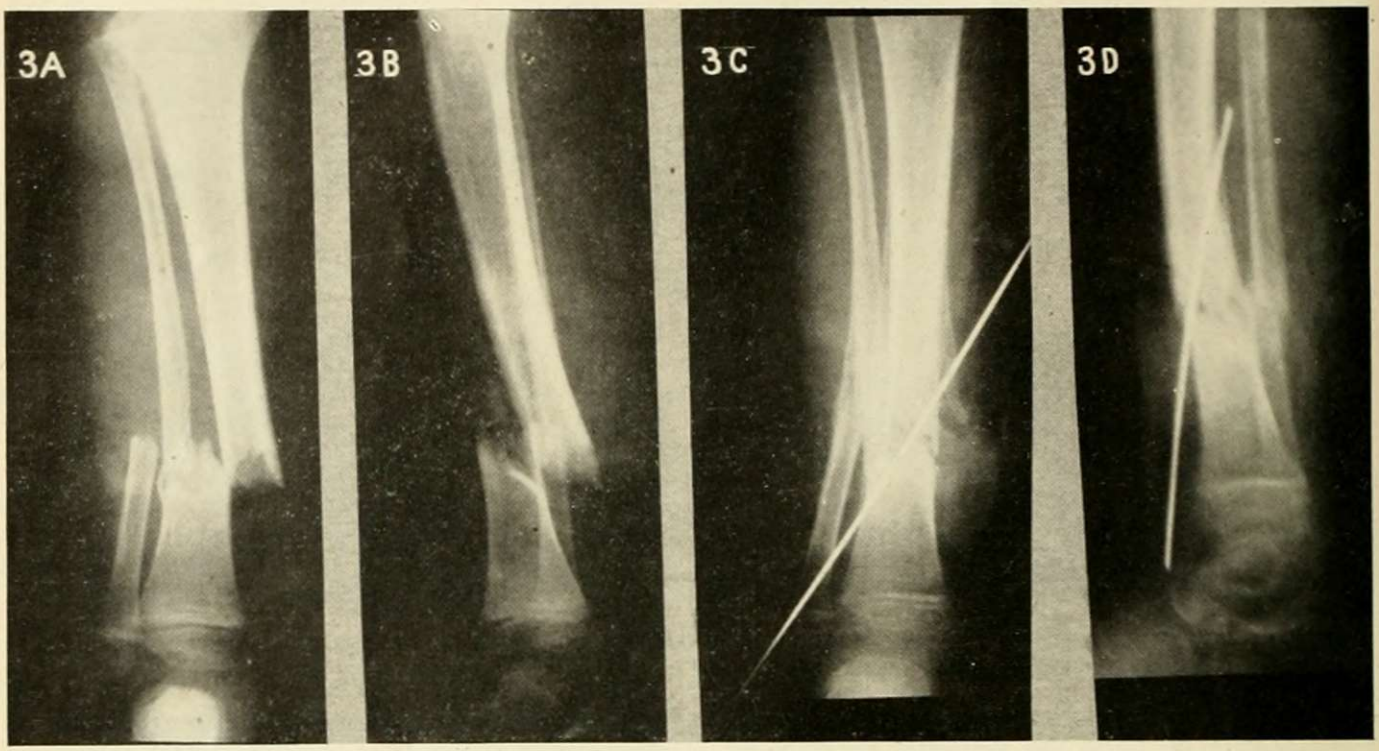


Fig. 3. (A and B) Compound fracture of the tibia and tibula with much destruction of the soft tissues. (C and D) Fixation with one Kirschner wire; a window is left in the cast for subsequent dressings.

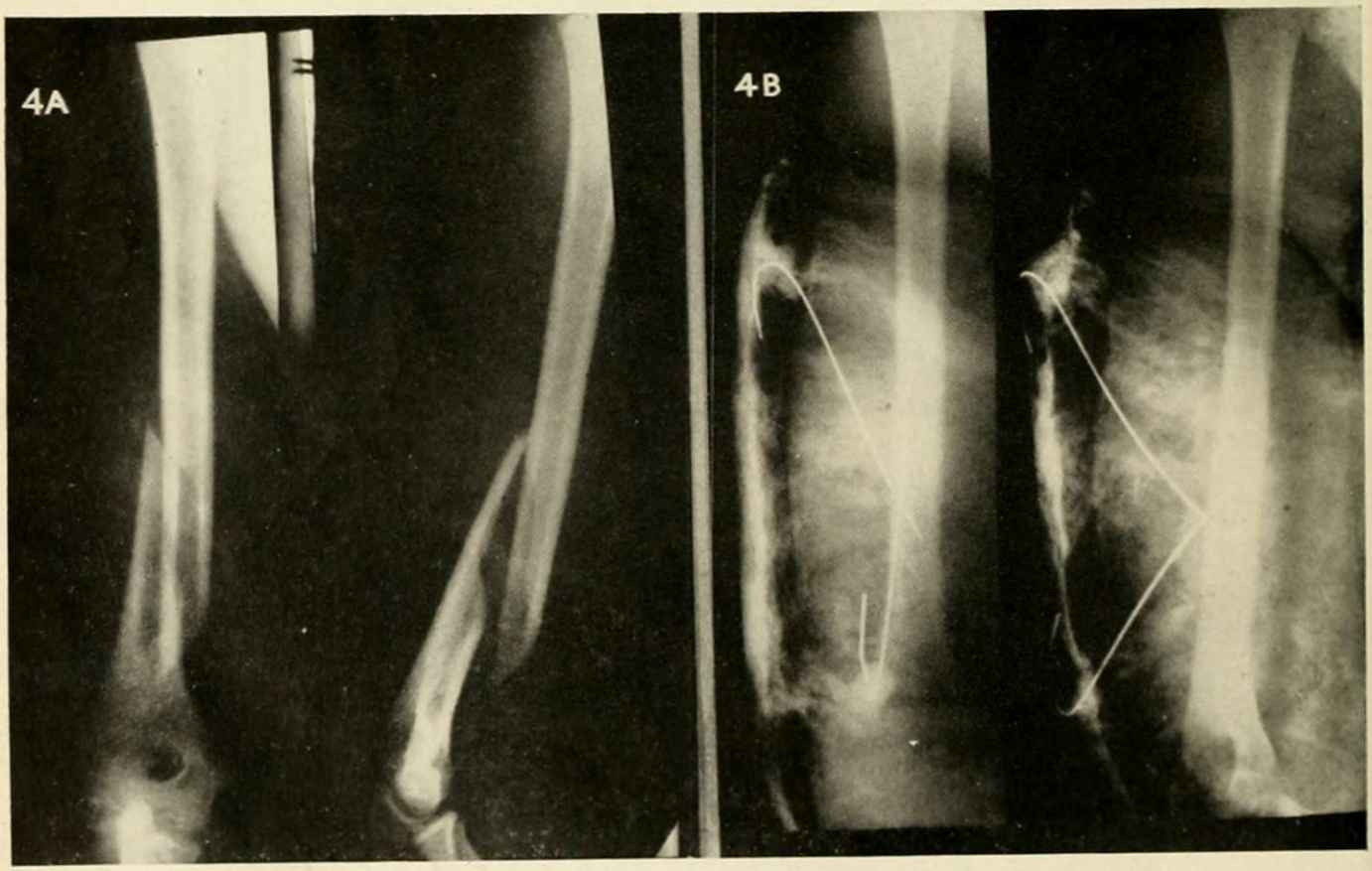


Fig. 4. (A) Spiral oblique fracture of the humerus. (B) Open reduction performed because of symptoms of impingement on the musculo-spiral nerve. Fixation by two Kirschner wires; hanging cast applied.

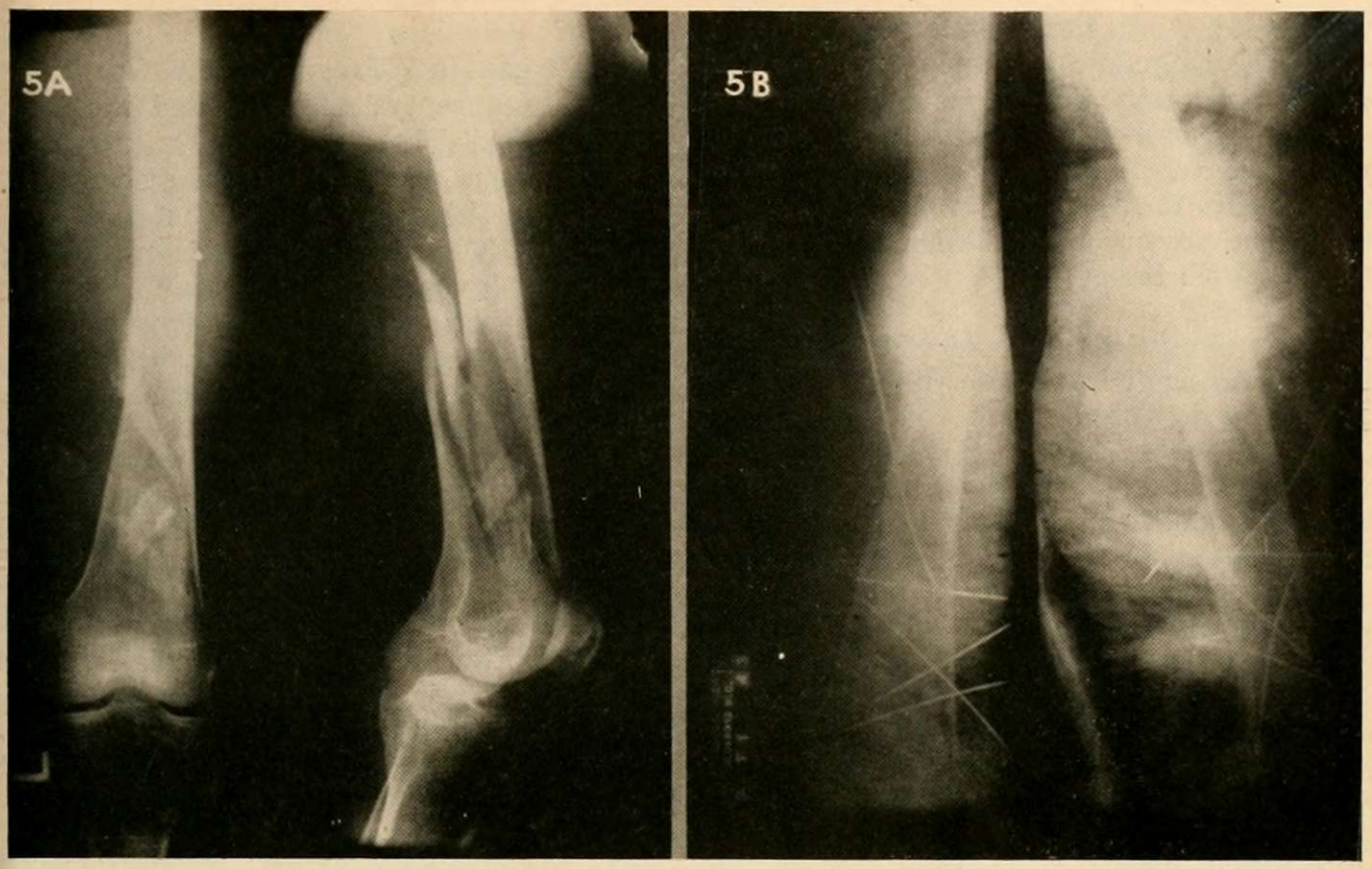


Fig. 5. (A) Comminuted fracture of the lower end of the femur. (B) Open reduction and fixation of all fragments with five Kirschner wires.

to pass the tip out into the soft tissues for any distance, and it should not be allowed to penetrate the skin on the opposite side of the extremity. The proximal end of the wire should extend to the outer part of the supporting cast; it is bent and incorporated in the last plaster roll. This procedure firmly fixes it and prevents its extrusion, its further entrance into the tissue, and its possible migration to distant parts.

After union has become firm, the wires are readily removed by simply nicking the plaster and pulling them out. This is done without discomfort to the patient and without disturbing or weakening the cast. Thus early removal of all foreign material is possible, and the supporting cast is left undisturbed until firm bony union has been accomplished. A second incision for the removal of the fixation apparatus is not necessary. Since the distal end of the wire has not passed through the skin on the opposite side, there is no danger of dragging infection into the tissue as the wire is removed.

Fracture fixation by the simple use of the Kirschner wire is not new. It has been employed for many years in the treatment of fractures of the clavicle[2]. More recently a case was reported in which it was used to reduce a fractured sternum[3]. Unfortunate results have occurred when the wire was extruded before the fracture became firmly fixed or when it worked its way deeper into the tissues and even migrated to other parts of the body. Glocker[4], in a recent issue of the *Military Surgeon*, reports an instance in which the wire migrated into the abdomen following fixation of a fractured femur, and Mazet[5] reports from the National Naval Medical Center a case in which, following blind wiring of an acromioclavicular joint, one wire backed out through the deltoid muscle and the other migrated into the lung, from which it was successfully removed. Bending the end of the wire and fixing it in the plaster will make impossible the occurrence of such catastrophies.

Summary

Having used this method in treating fractures of most of the bones of the extremities,

2. Murray, Gordon: A Method of Fixation for Fracture of the Clavicle, J. Bone & Joint Surg. 22:616-620 (July) 1940.
3. McKim, L. H.: A Method of Fixation for Fractures of the Sternum, Ann. Surg. 118:158-160 (July) 1943.
4. Glocker, R. K.: Migration of Kirschner Wire Into Abdomen Following Fixation of Fractured Femur, Mil. Sur-

we believe it has the following advantages:

1. The technique is simple.
2. It disturbs the periosteum less than any other method of internal fixation.
3. It leaves a minimum amount of foreign material in the wound.
4. The presence of the wires does not interfere with the application of a supporting cast.
5. Bending the outer end of the wire and incorporating it in the cast prevent it from becoming displaced.
6. The wires can be removed as soon as the fracture has become firmly fixed and need not be left in place until complete bony union has taken place. It is a surgical maxim that any foreign material that is not intended to be permanent should be removed as soon as practicable.
7. Removal of the wires can be accomplished without discomfort to the patient, without disturbing the strength of the supporting cast, without a second incision, and without any danger of introducing infection into the wound.

NARCOLEPSY

With Report of Four Cases

F. T. HARPER, M.D.
GRAHAM

Narcolepsy is a syndrome characterized by diurnal somnolence and cataplexy. The latter term refers to a loss of muscle tonus, involving sometimes a small group of muscles, and sometimes all the muscles of the body, and causing spontaneous attacks of powerlessness, sometimes referred to as hypnagogic cataplexy. Sometimes associated with this condition are amnesic states, transient ptosis, terrifying dreams, various degrees of irritability, and "sleep paralysis." This "paralysis" may be pre-dormitial or post-dormitial.

History

The majority of the cases of this disease have been reported in the past ten years. Rushton[1] reported 2 cases of "sleep paralysis" not associated with true narcolepsy. Westphal[2] gets credit for the first description of narcolepsy in 1877. Fischer[3] reported a case in 1878, and in 1880 Gelineau[4] published a report and proposed the term "narcolepsy." The significance of cataplexy as a symptom was first recognized by Loewenfeld[5] in 1902. Camp's contribution[6], published in 1907, was the first description of the complete syndrome to appear in American literature. In 1931 Cave[7] reported a series of 42 cases observed at the Mayo Clinic. The most detailed report was an excellent monograph by Daniels[8] reviewing the literature on narcolepsy up to 1934, and presenting 147 cases from the Mayo Clinic.

Incidence and Age of Onset

The disease seems to occur about three times as often in males as in females. Most cases apparently have their onset in the second and third decades of life.

Pathogenesis

The pathogenesis is still obscure. Much uncertainty still exists as to the pathology, but it is generally agreed that the disturbance is located in the cortex in the region of the third ventricle. Levin[9] has shown that there seems to be a sleep center located in this area. No autopsy has been performed except on one questionable case, that reported by Richard Bright in 1836. This was probably a tumor of the dura. Encephalograms on 22 patients with narcolepsy showed no definite abnormalities.

Diagnosis

The diagnosis of this disease is usually perfectly obvious from the history of untimely sleep and cataplexy, usually precipitated by strong emotion. When some underlying disturbance, such as organic brain disease, psychosis, endocrine disturbances, encephalitis, epilepsy or trauma, is associated with this syndrome, it is classed as symptomatic narcolepsy, in contrast with the idiopathic type.

1. Rushton, J. G.: Sleep Paralysis; Report of 2 Cases, Proc. Staff Meet., Mayo Clinic 19:51-54 (Jan. 26) 1944.
2. Westphal, C.: Eigenthuemliche mit Einschlafen verbundene Anfaelle, Arch. f. Psychiat. 7:631-635, 1877.
3. Fischer, Franz, Jr.: Epileptoide Schlafzustaende, Arch. f. Psychiat. 8:200-203, 1878.
4. Gelineau: De la narcolepsie, Gaz. d hop. 53:626-628 (July) 1880.
5. Loewenfeld, L.: Ueber Narkolepsie, Muenchen. Med. Wchnschr. 49:1041-1045 (June) 1902.
6. Camp, C. D.: Morbid Sleepiness with Report of a Case of Narcolepsy and a Review of Some Recent Theories of Sleep, J. Abnorm. Psychol. 2:9-21, 1907.
7. Cave, H. A.: Narcolepsy, Arch. Neurol. & Psychiat. 26:50-101 (July) 1931.
8. Daniels, L. E.: Narcolepsy, Medicine 13:1-122 (Feb.) 1934.
9. Levin, Max: Mental Symptoms in Narcolepsy, Am. J. Psychiat. 98:673-675, (March) 1942.

Course

This disease does not appear to be progressive. Occasionally cases have been reported in which the patient apparently completely recovered. Seale Harris[10] reported a case associated with hyperinsulinism and cured by partial resection of the pancreas. Palmer[11] recorded a case showing spontaneous remission of the sleep component after eighteen months, but persistence of the cataplectic component.

Treatment

The first drug used in the treatment of narcolepsy was ephedrine sulfate. Effective doses, however, caused unfavorable side reactions. No further progress in treatment was made until the advent of amphetamine sulfate (benzedrine) in December, 1935. This drug acts as a specific in relieving the symptoms[12]. The daily dose varies from 20 to 110 mg. The only untoward side effects observed have been tachycardia and, rarely, skin eruptions. Dextro-amphetamine sulfate apparently gives fewer dermatologic reactions. In July, 1943, Eaton[13] of the Mayo Clinic reported 15 cases of narcolepsy treated with another drug, desoxyephedrine hydrochloride, for nine months. All but 3 patients expressed preference for this new drug over amphetamine sulfate.

Case Reports

I have had 4 cases of narcolepsy since 1936; all were treated with amphetamine, and in 1 case desoxyephedrine hydrochloride was used for six months.

Case 1.

G.D., a white married female, began having terrifying dreams when she was 20 years of age. Her past history was noncontributory and physical examination was essentially normal. Associated with these dreams were attacks of "sleep paralysis," which occurred as soon as she lay down for a nap. During these attacks she was conscious and would moan and struggle, but was unable to move. An attack would eventually be dispelled spontaneously, or merely by shaking her. At times she would have several attacks of "sleep paralysis" before finally going into a normal sleep. About a year after the onset of these attacks she found herself unable to stay awake while riding, attending the theatre, or playing bridge; a short nap was inevitable. After about six months the cataplexy component entered. Her knees would buckle under her, and she would drop anything she had in her hand. These attacks were precipitated by such trivial stimuli as an amusing joke or a good hand of cards.

When I saw her in 1936 this patient had been under observation for nine years and had run the gamut of treatment. In spite of a normal basal metabolic reading she was given thyroid for a period of one year with no apparent results. Ephedrine caused tachycardia and extreme nervousness, and its effectiveness in keeping her awake was doubtful. Since 1936 she has taken 10 to 30 mg. of amphetamine sulfate daily, with complete relief of symptoms. For six months desoxyephedrine hydrochloride was used. It was observed that this latter drug relieved the symptoms but did not give the euphoria experienced with amphetamine. At the present time dextro-amphetamine is used very satisfactorily.

Case 2.

J.W., a white male now 36 years of age, was 24 when he found himself unable to stay awake at work, particularly after lunch. At night he had terrifying dreams and much difficulty in going into a normal sleep. Upon hearing a joke or being amused he would sometimes have to sit down because his knees would buckle. This condition continued for two and a half years with no relief or diagnosis. Then he was put on amphetamine sulfate and his symptoms entirely disappeared. When the drug was discontinued for one day all symptoms recurred. Complete relief of symptoms is obtained by 40 mg. of amphetamine sulfate daily.

Case 3.

B.W., a white male 28 years of age, gave a history of a rather indefinite onset of narcolepsy, but his symptoms when he consulted me were typical. He frequently had to stop

10. Harris, Seale: Epilepsy and Narcolepsy Associated with Hyperinsulinism, J.A.M.A. 100:321-328 (Feb. 4) 1933.
11. Palmer, H. A.: Narcolepsy Brit. M. J. 2:478 (Oct.) 1941.
12. (a) Myers, John W.: Narcolepsy (Case Report), Southwestern Med. 24:372-373 (Nov.) 1940.
    (b) Bloomberg, Wilfred: End Results of Use of Large Doses of Amphetamine Sulfate over Prolonged Periods, New England J. Med. 222:946-948 (June 6) 1940.
    (c) Ulrich, H.: Narcolepsy and Its Treatment With Benzedrine Sulfate, New England J. Med. 217:696-701 (Oct.) 1937.
    (d) Prinzmetal, M. and Bloomberg, W.: Use of Benzedrine for Treatment of Narcolepsy, J.A.M.A. 105:2051-2054 (Dec. 21) 1935.
13. Eaton, L. M.: Treatment of Narcolepsy with Desoxyephedrine Hydrochloride, Proc. Staff Meet., Mayo Clinic, 18:230-236 (July 28) 1943.

his car for short naps, and at times could not remain awake in spite of cold air, loud noises, or incessant smoking. At night, upon going to bed, he would think that people were in the room while he, although perfectly conscious, was unable to move. Shortly afterwards he would wake up in a cold sweat. When he was amused he would sometimes drop anything in his hand. Amphetamine entirely relieved his symptoms, allowing him to continue his work as a salesman and to sleep normally at night.

Case 4.

L.J., a white male of 28 years of age, began dropping books or falling down when he was amused. During these attacks he could not focus his eyes and would see double. In movies he would fall asleep, no matter how interested he was. Usually after a heavy meal he was obliged to take a short nap, waking refreshed. These symptoms were entirely relieved by amphetamine.

Discussion

Following prolonged use of amphetamine sulfate in these 4 cases there has been no abnormality of temperature, pulse, respiration, basal metabolic rate, blood pressure, blood, kidneys, or liver. Further, there is no evidence of addiction or habit formation, although some tolerance is developed. Although I have used desoxyephedrine hydrochloride in only 1 case, for a period of six months, no untoward reactions were observed during that period. Amphetamine was preferred by this patient, however, because of the increased sense of well being which it afforded.

Summary

1. A brief review of the history, symptoms and course of narcolepsy has been presented.

2. Four cases in my own practice have been reported and their treatment has been described.

THUMBNAIL SKETCHES OF EMINENT PHYSICIANS

JOSIAH C. TRENT, M.D., *Editor*

DURHAM

THE EVOLUTION OF THE ASEPTIC PRINCIPLE IN SURGERY

II

ANTONY VAN LEEUWENHOEK (1632-1723)

"Father of Bacteriology"

The discovery of bacteria, another milestone in the advance toward the aseptic principle in surgery, was preceded by numerous theories and hypotheses as to the cause of contagions and infections. Some suggested that the air contained floating bodies or evil vapors capable of producing disease. Fracastoro (1483-1553) propounded some remarkable theories of contagion. His hypothetical "seminaria" suggest our own bacteria. Athanasius Kircher (1602-1680) actually saw "worms" in the blood of plague victims. But the credit for first seeing and describing bacteria and thus reducing previous theories and speculations to actuality belongs to Antony van Leeuwenhoek[1], a draper of Delft, Holland, who ground his own lenses, constructed his own microscopes, mounted his own specimens and subsequently made countless highly original observations on everything from teeth scrapings to the chalk cliffs of Dover.

This extraordinary man, born the son of a basket maker, learned the draper's trade in Amsterdam and subsequently returned to Delft, where he practiced his trade.

During a life of 91 years he was married twice, had six children—only one of whom outlived him—held several municipal offices, and was in general a good, respectable and respected citizen of the community. He became an expert lens grinder but never disclosed his technique. He constructed hundreds of microscopes during his lifetime but rarely gave one away and never sold one. At the time of his death he had 257 completed microscopes and 172 mounted lenses. Today, however, only eight authentic examples survive and none is in the United States or England. All his microscopes were made with simple lenses, although the compound microscope had been known since 1608. Leeuwen-

1. Much of the following information was taken from Clifford Dobell's book, *Antony van Leeuwenhoek and his Little Animals*, New York, Harcourt, Brace and Co., 1932.

hoek's microscope consisted of a single biconvex lens of short focal length (9 mm.) with a maximum magnification of 200-300 times, mounted between two metal plates, usually brass, measuring approximately 2 by 4 cm. Fixed to the plates was a simple "mechanical stage." The object to be examined was glued to the "stage" (a sharp pin or screw), and by manipulation of the thumbscrews was adjusted to the focal point of the fixed lens. The lens was placed close to the eye and the whole held over a natural or artificial source of light. Leeuwenhoek had remarkable eyesight and unbounded patience, but many of his observations were so unique that this method fails to account for them. He states frequently in his letters that he had a "special method" of observing, a secret which he carried to his grave. Dobell thinks, however, that he must have hit upon some method of dark field illumination to have seen motile bacteria as clearly as he did.

Using this simple but highly effective microscope Leeuwenhoek made many important discoveries. All his findings he communicated to the Royal Society of London, of which he was a member, in some three hundred and seventy-five letters spaced over a period of sixty-five years. These he wrote in old fashioned Dutch, since he knew no other language.

> Leeuwenhoek was the first to describe the spermatozoa . . . ; gave the first complete account of the red blood corpuscles . . .; discovered the striped character of voluntary muscle and the structure of the crystalline lens; was the first to see protozoa under the microscope . . .; found microorganisms in the teeth, giving, for the first time, accurate figurations of bacterial chains and clumps, as well as of individual spirilla and bacilli; and demonstrated the capillary anastomosis between the arteries and veins, which Malpighi had already seen in 1660 without attaching much importance to it.(2)

Leeuwenhoek in his later years had numerous visitors, among them rulers and potentates of many countries. He disliked having his work interrupted by the merely curious but received kindly those who were genuinely interested. He jealously guarded his instruments and took measures to prevent their loss. One contemporary visitor's account, while revealing something of Leeuwenhoek's character, also indicated that all was not well between the Dutch and Germans even then: "When he had shown two



Fig. 1. Title page of the last volume of the Dutch collective edition of Leeuwenhoek's Letters (1718) containing an inset portrait of the author from a miniature by J. Goeree. (Author's collection)

or three of his microscopes he took them away and went to look for as many others; saying that he did this for fear lest any of them might get mislaid among the beholders because he didn't trust people, especially Germans; and he repeated this two or three times."

Leeuwenhoek was an extremely accurate observer and never spoiled his observations with speculations—a fact which probably saved him from oblivion. In a letter to a friend Leeuwenhoek beautifully set down his "articles of faith," which might well serve as a guide for us today!

> I must say to you as I oft-times said already that 'tis not my intention to stick stubbornly to my opinions, but as soon as people urge against them any reasonable objections, whereof I can form a just idea, I'll give mine up and go over to the other side: especially because my efforts are ever striving towards no other end than as far as in me lieth to set the Truth before my eyes, to embrace and to lay out to good account the small Talent that I've received; in order to draw the world away from its Old-Heathenish superstition; to go over to Truth, and to cleave

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FEBRUARY, 1945

STATE SOCIETY MEETING POSTPONED

Secretary Roscoe McMillan's message in this issue is brief, but very important. For the first time since the Civil War, the annual meeting of the Medical Society of the State of North Carolina has been postponed indefinitely. "All officers and committees are continued in office until such time as it will seem practicable to have our next meeting." This action was taken by unanimous vote of the Executive Committee "after very careful consideration of all factors involved," in the interest of the nation's war effort. Doubtless the members of the Committee felt that while the Allies are engaged in the supreme effort to crush Hitlerism, the least we at home can do is to cooperate to the

One of the most deeply ingrained traits of human nature is to look for a scapegoat to take the blame for unpleasant events. We have no difficulty on this score. If his Satanic Submajesty, Herr Schickelgruber, had remained content with his humble career as a paperhanger, think how much suffering the world would have been spared! Let us hope that his mad career will soon come to an end, and once more peace will come to the world.

* * * *

HAVE THE ARMED FORCES CRIPPLED MEDICAL EDUCATION?

The *Saturday Evening Post* for January 27 carries a thought-provoking article by Dr. Evarts Graham, Professor of Surgery at Washington University, asking—and fully answering—the above question. It should be read by every doctor in the country, and—more important—by those who determine the policies of our army and navy.

Dr. Graham recalls the lack of adequate preparation for war when Pearl Harbor was bombed, but says that "in at least one respect . . . we were very well prepared. We had the largest group of the most splendidly educated medical specialists in our whole history." These men were rapidly mobilized, and went to work without needing any further medical training. The medical profession is the only large group, except professional soldiers, that did not have to be drafted into service. The work of our medical officers has had much favorable comment ever since our entrance into the war.

As Dr. Graham says, the record made by American medicine in this war is only what was to be expected, for it is generally accepted that American doctors are the best trained in the world. It is all the more amazing, then, that "the Army and Navy have adopted policies which have already effectively prevented our medical schools and hospitals from continuing the supply of trained doctors for the armed services."

Dr. Graham briefly reveiws the revolution in medical education that has taken place since 1904, when the American Medical Association created its permanent Council on Medical Education to inspect and grade medical schools (and later, hospitals). This step was followed by the formation of the

of other organizations designed to stimulate better professional work; then by the creation of the fifteen specialty boards for the certification of specialists. This revolution was accomplished by the medical profession itself, without legal compulsion. Not only were the standards of medical schools raised immeasurably, but hospital training was likewise made more and more worth while.

The Army and Navy now are reaping the benefits of this educational program. Do they appreciate this fact? Judging from their actions, they are so far from appreciating the type of medical service they are getting that they are apparently doing their utmost to sabotage our medical schools and hospitals. Not content with cutting the premedical requirements to a dangerously low level, reducing medical school faculties by 40 per cent, and rushing the stripling students through their medical course at a dizzy speed, they have reduced to a ridiculous minimum the hospital training so essential to produce the highly trained doctors who now make up the bulk of our profession in service.

"Few would believe that the Army, in need of well-trained surgeons, would destroy the only plan of producing them that has been found to work efficiently . . . It is these eager but inadequately trained young officers who will serve . . . where expert surgical judgment is often needed." What is true of surgeons is equally true of medical men.

Still another way in which medical education is being sabotaged is by the decision not to defer any more medical students who are fit for military service. "The only replacements for the doctors who are dying out are the insufficient number of men rejected because of physical defects, and women."

In Dr. Graham's words, "We have been spending our capital . . . If the war proves to be a long one, the need of the armed services for well-trained medical officers will become urgent . . . The health of the home front . . . is now seriously jeopardized by the virtual destruction of graduate medical education."

This article strengthens the position taken by the NORTH CAROLINA MEDICAL JOURNAL more than three years ago[1]—that the ratio between the physicians allotted to the defense forces and those left in the civilian population is altogether disproportionate. Although about 40 per cent of our doctors are in service, there have been, thus far, approximately 32 civilian deaths to one in the services. Deaths from accident in the civilian population have been two and one half times as many as deaths from combat in the armed forces.

Another point which Dr. Graham might well have made is that when the health of the people begins to suffer because of the shortage of doctors brought about by the present program, we may expect the politicians to step in and demand that the control of medical practice be taken over by the government.

1. Medical Care for Military and Civilian Population, Editorial, North Carolina M. J. 2:560 (Oct.) 1941.

* * * *

BRITISH DOCTORS AND COMPULSORY INSURANCE

In *Collier's* for January 27 appears an article by Miss Amy Porter, entitled "Do We Want Compulsory Health Insurance?" In the concluding paragraph of this strongly biased and frequently misrepresentative article are found these two sentences: "No country which has tried compulsory insurance has ever abandoned it. The organized doctors of Great Britain strongly favor more, rather than less, compulsory insurance."

The reason for the truth of the first statement was given by Grover Cleveland many years ago: "The cohesive force of public plunder." One wonders where Miss Porter gets her authority for the second sentence. Certainly not from British medical journals. These have been filled with discussions of state medicine *pro* and *con*, but mostly *con*. An example of the attitude of the average British doctor is to be found in the *South African Medical Journal* for October 14, in an article by G. H. Alabaster, M.D., F.R.C.S. (Ed.), M.R.C.O.G., entitled "A State Service Criticism." Dr. Alabaster says: "Events are moving too fast for us to be blind to the fact that an attempt is being made to rush through 'catch-vote' legislation with a haste rather political than health-searching . . .

"The concern of people in general, in so far as they are aware of the issues, is for their own welfare, quite irrespective of ours. They have been told by the physician novelists, such as Cronin, that our treatment is expensive but not good, and to that outcry there has been, unfortunately, no adequate reply. In consequence we have fallen from grace in the opinion of the public. As

a profession we know all is not perfect in our work; we know, indeed, it never can be; we have acknowledged the fact so ardently that our self-questionings have been interpreted as self-accusation. But our worse mistake has been that we have allowed it to be taken for granted that State Medical Service is a certain road to perfection in our work."

And a report from the British Medical Association on the White Paper proposition includes these observations:

"The medical profession *will resist* any control by the State, either political or administrative, which is inconsistent with their intellectual and professional freedom. They fear political influence on medical matters. They fear bureaucracy and red-tape. They fear subservience of the clinical to the administrative."

Do these quotations support Miss Porter's statement that "The organized doctors of Great Britain strongly favor more, rather than less, compulsory insurance"?

* * * *

A LAYMAN LOOKS AT DOCTORS

This JOURNAL has had occasion in the past to quote from Winston-Salem's printer-philosopher, Mr. John Wesley Clay, whose syndicated column, "My Notions," appears in a number of daily papers. His column for January 19 paid a splendid tribute to the medical profession:

"Time was when typhoid fever was an annual scourge in these parts. Hardly a family escaped its ravages. The victim would languish for days with a burning fever, his strength would ebb away, and after suffering from one to two weeks would either die or recover, sometimes remaining a semi-invalid for a long time. The disease was no respecter of persons. It attacked the robust and strong as well as the physically weak.

"But thanks to the modern doctor typhoid fever has been put to rout. One of the greatest sources of income to the old-fashioned family physician has been done away with, by the doctors themselves, in the elimination of typhoid fever.

"That is one of the reasons why we hold the medical profession in such high esteem. Disease is bread and butter to the physician, yet he deliberately kills his source of income. They are among God's noblemen. We would hate to see government or politics interfere with this brilliant and noble class of men."

DIAMOND ANNIVERSARY OF THE RALEIGH ACADEMY OF MEDICINE

On February 2 the Raleigh Academy of Medicine celebrated its seventy-fifth anniversary with a dinner meeting at the Hotel Sir Walter. Dr. Hubert Royster, who is the oldest living Fellow of the Academy, both in years and in length of fellowship, prepared the program and acted as toastmaster. After Dr. V. M. Hicks, president of the Academy, had welcomed the guests, Governor R. Gregg Cherry brought greetings from the state, Mayor Graham H. Andrews, from the city, and President Paul Whitaker, from the State Medical Society. Dr. Charles P. Eldridge then spoke on "Our Past Twenty-Five Years," and the guest speaker, Major General George F. Lull, reviewed "Some Wartime Problems of the Medical Department and Some of Its Accomplishments."

The Raleigh Academy of Medicine is the oldest local medical organization in North Carolina which has preserved its continuous existence. It has furnished twelve presidents to the State Medical Society; five of these were founders of the Academy.

* * * *

MAJOR EDWARD HARRISON

To the long and constantly growing list of medical men who have given their lives in the service of their country must be added the name of Major Edward T. Harrison of High Point, who died at the Moore General Hospital on December 18.

Dr. Harrison did not have to go into service, for he had reached an age that would have allowed him to stay at home and care for his large and loyal practice without fear of criticism. The call of duty was so strong, however, that he volunteered in July, 1942, and was at once commissioned a major. He left this country in December, 1943, and spent a year in the Pacific as Chief of Surgical Service, 37th Station Hospital. While in New Guinea he contracted dysentery, from which he never fully recovered. He continued at his post of duty until it was evident to his fellows that he was mortally stricken, and died within a few days after being flown to the Moore General Hospital. The final cause of his death was given as aplastic anemia, but Major Harrison was as truly a casualty of the war as if he had been killed by a bullet or bayonet.

"Greater love hath no man than this, that a man lay down his life for his friends."

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE HOSPITAL
DURHAM

DAVID CAYER, M.D.
and
I. N. DUBIN, M.D.

DR. CAYER: A 59 year old white, married male was admitted complaining of "inability to eat anything" for the past two years, weight loss, weakness, and jaundice.

The family and marital histories were non-contributory. Approximately thirty years ago the patient had had jaundice; otherwise he had always been well.

The patient stated that two years before entry, following the extraction of all his teeth because of dental caries, he began to lose his appetite. He experienced nausea and vomiting on occasions, but no abdominal pain. He became gradually weaker over the period of two years, and his weight dropped from 175 to 153 pounds. Several weeks before entry icterus was noted, and at approximately the same time the stools became light in color. The jaundice increased until the time of admission. The patient had always been constipated and had had no diarrhea or bloody stools. At another hospital, one week prior to entry here, he received three transfusions because of "low blood," and a rather large amount of quinine, although no history of malaria was obtainable.

Physical examination showed his temperature to be 38.5 C., his pulse 88, respiration 20, and blood pressure 120 systolic, 70 diastolic.

The patient was an obviously ill, toxic, drowsy, nauseated, weak, cachectic, deeply icteric white male with extremely pale mucous membranes. No spider angiomas or purpuric spots were noted.

The eyegrounds were not remarkable. The tongue was dry, red and smooth. Complete edentia was present. Soft, enlarged lymph nodes were present in both superior cervical triangles and in the left axilla. A hard node 2 to 3 cm. in diameter was present in the left supraclavicular region.

apical systolic murmur was present. The abdomen was distended and there was a questionable fluid wave. No prominence of the superficial veins was noted. The liver was moderately tender and extended 6 cm. below the costal margin into the midepigastrium, but no mass was palpable. The spleen was hard and extended 8 cm. below the costal margin in the anterior axillary line. Examination of the abdomen three days after entry, when the patient was much more relaxed, revealed several hard nodules easily palpable in the abdomen; their exact location was not given in the record. There was no edema.

The hemoglobin was 9.5 Gm. or 61 per cent, red blood cells 2,980,000, white blood cells 5850, with 59 per cent segmented polymorphonuclears, 16 per cent nonsegmented polymorphonuclears, 2 per cent juveniles, 4 per cent small lymphocytes, 5 per cent large lymphocytes, and 14 per cent monocytes. The color index was 1.05, the mean corpuscular hemoglobin content 13, the mean corpuscular volume 93, reticulocytes 2.5 per cent, platelets 250,000. Bone marrow studies showed a total nucleated cell count of 15,000, with 10,000 white blood cells and 4 per cent reticulocytes. A differential bone marrow white cell count showed 43 per cent segmented polymorphonuclears, 22 per cent nonsegmented polymorphonuclears, 11 per cent juveniles, 2 per cent myeloblasts, 1 per cent undifferentiated myelocytes, 6 per cent neutrophilic myelocytes, 2 per cent small lymphocytes, 2 per cent large lymphocytes, 1 per cent plasma cells and 1 per cent monocytes. Four normoblasts and 41 erythroblasts were found per 100 white blood cells. Hematologic study indicated a relatively empty bone marrow and an elevated monocyte count in the peripheral blood.

The stool was soft and light brown; the benzidine test and microscopic examination were negative; no bile pigment test was done. The urine showed a specific gravity of 1.013 and no sugar or albumin; it was negative microscopically, except for several granular casts, and the benzidine test was negative. No urobilinogen or bile pigment test was recorded.

Serological studies of the peripheral blood were negative. Blood chemistry studies were as follows: nonprotein nitrogen 56 mg. per 100 cc. on admission, Van den Bergh reac-

17 Bodansky units per 100 cc., vitamin A 37 international units per 100 cc. (normal), carotene 221 international units per 100 cc.; total proteins 5.8 Gm. per 100 cc.—albumin 2.4, globulin 3.4 Gm. Blood cultures showed no growth.

An x-ray of the chest revealed some clouding in the right mid-lung field. The diaphragms were smooth. The heart was slightly enlarged to the left. A flat plate of the abdomen showed a large amount of gas in the stomach. The liver and spleen appeared enlarged; no other changes were visible.

The nonprotein nitrogen one day before death was 213 mg. per 100 cc. A blood count made one day before death showed a hemoglobin of 47 per cent, 2,250,000 red blood cells and 9500 white blood cells, with 58 per cent segmented polymorphonuclears, 18 per cent nonsegmented, 4 per cent juveniles, 1 per cent undifferentiated myelocytes, 10 per cent small lymphocytes, 1 per cent large lymphocytes, and 8 monocytes. There were 1 normoblast and 2 erythroblasts per 100 white blood cells. The platelet count was 150,000.

Course in Hospital: The patient's temperature varied between 37.4 and 39 C., with a rather slow swing and a corresponding pulse rate throughout his first hospital week. During the second week his temperature dropped below the base line for several days, but during the few days immediately prior to death averaged 37.2 C., the pulse still in proportion. A biopsy of the hard node in the left supraclavicular region was obtained, and the report is being purposely withheld by the pathologist. The patient at no time roused from the stuporous, drowsy state, which progressed to coma. He expired quietly in coma on his thirteenth hospital day. Therapy consisted of supportive measures, including parenteral sodium chloride, dextrose and vitamins.

Discussion

DR. CAYER: The problem is that of a gradually progressive illness of approximately two years' duration in a 59 year old white man. That the patient dates his loss of appetite to the period following the removal of his teeth does not mean that the two facts are necessarily related. Removal of teeth—unfortunately all too common—would hardly account for persistent anorexia. In gradual sequence nausea, vomiting, weakness, weight loss and jaundice developed. While there is a previous history of jaundice thirty years ago, the complete absence of any other history of colic, intolerance to fats, or digestive complaints in the interim rather indicates that this was probably catarrhal jaundice. One week before admission to this hospital he received three blood transfusions and was given large amounts of quinine, although there is nothing to suggest that he had malaria. We may assume that he was anemic and febrile at this time. Throughout the history the absence of any mention of pain is striking. The physical findings of semi-coma, icterus, pallor, and enlargement of peripheral nodes, liver and spleen bring us to a consideration of the conditions which might produce this picture, some of which may be ruled out quite easily.

Multiple myeloma can be passed over because of the absence of pain or skeletal involvement, auto-agglutination, Bence-Jones protein, elevated serum globulin, or plasma cells in the sternal marrow.

Lymphosarcoma originates usually in the mediastinal and cervical nodes and is rarely a cause of splenomegaly. Cachexia is not a part of the clinical picture but occurs only as a terminal event.

Primary carcinoma of the liver is relatively uncommon. Enlargement of the spleen and peripheral nodes usually does not occur, and the average duration in untreated cases is three to twelve months. The history of two years' duration, if correct, would rule out this diagnosis.

Secondary carcinoma of the liver is a far more likely possibility; the most frequent primary sites are the colon, gallbladder and bile passages, and the stomach. The complete absence of changes in bowel habits or in stools, and the absence of bleeding or obstruction over a period of two years would probably eliminate the colon as a primary site. With *primary carcinoma of the gallbladder or ducts*, a history of previous gallbladder infection or colic is the rule, while marked splenomegaly is not. Also, jaundice occurs early and is usually accompanied by pain. Severe and rapidly progressive jaundice characterizes *carcinoma of the head of the pancreas*, and the picture of anemia, with splenic and lymph node enlargement does not fit this diagnosis at all. Contrary to what is generally written, about 40 per cent of such patients give a history of pain at some time.

Carcinoma of the stomach is a distinct possibility. The insidious onset of anorexia, followed by nausea and vomiting, is highly suggestive. Anemia secondary to an infiltrative lesion of the stomach is well recognized, and the hepatomegaly and jaundice could result from metastases. Fever is a frequent finding in abdominal malignancies. In carcinoma of the stomach it is uncommon except when metastases have occurred. Against this diagnosis are the following facts: It is specifically stated that no epigastric mass was felt. While untreated carcinoma of the stomach might have a duration of two years, it would be unlikely. Marked splenomegaly is uncommon, and it is reasonable to expect pain, at least during the last few months. We have no information as to the amount and character of the vomitus, both of which are of extreme importance in diagnosis. It is stated, however, that the stool benzidine test was negative. If this statement is the result of more than one test it is highly significant, since 90 to 95 per cent of the patients with advanced carcinomas of the stomach have occult blood in the stools, with a positive benzidine test. Bleeding may also occur as an early symptom.

The entire sequence of events in this case can be adequately explained by one clinical entity—namely, *Hodgkin's disease*. While it is true that this diagnosis is most frequently brought to mind by painless enlargement of the cervical nodes, the abdominal form is not uncommon. It is in this particular type that the fever is most prominent, along with enlargement of the liver and spleen.

The statement is made in some texts of pathology that the spleen is always enlarged, and in probably 60 per cent of the cases can be palpated. Constitutional symptoms are often lacking in the early phase of the disease, but once the disorder is well developed, weight loss and cachexia usually are marked. Pain is not usually pronounced unless it is due to pressure or to bone lesions. The blood picture, while not diagnostic, may be helpful. A low white blood cell count is frequently found in patients with abdominal Hodgkin's disease. Monocytosis is suggestive of Hodgkin's, as is eosinophilia. The resistant anemia probably represents an invasion of the bone marrow. In untreated cases the average duration is two or three tion caused by enlarged nodes at the liver hilus or from actual invasion of the liver by Hodgkin's tissue, with compression of the bile canaliculi. The rapidly rising nonprotein nitrogen is of interest in this case. We do not know from the history whether anuria developed before death. Possible explanations for the rising nonprotein nitrogen would include obstruction of the ureters by tumor masses, actual infiltration of the renal substance, extra-renal azotemia due to fall in blood pressure, anoxemia, and the possibility that owing to the extensive liver destruction, the nonprotein nitrogen as measured represented primarily amino acids. A urea ratio might have been helpful.

Dr. Cayer's Diagnosis

1. Hodgkin's disease with involvement of abdominal and peripheral nodes, liver, spleen and bone marrow.

Anatomical Discussion

DR. DUBIN: The left supraclavicular node removed for biopsy showed the typical picture of Hodgkin's disease. At autopsy the main findings were an infiltration of the liver, spleen, bone marrow and lymph nodes by Hodgkin's tissue. The periaortic lymph nodes were especially enlarged. The spleen weighed 750 Gm. (normal weight 160 Gm.) and the liver 2,350 Gm. (normal weight 1550 Gm.). The jaundice was due to the obstruction of the intrahepatic bile ducts by the diffusely proliferating Hodgkin's tissue. The lymph nodes around the extrahepatic bile ducts were not particularly enlarged and did not play a part in the production of the jaundice. There was a fresh terminal lobular pneumonia.

I cannot explain the elevation of the nonprotein nitrogen, for although there were bile casts in the renal tubules there was no demonstrable damage to the glomeruli, the tubular epithelium or the interstitial tissues; therefore, I have no basis for saying that the elevated nonprotein nitrogen was of renal origin.

Anatomical Diagnosis

1. Hodgkin's disease with involvement of the liver, spleen, bone marrow, and lymph nodes.

2. Jaundice due to obstruction of the in-

TUBERCULOSIS ABSTRACTS

A Review for Physicians

ISSUED MONTHLY BY THE NATIONAL TUBERCULOSIS ASSOCIATION

VOL. XVIII FEBRUARY, 1945 NO. 2

TUBERCULOSIS among older people remains one of the stubborn pockets of resistance in the general campaign aimed at the eradication of the disease. For the most part we must rely upon the general practitioner to carry out this phase of the struggle, for the individuals concerned are usually among his patients and outside the range of the present "mass" control measures.

TUBERCULOSIS IN ELDERLY PEOPLE

The importance of tuberculosis in elderly people, especially pulmonary tuberculosis, has been generally underestimated. One reason for this is that few of us have any conception of the number of older people among us. There are in the United States nearly four thousand persons over 100 years old; over 87 thousand who are past 90; more than one million who are over 80; more than five million over 70; and 13.5 million over 60. These, with 13 million in their fifties, make a total of over 26.5 million persons over 50, more than 20 per cent of the whole population.

The U. S. Census figures for 1870 showed only about 11 per cent of the population over 50 at that time. A reduction in mortality from infectious disease, increased application of sanitary science, better housing and nutrition are all contributing to the longer life of the present day. How permanent the present large percentage of older people in the population will be, we cannot tell. Continued wars followed by widespread epidemics, may again reduce life expectancy to that of the middle ages.

Now, however, when about one fifth of our population is elderly, it is important that we know how much of it harbors tuberculosis, and how much of a menace to the community this represents. Is tuberculosis in the later decades of life increasing?

Figures from the U. S. Census Bureau show that the mortality rates from tuberculosis in the United States in 1940 were much higher in the later decades of life than among young people. The highest rate in 1940 at any age period, that of males between 55 and 65, was 110 per 100,000. In 1900 the highest rate for males, 362 per 100,000, was in the age period 35 to 39.

The death rate from tuberculosis is still relatively high in persons over 50, and since this group forms about 20 per cent of the population, there are many elderly tuberculous persons in the country. Using the very conservative factor of five active cases for every death, the active cases, many of which are spreading infection, may be estimated as at least 100,000. Not all of these cases are in sanatoria.

Pathology

There has been a great deal of controversy regarding the seriousness of tuberculosis in old people. Some have considered it relatively benign, while others have thought it rapidly progressive. In one report of a series of 142 cases over 55 years of age admitted to a sanatorium, many of the patients had active tuberculosis with positive sputum for periods of from 10 to 40 years. The number of tubercle bacilli eliminated by sputum-positive cases which remain positive for periods as long as 10, 20, 30 or 40 years, can only be faintly realized or comprehended, in this respect being comparable only to national expenditures for war and other purposes.

The patients in sanatoria are for the most part those with active or progressive lesions. Probably a large proportion of the fibrotic cases with few symptoms are at home. This circumstance makes it difficult to determine the typical characteristics of pulmonary tuberculosis as it affects elderly people.

Aging tissues are said to be less susceptible to inflammatory processes than growing ones, and tend to develop fibrous change. Obliteration of lymphatic channels and involutional changes take place which may render the body resistant to the spread of tuberculosis. On the other hand there is probably

concomitant atrophy, decalcification and dehydration. A few individuals may reach old age without previous infection and develop primary tuberculosis, not always distinguishable clinically from reinfection tuberculosis.

Many elderly persons who have definitely recognizable tuberculous lesions with positive sputum have become somewhat immune to the toxic effects of their disease, and make up a highly infectious class. In this group are included the so-called "good chronics" with positive sputum who do not consider themselves ill. Some of them care for young children or are otherwise in close contact with susceptible persons.

The course of events in any individual case is dependent not only on exposure to fresh infection or on the reactivation of old quiescent foci, but also on the endowment of the individual with more or less resistant tissues. Although tuberculosis may only become manifest and troublesome in later life, its origin usually is to be sought in an earlier period.

Differential Diagnosis

While tuberculosis is relatively common in later life, its detection is frequently difficult. Diseases likely to cause confusion are frequently met. Included among them are cancer, cardiovascular disease, chronic bronchitis, emphysema, bronchiectasis, asthma and silicosis. If the sputum does not contain tubercle bacilli, the differentiation becomes increasingly difficult. Cough, weakness, loss of weight, hemoptysis and other symptoms found in tuberculosis may be present in other conditions with consequent difficulty in differential diagnosis.

Many cases of tuberculosis in older people are not detected because few of them have had chest X-rays. Most of the surveys have been among children and young people who are much more easily persuaded to cooperate. It has been difficult to secure the consent of older people for examination. They pay less attention than young people to declining health, which they feel is to some extent inevitable. Their tired feeling they consider a normal accompaniment of old age. They do not like to change their environment and are fearful lest there may have to be radical alterations in their way of living. Inertia and dread of loss of security make them hesitate.

Methods of search for unsuspected cases of tuberculosis, however, are changing. The X-ray, our most valuable resource for this purpose, is being used more freely since it is becoming less expensive. An X-ray of the chest will soon be part of the routine examination of all patients seen by physicians in their offices, just as it is now becoming a part of up-to-date clinic practice.

Treatment

The treatment of tuberculosis in old people is in many respects the same as it is for those in early life. Rest of the inflamed area is the keynote and will probably be necessary even if some day some form of chemotherapy is found. Certain difficulties in the rest treatment of elderly patients are apparent. Complete immobilization is not well borne by the aged and mechanical measures to secure lung rest are less applicable for them. Symptomatic treatment and good nursing may bring good results where mechanical adjuncts to bed rest are not advisable. Exceptional cases will doubtless have to remain at home. The physician should, however, not accede to such a plan without a full realization of the risks involved, and the possibility of infecting an entire family and a new generation.

The entire population needs and deserves good medical supervision. Persons with arrested tuberculosis, in order that they may be kept from reactivating their lesions and becoming spreaders of tubercle bacilli need more than the average medical attention. Older persons in this category will require as much consideration and follow-up as younger patients.

Tuberculosis in Elderly People, A. T. Laird, M.D., The Journal-Lancet, June, 1944.

CORRESPONDENCE

New Guinea

Members of the Editorial Board and
Medical Society of the State of North Carolina

Gentlemen:

For more than a year it has been appropriate that I express my gratitude for receiving the Medical Journal so regularly. It is indeed a great help and I find it more interesting here than when I was in the States. Of the medical men whom I know from so many states, none receive their state journal gratis, as we do. Thanks.

(Signed) CREIGHTON WRENN
Captain, Medical Corps

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.
Raleigh

Evidence: *A medical expert may base his opinion upon the clinical history, his observations, and the patient's description of his symptoms.*

The plaintiff in this case sustained injuries while riding on a passenger train which collided with a freight train.

In Superior Court it was brought out by testimony that there had been no objective findings such as broken bones or abrasions of the skin. Despite this fact the plaintiff's physicians were allowed to testify concerning the patient's exclamations and other verbal indications of pain, and his inability to handle himself normally, and they were also permitted to give opinions based upon those facts as well as upon the appearance of the plaintiff at the time of their examinations. One of the physicians was allowed to state that when he examined the plaintiff shortly after the injury, the latter was unable to draw up one of his legs except very slowly, and complained of pain whenever he moved. Other physicians who examined the plaintiff at the time of the trial, and immediately before that time, testified about tests that were made to determine whether the legs of the plaintiff were paralyzed. They all gave opinions based upon what may be termed a clinical history of the case, their own observations, and the results of the tests which they performed.

The judgment in Superior Court was for the plaintiff. The defendant appealed to the Supreme Court, and among other errors alleged, objected to the testimony of the physicians concerning the extent of the plaintiff's injuries.

When this case was considered by the Supreme Court, this tribunal stated in substance that a medical expert may base his opinion on the clinical history of a case under consideration, and in order to make his testimony intelligible, may testify as to the observations that he made, and also as to what his patient said to him in describing his bodily condition and the character and manifestations of his sickness. The reason for this rule is that, of necessity, the physical condition of the patient, and the nature and extent of his malady or injury. The rule being founded on such necessity, it has been declared that it must be applied with caution, and not extended beyond the reason of necessity upon which it rests. The Court further stated that the mere statement made by a patient for the sole purpose of furnishing the expert with information on which to base an opinion is not admissible, and that the witness in testifying to what he has heard and observed is confined to exclamations, shrinkings, and other expressions which appear instinctive, involuntary, and spontaneous. (Arkansas Supreme Court, Spring Term, 1915, Vol. 176 S. W. 134.)

BULLETIN BOARD

SECRETARY'S MESSAGE

The Executive Committee of the Medical Society of the State of North Carolina, after very careful consideration of all factors involved, voted unanimously to postpone the Ninety-Second Annual Session, which was scheduled to be held at Pinehurst April 30, May 1 and 2, until the ban for conventions is lifted.

This action was taken voluntarily in order to cooperate to the fullest possible extent with the request of the Office of Defense Transportation and in the interest of the nation's war effort.

All officers and committees are continued in office until such time as it will seem practicable to have our next meeting.

Roscoe D. McMillan, M.D.
Secretary-Treasurer

* * * *

Minutes of Meetings of the Executive Committee, Legislative Committee, and Committee to Advise with Members of the Governor's Commission to Extend Medical and Hospital Care in North Carolina

December 31, 1944

A joint meeting of the Executive Committee, the Legislative Committee, and the Committee to Advise with Members of the Governor's Commission to Extend Medical and Hospital Care in North Carolina was held with the Governor's Commission to

The following were present:
Executive Committee:
Dr. Paul F. Whitaker, President
Dr. Zack D. Owens, Second Vice President
Dr. Roscoe D. McMillan, Secretary-Treasurer
Dr. John Cotten Tayloe, Councilor Second District
Dr. Newsom P. Battle, Councilor Fourth District
Dr. F. L. Knight, Councilor Fifth District
Dr. M. D. Hill, Councilor Sixth District
Dr. Fred M. Patterson, Councilor Eighth District
Dr. I. E. Shafer, Councilor Ninth District
Legislative Committee:
Dr. Hubert B. Haywood, Chairman
Dr. Ben F. Royal
Dr. P. P. McCain
Dr. W. M. Coppridge
Dr. Donnell B. Cobb
Committee to Advise with Members of the Governor's Commission to Extend Medical and Hospital Care in North Carolina:
Dr. George L. Carrington
Dr. V. M. Hicks
Dr. T. L. Carter
Dr. Erick Bell
Dr. G. G. Dixon
Dr. Fred M. Patterson
Dr. Julian Moore
Dr. M. D. Hill
Dr. I. E. Shafer
Dr. W. Raney Stanford

Governor Broughton called the meeting to order at 2:30 p.m., stating that the purpose of the meeting was to draft a bill to be introduced in the 1945 legislature to extend medical and hospital care in North Carolina and increase the facilities for the education of medical personnel at the University.

The meeting was then turned over to Mr. Clarence Poe, Chairman of the Governor's Commission, who read the bill. After much discussion and several changes in the bill, it was unanimously approved by the Executive Committee of the State Medical Society.

The meeting thereupon adjourned at 5:30 o'clock.

* * * *

This meeting was immediately followed by a meeting of the members of the Executive Committee, which was called to order by President Whitaker at 5:30 o'clock, in executive session.

Dr. Hubert B. Haywood, Chairman of the Legislative Committee, stated that the 48 osteopaths in North Carolina are demanding recognition from the 1945 legislature and asking that they be allowed to prescribe drugs in an emergency. It was the unanimous opinion of the Executive Committee that this is an entering wedge for the osteopaths to practice medicine in North Carolina, and inasmuch as they are demanding recognition on the Board of Medical Examiners the Executive Committee felt that there should be some change in the Medical Practice Act, certainly in regard to this phase of it.

Dr. M. D. Hill made a motion that the Secretary-Treasurer confer with the American Medical Association regarding the draft of a proposed law that will be suitable to North Carolina for the 1945 legislature, this draft to be mailed for study to the members of the Executive Committee, Legislative Committee, and Board of Medical Examiners. After this study has been made, President Whitaker is to call a meeting of the Executive Committee, the Legislative Committee, and the Board of Medical Examiners to discuss the proposed bill to be presented to the 1945 legislature. This motion was seconded by Dr. I. E. Shafer and unanimously carried.

Dr. Haywood also stated to the Executive Committee that the North Carolina Board of Nurse Examiners desires to eliminate the two physicians on the Board—namely, the one elected from the Medical Society and the one elected from the North Carolina Hospital Association. Motion was made by Dr. I. E. Shafer that the physician members of the Board of Nurse Examiners be retained. This motion was duly seconded and unanimously carried.

There being no further business, the meeting adjourned at 6:30 o'clock.

Roscoe D. McMillan, M.D.
Secretary

January 28, 1945

The Executive Committee and the Legislative Committee of the Medical Society of the State of North Carolina, at the call of the President of the Society, held a meeting at the Sir Walter Hotel, Raleigh, North Carolina, on Sunday, January 28, 1945, with the Society's Committee to Advise with Members of the North Carolina Hospital and Medical Care Commission and with the chairman and medical members of the North Carolina Hospital and Medical Care Commission.

The President of the Society, Dr. Paul F. Whitaker, presided. The meeting was called to order at 2 p.m., the following persons being present:
Members of Executive Committee:
Dr. Paul F. Whitaker, President, Kinston
Dr. Zack D. Owens, Second Vice President, Elizabeth City
Dr. Roscoe D. McMillan, Secretary-Treasurer, Red Springs
Dr. Paul Crumpler, Councilor Third District, Clinton
Dr. F. L. Knight, Councilor Fifth District, Sanford
Dr. M. D. Hill, Councilor Sixth District, Raleigh
Dr. I. E. Shafer, Councilor Ninth District, Salisbury
Members of Legislative Committee:
Dr. Hubert B. Haywood, Chairman, Raleigh
Dr. W. M. Coppridge, Durham
Dr. Donnell B. Cobb, Goldsboro
Members of Committee to Advise with Members of the North Carolina Hospital and Medical Care Commission:
Dr. George L. Carrington, Burlington
Dr. V. M. Hicks, Raleigh
Dr. C. T. Smith, Rocky Mount
Dr. T. L. Carter, Gatesville
Dr. Erick Bell, Wilson
Dr. Grady G. Dixon, Ayden
Dr. C. F. Strosnider, Goldsboro
Dr. M. D. Hill, Raleigh*
Dr. I. E. Shafer, Salisbury*
Members of North Carolina Hospital and Medical Care Commission:
Clarence Poe, D.S., Chairman, Raleigh
Dr. Paul F. Whitaker, Kinston*
Dr. Roscoe D. McMillan, Red Springs*
Dr. W. Reece Berryhill, Chapel Hill
Dr. Carl V. Reynolds, Raleigh
Dr. G. M. Cooper, Raleigh
Dr. Hubert B. Haywood, Raleigh†
Dr. Donnell B. Cobb, Goldsboro†
Dr. J. Buren Sidbury, Wilmington
Dr. W. M. Coppridge, Durham†
Dr. W. R. Stanford, Durham
Hon. John W. Umstead, Jr., Chapel Hill
(Member of North Carolina General Assembly)

* Also listed as member of Executive Committee.
† Also listed as member of Legislative Committee.

Others:
Hon. Frank P. Graham, President, University of North Carolina, Chapel Hill
Mr. W. D. Carmichael, Comptroller, University of North Carolina, Chapel Hill
Dr. W. H. Moore, Wilmington

President Whitaker stated that the object of the meeting was to consider certain proposals for adjustment of the legislative program of the North Carolina Hospital and Medical Care Commission and asked Dr. Poe, the Chairman of the Commission, to present the proposals.

Dr. Poe said that, because of the great demand for increased appropriations for nearly all departments of the state government, it had become necessary to reduce the amount which the Commission will request the General Assembly to appropriate for carrying out the Commission's program for the establishment of hospitals, the extension of hospital and medical care, and the expansion of the Medical School of the University of North Carolina from a two-year to a four-year school. The original proposals of the Hospital and Medical Care Commission and the new proposals were summarized by Dr. Poe as follows:

	Original Proposals	New Proposal
A. Amounts for enlarged hospital facilities in North Carolina		
1. Central hospital at U. N. C.	$3,660,000	$2,325,000
2. Other hospitals	$5,000,000	$2,500,000
	$8,660,000	$4,825,000
B. Policies to encourage hospital building—	Grants of 10 to 50 per cent to needy counties, varying with need	No grants of principal Complete grant of all interest Repayments of 5 per cent a year for twenty years (with extensions for cause)
C. Policies to help both hospitals and indigent patients— State to provide $1 a day	$500,000	$500,000
D. Additional building for four-year medical school	$175,000	$175,000
E. Support of four-year medical school—	Adequate amount	Adequate amount
F. Funds to help medical students to serve rural areas	$250,000	$150,000
G. Health in schools	$300,000(?)	$300,000(?)

Dr. Poe stated that the amount of the new proposal for the central hospital would provide for 400 beds instead of the 600 originally recommended by the Commission. He quoted Dr. W. Reece Berryhill, Dean of the University Medical School, as saying that a 400-bed hospital can provide 50 beds for psychiatric patients and that it would be possible to have a first-class medical school with a hospital of this size.

Dr. Poe discussed the question as to whether the $2,500,000 now proposed for other hospitals would be adequate and voiced his belief that, with this as a beginning, the benefits realized in the counties in for establishing other hospitals.

Dr. Poe then took up the matter of policies to encourage the building of hospitals and, while expressing his personal belief that there should be grants of principal to needy counties and that the Commission should try to get this part of the program through, made the point that a grant of all interest on a loan which is to be repaid at the rate of 5 per cent a year for twenty years is really a grant of 33⅓ per cent of the total. He suggested that if the amount of $2,500,000 is allowed for interest-free loans it might be possible to include a stipulation that the Commission might, with the approval of the Governor and the Council of State, make grants in cases of extreme need.

Dr. Poe closed his remarks by expressing his feeling that, through the work of the Medical Society and the Commission, the time has now come when a real advance can be made and that, beginning with the reduced program now, the state can continue to go forward until the whole of the original program is realized.

Dr. Hubert B. Haywood, Chairman of the Legislative Committee, said that his committee had been working with the Hospital and Medical Care Commission and that, in his opinion, the figures as given by Dr. Poe in the new proposal are the highest that it can be hoped will be approved by the state authorities at the present time.

President Whitaker, after thanking Dr. Poe for his report, said that probably the most important part of this program is the fact that the state is recognizing its responsibility for the care of the indigent sick in North Carolina.

Dr. C. T. Smith quoted Mr. J. Lyman Melvin, Superintendent of the Parkview Hospital, Rocky Mount, and a member of the Board of Trustees of the North Carolina Hospital Association, as saying that he had communicated with enough of the trustees of the Hospital Association to be able to say that they will accept the new plan.

Dr. Carl V. Reynolds, State Health Officer, stated that a bill now before Congress provides $100,000,000 for aid to the states and counties in the erection of hospitals, the minimum grant being 25 per cent and the maximum 75; and he expressed his belief that the bill will shortly be enacted into law and that thus Federal funds will soon be available.

The following motion was offered by Dr. I. E. Shafer: "Resolved, that we reiterate our endorsement of the full program of the North Carolina Hospital and Medical Care Commission but that, in view of the conditions reported by Dr. Poe, we accept and endorse, as a beginning, the adjusted program set forth by him; provided that, in counties or communities where especially serious need of hospital facilities is found to exist, the State Hospital Commission may make grants in lieu of interest-free loans for hospital construction, provided the reasons for such action are reported to and examined by the Governor and the Council of State and approved by them; and provided that in no case shall such a grant exceed 50 per cent of the cost of constructing the hospital involved; and provided further that not more than $1,000,000 of the $2,500,000 authorized for interest-free loans may be converted into grants as herein set forth; and

"Resolved, further, that our leaders be authorized to accept incidental adjustments or changes that do not materially affect the program in its broader principles."

This motion was seconded by Dr. Strosnider and

motion, took the floor to explain his position and outlined his views as set forth in his article in the January issue of the **North Carolina Medical Journal**, stating that his opposition is to the proposed four-year medical school at the University. At the request of President Whitaker, Dr. Haywood gave the figures as to the number of doctors graduated each year from the two medical schools in North Carolina, stating that there is an annual deficit of doctors in the state, due to death and other causes. There was some further discussion by Dr. W. M. Coppridge, Dr. G. M. Cooper, and Dr. Carter.

The meeting then adjourned, at 5 p.m.

After the close of the meeting Secretary-Treasurer McMillan communicated with the following members of the Executive Committee by long-distance telephone, presenting to them the proposition as outlined by Dr. Poe; and each of them expressed himself as being in favor of accepting the new proposal:

W. H. Smith, M.D., First Vice President, Goldsboro
J. G. Matheson, M.D., Councilor First District, Ahoskie
John Cotten Tayloe, M.D., Councilor Second District, Washington
Newsom P. Battle, M.D., Councilor Fourth District, Rocky Mount
C. C. Orr, M.D., Councilor Tenth District, Asheville.

News Notes from the State Board of Health

Dr. T. F. Vestal, who for the past five years has been director of the Division of Industrial Hygiene of the State Board of Health, recently was made director of the Division of Tuberculosis Control—a new and much needed division of the State Board of Health.

Dr. Vestal now is in the process of setting up this division and its program. As director of tuberculosis control, he will be in charge of all tuberculosis case-finding work and will administer Federal funds appropriated recently for this purpose by the Bulwinkle Bill—a bill passed by Congress to set up a division of tuberculosis control in the United States Public Health Service. This new Federal division will deal not only with tuberculosis control on a national scale, but will give all possible aid to the states, both financially and otherwise.

Dr. Vestal will also administer any funds which may be appropriated later by the North Carolina General Assembly for tuberculosis control work in this state.

Dr. Vestal was succeeded as director of the Division of Industrial Hygiene by Dr. C. B. Davis, a native North Carolinian, who for some time has been in charge of the industrial hygiene program of the North Carolina Shipbuilding Company in Wilmington.

Dr. Davis was graduated from Wake Forest and from the University of Pennsylvania Medical School. After an internship in Philadelphia he became engaged in private practice in Wilmington and later in industrial hygiene work with the North Carolina Shipbuilding Company.

News Notes from the North Carolina Tuberculosis Association

North Carolina has led the way not only in the number of member institutions in the National Student Health Association, but also in establishing the first state-wide student health association. Leader in these developments has been Miss Jennie L. Douglass who is Secretary and a member of the Executive Council of the National Student Health Association. A two-day conference was recently held in Durham under the auspices of the North Carolina State College for Negroes and representatives came from a number of colleges, discussed a number of problems and formed this statewide student health association.

The next meeting of the National Student Health Association will be held at the North Carolina State College for Negroes in Durham sometime in April.

The National Social Hygiene Day Project, sponsored by this and other associations, was a success. Seven North Carolina Negro Colleges took part. St. Augustine's College won the fourth national prize and Johnson C. Smith University was given honorable mention.

The North Carolina Tuberculosis Association is vitally interested in the promotion of the work of this Association in North Carolina, having given both advisory service and financial aid to some of its projects.

* * * *

For the information and guidance of tuberculosis associations and as a service to health officers, sanatorium superintendents, physicians, social welfare and rehabilitation workers, lawyers and business heads concerned with workmen's compensation problems, the National Tuberculosis Association has undertaken the publication, state by state, of the full text of all the laws, rules and regulations relating to tuberculosis.

The task is a formidable one, involving the publication throughout the nation of approximately fifty volumes averaging eighty pages each.

When the North Carolina volume is completed, it will be made available through the North Carolina Tuberculosis Association to all those expressing a desire to have it.

The volume will be inexpensive and can be used as a reference for existing laws and as a basis in the formulation of model laws covering such problems as isolation and quarantine, sanatorium admissions, re-admissions and settlements, public health nursing services, and workmen's compensation and rehabilitation.

Moore County Medical Society

A meeting of the Moore County Medical Society was held on January 22. The treatment of venereal diseases was discussed, and it was decided to send all acutely infectious cases, so far as possible, to one of the Rapid Treatment Centers in order to cut down the spread of infection to men in the armed forces.

News Notes

Dr. V. L. Bigler of Albemarle died in the Medical College Hospital in Richmond on January 21.

* * * *

Dr. J. R. Gamble of Lincolnton died on January 26 in the Reeves Gamble Hospital, of which he was the founder and owner.

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Major Barnes Woodhall, MC, has been appointed as Consultant in Neurosurgery to The Surgeon General. He is now on duty at Walter Reed General Hospital in Washington, D. C. Major Woodhall received his M.D. degree from Johns Hopkins University. He was an assistant professor of surgery at the Duke University Medical School and Hospital, and prior to his entrance on active duty with the Army, he was chief of the neurological section, Ashford General Hospital, W. Va.

(BULLETIN BOARD CONTINUED ON PAGE 114)

AUXILIARY

The Auxiliary is now sponsoring three beds, one in each of the North Carolina Tuberculosis Sanatoria. As our "guests" we have three nurses, girls who are most grateful for the privilege of occupying an Auxilary bed.

The Eastern Sanatorium patient writes, "I wish to express my deep appreciation to the Auxiliary for their kindness in making me a guest during my stay at the Sanatorium. Already the rest I have received has helped me considerably."

Our Sanatorium guest writes, "The courtesy extended me by the Auxiliary is one of the nicest things that has ever happened to me. Financially it has been a life saver and morally it has helped to keep my spirits high, to know there are people like the Auxiliary members who care for our welfare and are doing such a wonderful thing by giving the 'Free Beds'."

From Black Mountain our patient writes, "Thank you all for what you are doing for me. You don't know how much I appreciate it and I hope the Society will receive a blessing from the Lord by so doing."

A Christmas card from a former patient proudly announces that she is again working.

All of these girls would like to write each Auxiliary member, but that is impossible. They want, particularly at this time, to say "thank you" for the lovely Christmas provided them. Our nurse at Black Mountain had her room festooned with cards, the chair piled with gifts and several checks to complete the picture. May I thank each one of you for your thoughtfulness and generosity in helping these girls and in continuing the spirit of Christmas.

THELMA S. SAUNDERS

Vitamin Advertising and the Mead Johnson Policy

The present spectacle of vitamin advertising running riot in newspapers and magazines and via radio emphasizes the importance of the physician as a controlling agent in the use of vitamin products.

Mead Johnson & Company feel that vitamin therapy, like infant feeding, should be in the hands of the medical profession, and consequently refrain from exploiting vitamins to the public.

BOOK REVIEWS

Atlas of the Blood in Children. By Kenneth D. Blackfan, M.D., Late Thomas Rotch Professor of Pediatrics, Harvard Medical School; Late Physician-in-Chief, Infant's and Children's Hospital, Boston; and Louis K. Diamond, M.D., Assistant Professor of Pediatrics, Harvard Medical School; Visiting Physician and Hematologist, Infant's and Children's Hospital, Boston. With illustrations by C. Merrill Leister, M.D., Associate Pediatrician, St. Luke's Hospital, Bethlehem, Pa. 320 pages. Price, $12.00. New York: The Commonwealth Fund, 1944.

This is truly a magnificent volume. Although the authors have confined their work to children, many of the cases were followed into adulthood, and the book is equally valuable for the study of blood dyscrasias in adults. The variations from normal at different ages and the great lability of the blood picture in children under the influence of intercurrent diseases are stressed.

The illustrations are superb. The colors are unusually accurate and can be compared with stained slides in the laboratory more easily than can the majority of plates describing the blood. The authors have wisely chosen Wright's stained smears, since this is the stain commonly used in most laboratories. The text has been confined to a minimum. Case reports and charts of illustrative cases are freely used. An adequate bibliography is appended.

The volume should prove indispensable to internists as well as to pediatricians. This book could be reproduced only at many times its present cost except for the generous subsidization of the Commonwealth Fund. This Foundation should be warmly commended for enabling this contribution to be made widely available.

Military Medical Manuals. Manual of Clinical Mycology. By Norman F. Conant, Ph.D., Donald S. Martin, M.D., David T. Smith, M.D., Roger D. Baker, M.D., and J. Lamar Callaway, M.D., Duke University School of Medicine, Durham, N. C. 348 pages, with 148 illustrations. Price, $3.50. Philadelphia: W. B. Saunders Co., 1944.

This pocket-size volume of the series prepared under the auspices of the National Research Council is the best in its field. It is very practical in its approach. The clinical picture, pathology, immunology, and mycology of each disease are described by an expert in his field. The illustrations are superb and show the clinical lesions in patients and the fungi as isolated from the patients with the morphologic variations after culturing. Many of the diseases described may not now occur in this country, but this volume is written primarily for military use throughout the entire world. It is strongly recommended for all physicians who may come in contact with fungus diseases. The volume is very fittingly dedicated to the memory of Archie S. Woods of the John and Mary R. Markle Foundation, whose unusual interest as a layman has led to wide dissemination of knowledge concerning tropical and fungus diseases.

Textbook of General Surgery. By W. H. Cole and Robert Elman, in association with eighteen consulting authors. Ed. 4. 1118 pages. Price, $10.00. New York: D. Appleton-Century Company, Inc., 1944.

This text of thirty-three chapters accomplishes in a splendid way the object which its authors had in mind: to present a systematic survey of the field of surgery. General surgery, as well as gynecologic, urologic, thoracic, and war and catastrophe surgery, is very well covered in a concise manner. The book in general adheres to fundamental surgical principles, and is admirably suited as a text for the use of medical students, house officers, and men engaged in general practice. The opinions set forth in the text are all basically sound, and where a controversial subject is discussed the authors present several sides of the question with admirable lack of bias. Not the least virtue found in this text is the splendid bibliography at the end of each chapter.

Hydronephrosis and Pyelitis of Pregnancy. By H. E. Robertson, M.D., Section on Pathologic Anatomy, Mayo Clinic, Rochester, Minnesota. 332 pages with 11 illustrations. Price, $4.50. Philadelphia and London: W. B. Saunders Company, 1944.

In this monograph, Dr. Robertson has accomplished the monumental task of reviewing historically this extremely important subject. His purpose is to improve our understanding of this basic scientific problem by bringing together all the available information on the subject and reviewing the accomplishments of the past. He succeeds admirably in fulfilling this purpose, and this volume is the most complete reference work which has appeared on this subject.

The observations made on this phenomenon are presented in a chronological order, from those of Morgagni in his "Letters on the Seats and Causes of Diseases," published in 1769, to the most recent literature on the subject. Dr. Robertson's editorial comments in the form of footnotes appear throughout the volume and add immeasurably to its value.

The force of medical tradition is emphasized to all of us by Dr. Robertson's quotation of a statement from the first edition of DeLee's **Principles and Practice of Obstetrics,** which appeared in 1913: "The ureters, particularly the right, have been found dilated and filled with urine in about two-thirds of the gravidae coming to autopsy. This is caused by torsion, stretching or kinking of the ureters, due to the enlargement and dislocation of the pelvic organs, but not to compression, since the specific gravity of the pregnant uterus is about equal to that of the intestinal mass." This statement also appeared in the 1918, 1924, and 1928 editions of this book, with a reference to a paper by Luchs, which according to Dr. Robertson does not mention the subject. It has been quoted by numerous authors, and has colored our thinking in this problem during three decades.

Dr. Robertson largely permits us to draw our own conclusions from the mass of material he has brought together, and points out the need for further fundamental studies of this problem. A complete bibliography is included.

Dr. Robertson's monograph may well become the primary source book in this field.

A Textbook of Histology. By E. V. Cowdry, Professor of Anatomy, The School of Medicine, Washington University. Third edition. 426 pages, with 317 illustrations. Price, $7.00. Philadelphia: Lea and Febiger, 1944.

The third edition of Cowdry's **Histology** is a concise volume of information on physiological histology. The subject matter is discussed from the point of view of blood as the principal integrator of the body. All of the cells and intercellular substances and their manifold combinations into tissues and organs are discussed from this main thesis.

This volume may well serve as a guide for the writers of all textbooks for medical students. The subject matter is approached with a view of the over-all picture of the biology of a human being. Minutiae of technical methods and other detail which research men might desire are relegated to larger volumes on the subject and to the original experimental papers. This results in elimination of much subject matter and permits the continuity of vitalistic processes to permeate throughout the book. The correlation of the function and the structural composition of tissue is constantly emphasized to advantage in portraying the dynamic conception of living tissue.

The selection of material for illustrations is excellent. Photomicrographs of tissues in many diseases are used in pointing out cellular activity. Variations in tissue in different age group periods are shown clearly. The manner of reproduction of the fine photographs is a tribute to the artistry of the publisher.

Case Studies in the Psychopathology of Crime. Vol. 2. By Ben Karpman, M.D., Senior Physician and Psychotherapist, St. Elizabeth's Hospital, Washington, D. C. 738 pages. Price, $16.00. Washington, D. C.: Medical Science Press, 1944.

This book represents the second volume of a series of case studies of criminal psychopaths who were admitted for treatment to St. Elizabeth's Hospital in Washington, D. C., from federal penitentiaries. The sale of the book is restricted to those having a direct professional interest in medicolegal or social problems. It contains four intensive and detailed personality studies. The psychiatric approach is primarily an analytical one. However, it is distinguished from usual analytic literature by the fact that very little or no interpretation is offered by the psychiatrist, and the developmental difficulties are made clear through the patient's own history. The details are rarely brought in such intimacy to the average physician or social worker anywhere else in the literature and are of great importance in the understanding of behavior abnormalities. The cases dealt with in this book pertain to drug addiction, violation of the Mann Act, rape, and robbery. Although these difficulties are eventually dealt with in one way or another by the law, it must be obvious to every physician that these problems also belong in the field of medicine and frequently confront the physician.

The book is quite voluminous and hardly designed for quick reading by the general practitioner. To the psychiatrist, to the physician who is interested in underlying personality difficulties in connection with his treatment of patients, and to the social worker who frequently has to deal with the families of these patients, the book will be of great interest. The reader will be well repaid in terms of knowledge for the time invested in reading this book.

Etiology, Diagnosis and Treatment of Amebiasis. By Charles F. Craig, M.D., Colonel U. S. Army, retired. 332 pages. Price, $4.50. Baltimore: Williams & Wilkins Co., 1944.

The presence of American troops in regions where amebiasis is extremely common, and also the increasing realization that this disease is by no means confined to the tropics make Dr. Craig's new authoritative publication particularly timely.

The entire subject of amebiasis is brought up to date, with comprehensive, well written sections covering pathology, symptomatology, complications, diagnostic methods, and therapy; also included are the results of laboratory and animal experimentations.

There are many excellent illustrations and a valuable bibliography.

This book is of value to all students and practitioners of medicine, particularly to those of us in the South.

Ventures in Science of a Country Surgeon. By Arthur E. Hertzler, M.D. 304 pages. Price, $4.00. Halstead, Kansas, 1944.

Those doctors who enjoyed Dr. Hertzler's **The Horse and Buggy Doctor** will enjoy still more his latest venture into literature. The first book was written for the general public, the latter for doctors; and as Logan Clendening once said, doctor talk is the best talk there is. Here Dr. Hertzler reviews his life's work and is apparently well satisfied with it. He has every right to be, for he has accomplished far more than is given to most medical mortals to do. One wonders how one man could carry on the tremendous practice he has had, interest himself in research, and also find time to write.

Dr. Hertzler's writing reminds one much of Bernard Shaw. It is purposely egotistic—provocatively so. For example, in discussing his long crusade against the erroneous diagnosis of chronic appendicitis, he said that "Over a period of years every medical meeting was marked by papers dealing with chronic appendicitis. The pros and cons were equally divided, myself on one side and the rest on the other."

The temptation is to quote much of the book, for it is studded with most quotable phrases and sentences. It is not listed for the market, but information received by this reviewer is that a check for four dollars sent to Dr. Hertzler at Halstead, Kansas, will be sufficient to insure a copy.

Seventeenth Anniversary Issue of the Harofe Haivri

Volume II, 1944, seventeenth anniversary issue of the **Harofe Haivri**, edited by Moses Einhorn, M.D., has just made its appearance. Its contents are not confined to technical medical topics, but are divided into several sections covering a variety of related subjects.

In the medical section, the following subjects are discussed: "Cesarean Section (Its Uses and Abuses)" by Dr. H. J. Epstein and a discussion by Dr. A. J. Rongy, "Malaria in Public Health" by Dr. A. J. Levy, "Stricture of the Rectum" by Dr. E. Rapaport, "Cancer of the Skin" by Dr. O. L. Levin and Dr. H. T. Behrman and "The Painless and Bloodless Treatment of Calcified Bursitis" by Dr. J. Echtman.

Under the heading of Jews and Health, Dr. L. Wulman, organizer of the American branch of the OSE originated in Russia, in the year 1912, and derives its name from the initials of the Russian words, Oschestvo Zdravoochranenia Evreev, which mean "Society for Safeguarding the Health of the Jews."

In the section on Personalia, Dr. Solomon R. Kagan offers an article entitled "Jews as Nobel Prize Winners in Medicine", among whom are discussed such outstanding physicians as Ehrlich, Metchnikoff, Barany, Willstaetter, Meyerhof, Landsteiner, Warburg, Loewi and Erlanger.

For further information, you may communicate with the editorial office of the **Harofe Haivri**, 983 Park Avenue, New York 28, New York.

BULLETIN BOARD

(CONTINUED FROM PAGE 111)

Ophthalmological Seminar

An Ophthalmological Seminar sponsored by Emory University and honoring the memory of Dr. Abner Wellborn Calhoun, first professor of ophthalmology of Emory University, will be held in Atlanta April 19-21. The guest speakers will be Dr. W. L. Benedict, Dr. John Dunnington, Dr. Harry Gradle, Dr. Parker Heath, Dr. Walter I. Lillie, Colonel Derrick Vail, and Dr. Frank Walsh. All those interested in ophthalmology are invited to attend as guests of Emory University.

American College of Surgeons Defers War Sessions

The American College of Surgeons has deferred for the time being its 1945 series of War Sessions, four of which were to have been held in February, according to an announcement by Dr. Irvin Abell, Chairman of the Board of Regents.

Cancellation of Nineteenth Annual Conference on Medical Service

The nineteenth annual session of the National Conference on Medical Service, scheduled for Sunday, February 11, 1945, at the Palmer House, Chicago, will not be held. This action is taken in compliance with a request received from the Office of Defense Transportation.

Spring Refresher Course in Otolaryngology

The fifth semi-annual refresher course in laryngology, rhinology and otology will be conducted by the University of Illinois, College of Medicine at the College in Chicago, March 26 to 31 inclusive, 1945. While the course will be largely didactic, some clinical instruction will be included. This course is intended primarily for ear, nose and throat specialists. As the registration is limited to thirty, applications will be considered in the order in which they are received. The fee is $50.00. When writing for application please give details concerning school and year of graduation, and past training and experience.

Address—Dr. A. R. Hollender, Chairman, Refresher Course Committee, Department of Otolaryngol-

Meharry Medical College

The Board of Trustees of Meharry Medical College announces the appointment of Dr. M. Don Clawson as president of Meharry Medical College succeeding Dr. Edward L. Turner. The Board of Trustees also announces the appointment of Dr. Murray C. Brown as Director of Medical Education.

Russian War Relief, Inc.

Since the start of the war there have been few cases of polio in the Soviet Union, Dr. Sofia Markina, director of the Dzerzhinsky Children's Hospital in Moscow, told Leo Gruliow, Russian War Relief representative, and Lillian Hellman, American author and playwright, who made a tour of this 400-bed hospital, outfitted with American blankets, sheets, pajamas and medical supplies sent by the relief agency.

The virtual disappearance of poliomyelitis among Russian children was attributed by Dr. Markina to the wide dispersal of these children during the evacuation which took place early in the war.

The relief representative, who cabled this information to the agency's headquarters in New York City also reported a decline of rheumatic fever among children, a decrease which Dr. Markina feels is due to the lack of protein content in Russia's wartime diet. This dietary insufficiency, Dr. Markina pointed out, has, however, created other serious nutritional cases requiring sanatorium treatment. Citing an absence of epidemics as a whole, she indicated as a special wartime problem the rise in malaria carried by children who returned from evacuation points in Central Asia.

The staff of the Dzerzhinsky Children's Hospital, under Dr. Markina's supervision, is now making a study of wartime effects on the health of children.

* * * *

The American people in 1944 contributed almost $23,000,000 in cash and goods to Russian War Relief, making a total of $42,246,240 received by the agency since its inception a little over three years ago.

Medical and Surgical Relief Committee

Mr. Arthur Kunzinger, treasurer of the Medical and Surgical Relief Committee recently announced that for the six month period ending December 31, 1944, the Committee's donations to 21 countries including the United States, amounted to $43,669.87.

The territory covered by the Medical and Surgical Relief Committee has increased as the number of liberated countries has increased, and contributions now reach France and Italy. United States tops the list of beneficiaries with $16,386.13, the U.S. Army $1,025.40, and various civilian hospitals and welfare agencies the balance of $11,818.95. The greatest number of shipments for this period went to China and India, while the most valuable single contribution amounting to $4,951.76 went to L'Entre Aide Francaise for the relief of French children.

The Medical and Surgical Relief Committee is distinguished by its adherence to two principles: (1) No authentic appeal is ever turned down, and (2) medical aid is the only form in which aid is given. Contributions of medical, surgical and dental supplies and instruments will soon reach the $700,000 mark. The exact figure to date is $690,715.60.

American Foundation for Tropical Medicine

A gold medal and an honorarium of $500 for outstanding service in the field of tropical medicine were presented to Rear Admiral Edward R. Stitt (retired), former Surgeon General of the United States Navy, by the American Foundation for Tropical Medicine.

The presentation was made on behalf of the Foundation by Col. Richard Pearson Strong (M.C.), director of tropical medicine at the Army Medical School, Washington, D. C., and recipient of last year's award.

The medal and honorarium were established in 1944 through a gift by the Winthrop Chemical Company. Known as the Richard Pearson Medal and bearing a profile of Dr. Strong on its face, it is to be awarded annually for distinguished service in tropical medicine.

INDEX TO ADVERTISERS

Banner Elk Rest Home 116
Broadoaks Sanatorium XXXI
Burroughs Wellcome & Co. ..... XVI - XX
Camp, S. H. Co. XXXIII
Charlotte Eye, Ear, and Throat Hospital XXVIII
Cheplin Laboratories XXIV
Commercial Solvent ..... VI - VII
Cook County Graduate School of Medicine XXIX
Dairy Council XXI
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M & R Laboratories XXII
Mead Johnson & Company XXXVI
Parke, Davis and Company ..... XXXIV - XXXV
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Physicians Casualty Assn.
Physicians Health Assn. XXIX
Pinebluff Sanitarium III
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R. J. Reynolds Tobacco Co. IX
Saint Albans Sanatorium XXVII
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Julius Schmid, Inc. XV
Searle, G. T. & Co. XIX
Smith, Kline & French ..... XVII - XXV
Spencer Corsets XXIX
E. R. Squibb XIV
Stuart Circle Hospital XXXI
Thompson Homestead School 116
Tucker Hospital XXX
Upjohn Co. XIII
Wachtel's, Inc. XXVI
Westbrook Sanatorium XXVIII
Winchester Surgical Supply Co.
Winchester-Ritch Surgical Co. XXI
Winthrop Chemical Co., Inc. XXXII
White Laboratory XXIII
Wyeth, John ..... Insert and II

Mary Loveless Wins First Marcelle Award

Dr. Jonathan Forman, Executive Director of the Seventh Annual Forum on Allergy, announced that the Marcelle Award with its cash prize of three hundred fifty dollars has been won by Mary Loveless, M.D., New York City, for her attempt to correlate thermo-stabile antibodies with clinical results and the consequent use of "Booster-doses" which may well shorten and simplify our treatment of hay fever. The second prize in the Marcelle Award went to Charles F. Code, M.D., of the Section on Clinical Physiology of the Mayo Foundation at Rochester, Minnesota. This prize of one hundred fifty dollars was awarded for his studies of the role of histamine in the production of anaphylactic and allergic reactions. A. R. Rich, M.D., of the Johns Hopkins University and his associates received honorable mention for their work on serum sickness and periarteritis, as did Frank Simon, M.D., of Louisville, Kentucky, for his studies of the allergens in human dander.

For several years now the Annual Forums On Allergy have given a gold medal in recognition of a life's work in the field. This year the Gold Medal went to Milton J. Rosenau, Chapel Hill, North Carolina, Charles Wilder Professor of Preventive Medicine and Hygiene, Emeritus, Harvard University, and Professor of Epidemiology, School of Medicine, University of North Carolina. Through the generosity of Marcelle's Cosmetics, Inc., the Forum was able to give a first prize this year of three hundred fifty dollars and a second prize of one hundred fifty dollars in recognition of the most meritorious contributions to Clinical Allergy during the past year.

Medical Men Honored for Contribution to Safe Childbirth

Two medical men, from diverse fields, have been honored by the Planned Parenthood Federation of America for their part in making childbirth more healthful, safe and secure for American mothers.

Two $500 cash awards of the Albert and Mary Lasker Foundation were presented to Dr. John MacLeod, of the Department of Anatomy, Cornell University Medical College and to Dr. Felix J. Underwood, executive officer of the Mississippi State Board of Health, at the 24th Annual Meeting Dinner in the Waldorf-Astoria, New York, on January 24.

Dr. Richard Pierson, one of New York's leading obstetricians and chairman of the Federation's Medical Committee presented the cash prizes, with a plaque and scroll to the two men. The award was given to Dr. MacLeod for his scientific research in the motility of human sperm cells—which should prove valuable, after further study, in the correction of infertility and the control of fertility in human beings. Dr. Underwood was cited for his state's expanded maternal health program which includes planned parenthood as an integral part of its public health service.

Proteins in Soy Milk Approximate Utilization of Egg Protein

Investigations recently conducted at Wayne University in Detroit have shown the soy proteins in Mull-Soy to have an average true digestibility of 89.6 per cent and an average biological value for maintenance of 95.6 per cent, compared with egg protein as 100 per cent.

The findings of this study using adult human subjects were published in a recent issue of the Journal of Nutrition, 28:209,1944. The method of Murlin and associates was used to determine biological values.

Mull-Soy, a product of The Prescription Products Division of the Borden Company, has been used extensively for infant feeding, and also for children and adults, as a palatable, well-tolerated and easy-to-digest milk substitute.

The penicillin laboratories of Wyeth Incorporated, Reichel Division, at West Chester and Kimberton, Pa., have been selected as ideal for the study of penicillin manufacturing methods by Dr. Jesuino de Albuquerque, Secretary of Public Health of the Federal District of Rio de Janeiro, Brazil, who is in this country gathering data for the establishment of a municipal penicillin laboratory in Rio.

In cooperation with the Wyeth staff, arrangements have been made for a group of Brazilian chemists and bacteriologists to study the production and standardization of penicillin at Wyeth. The Wyeth organization has made the facilities of its Philadelphia, West Chester and Kimberton laboratories available to the Brazilian scientists for this purpose.

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VOLUME 6 MARCH, 1945 NUMBER 3

COMPENSATION OF RENAL METABOLIC DYSFUNCTION

Treatment of Kidney Disease and Hypertensive Vascular Disease with Rice Diet, III

WALTER KEMPNER, M.D.
DURHAM

PART 2*

Cholesterol

The relation of hypercholesterolemia to generalized arteriosclerosis, coronary disease, and vascular retinopathy has been a subject of extensive study. High carbohydrate—low calorie diets have been shown to reduce the serum cholesterol level in patients with diabetes mellitus[12].

The effect of the strict or modified rice diet on the serum total cholesterol concentration was determined in 82 patients (table 9). Three of the patients had acute glomerulonephritis; 32 patients had chronic glomerulonephritis, chronic pyelonephritis, or nephrolithiasis; 47 patients had "hypertensive vascular disease" with or without apparent renal excretory dysfunction. Hypercholesterolemia (220 to 840 mg. of cholesterol per 100 cc. of serum) was present in 53 of the 82 patients before the rice diet was started, the average cholesterol concentration in these 53 patients being

Before rice diet .....294 mg. per 100 cc. of serum
After 91 days (average)
of rice diet .....198 mg. per 100 cc. of serum

In the remaining 29 patients the serum cholesterol concentration ranged from 135 to 218 mg. per 100 cc. before the rice diet was started, the average concentration being

Before rice diet .....185 mg. per 100 cc. of serum
After 89 days (average)
of rice diet .....158 mg. per 100 cc. of serum

In 9 of the 82 patients there was an *increase* in the cholesterol concentration of from 2 to 38 mg. per 100 cc. of serum, the average cholesterol concentration being

Before rice diet .....173 mg. per 100 cc. of serum
After 91 days (average)
of rice diet .....190 mg. per 100 cc. of serum

TABLE 9

SERUM CHOLESTEROL OF PATIENTS ON RICE DIET

(Mg. per 100 cc. of serum)

Acute glomerulonephritis

Case	*Before*	*After*	*Days*
1.	168	100	150
2.	220	176	300
3.	142	155	180
Aver.	**177**	**144**	**210**

Chronic glomerulonephritis, chronic pyelonephritis, nephrolithiasis.

Case	*Before*	*After*	*Days*	*Case*	*Before*	*After*	*Days*
1.	220	185	24	18.	175	150	77
2.	210	186	28	19.	151	110	169
3.	236	152	34	20.	160	172	10
4.	338	244	18	21.	440	285	71
5.	158	145	16	22.	212	110	240
6.	368	230	167	23.	208	162	42
7.	840	410	14	24.	237	185	28
8.	230	150	31	25.	640	225	212
9.	180	205	40	26.	211	93	74
10.	310	142	309	27.	185	170	350
11.	296	148	50	28.	240	177	288
12.	225	156	346	29.	178	180	9
13.	150	142	42	30.	315	185	78
14.	135	160	18	31.	320	260	150
15.	270	140	180	32.	315	190	83
16.	272	210	21				

* Part 1 was published in the February issue of the JOURNAL.

12. Rabinowitch, I. M.: Experiences with a High Carbohydrate—Low Calorie Diet for the Treatment of Diabetes Mellitus, Canad. M. Ass. J. [illegible]

"Hypertensive vascular disease"

Case	Before	After	Days	Case	Before	After	Days
1.	205	178	67	26.	137	175	28
2.	168	175	240	27.	238	210	84
3.	225	177	143	28.	333	270	28
4.	238	200	61	29.	266	154	112
5.	255	215	47	30.	345	258	74
6.	354	275	134	31.	293	200	20
7.	242	172	72	32.	222	70	99
8.	292	237	212	33.	210	190	109
9.	234	173	73	34.	300	225	166
10.	325	226	31	35.	318	235	9
11.	217	190	125	36.	220	187	53
12.	317	186	52	37.	210	205	24
13.	224	155	32	38.	225	200	16
14.	172	160	35	39.	273	230	9
15.	218	135	90	40.	292	168	78
16.	255	146	139	41.	215	110	76
17.	210	225	228	42.	239	149	60
18.	230	164	35	43.	258	175	41
19.	300	198	6	44.	193	153	16
20.	250	260	65	45.	260	170	178
21.	252	161	14	46.	200	175	6
22.	185	108	14	47.	304	169	66
23.	188	150	83				
24.	284	235	18				
25.	332	246	14	Aver.	249	188	72

In the remaining 73 patients there was a *decrease* of from 5 to 430 mg. per 100 cc. of serum, the average cholesterol concentration being

Before rice diet .....266 mg. per 100 cc. of serum
After 91 days (average) of rice diet .....183 mg. per 100 cc. of serum

Vascular Retinopathy

Recovery from advanced vascular retinopathy requires a period of months. Thirty-three patients with papilledema, hemorrhages, or exudates followed the rice diet for a period of at least eight weeks. In 30 of these patients eyeground photographs were taken before and after treatment; in 3, only after treatment.

In 1 patient, the retinopathy became worse. In 11 patients, the retinopathy not only came to a standstill, but papilledema, hemorrhages, and exudates partially cleared up. In 21 of the 33 patients, the retinopathy improved greatly or even cleared up completely under the rice regime. Five patients who had not been able to recognize objects regained their eyesight to such an extent that they were able to read fine print. As the photographs of the eyegrounds show, papilledema, hemorrhages, and exudates disappeared, arteriovenous compression decreased, the arterioles became less tortuous, and the previously engorged and tortuous veins became delicate and straight.

Histories 2-7, 9-10 and figures 25-32, 39, 43-44, 48, 54, and 56 illustrate the response of vascular retinopathy to the diet.

Histories of Patients Treated with the Rice Diet*

Patient 1. *Acute glomerulonephritis. Example of decrease of high blood pressure and nonprotein nitrogen to normal and of disappearance of generalized edema and heart enlargement.*

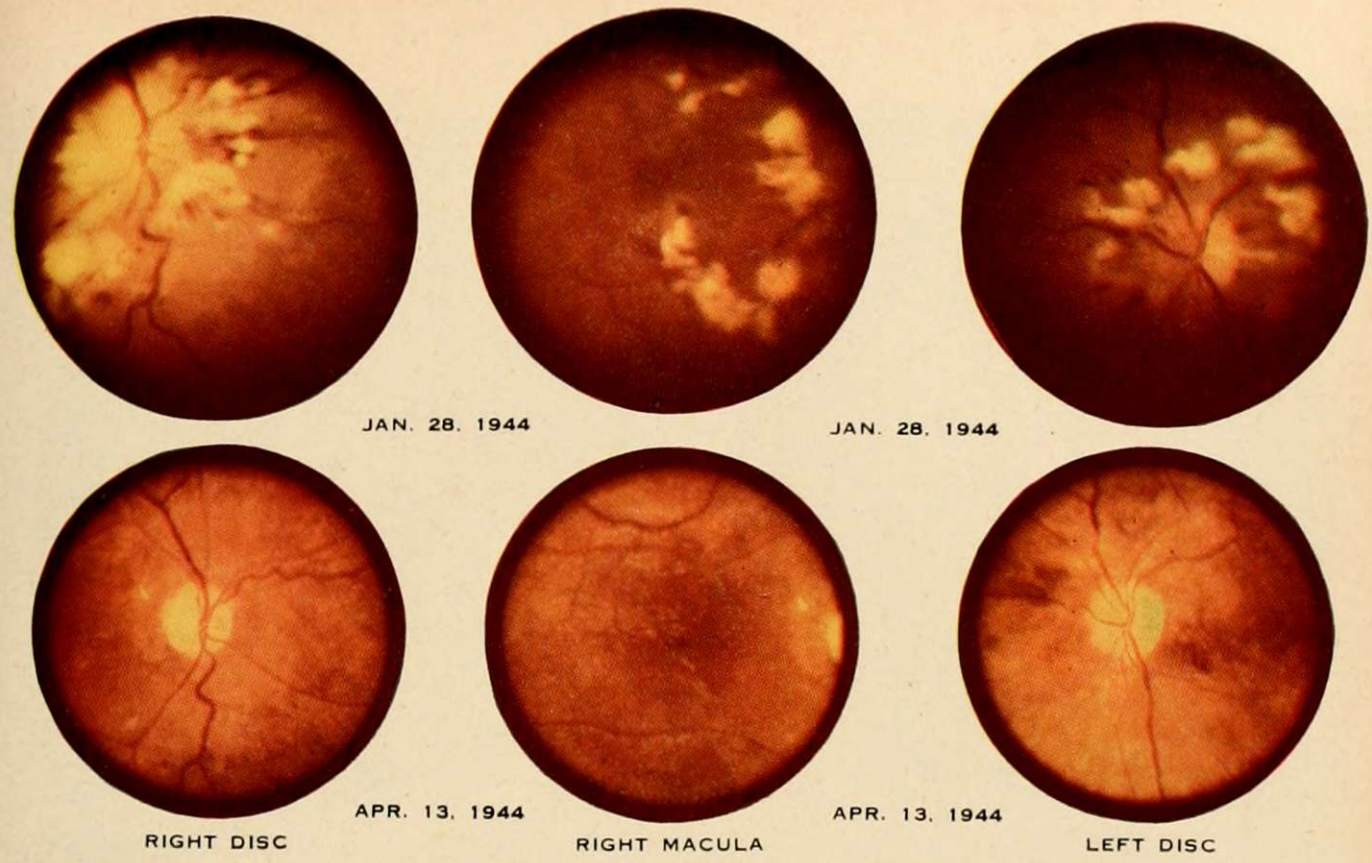
W.B. (B4700), a 17 year old farm boy, came to the outpatient clinic on May 5, 1943, complaining of edema, headache, and backache. He was admitted to the hospital on May 6 at 2 a.m.

History: The patient had had measles, whooping cough, chickenpox, and pneumonia in early childhood, mumps at the age of 7, diphtheria at 12, malaria at 13. He had colds two or three times a year, associated with frontal headaches and sometimes with cough productive of yellow mucoid sputum.

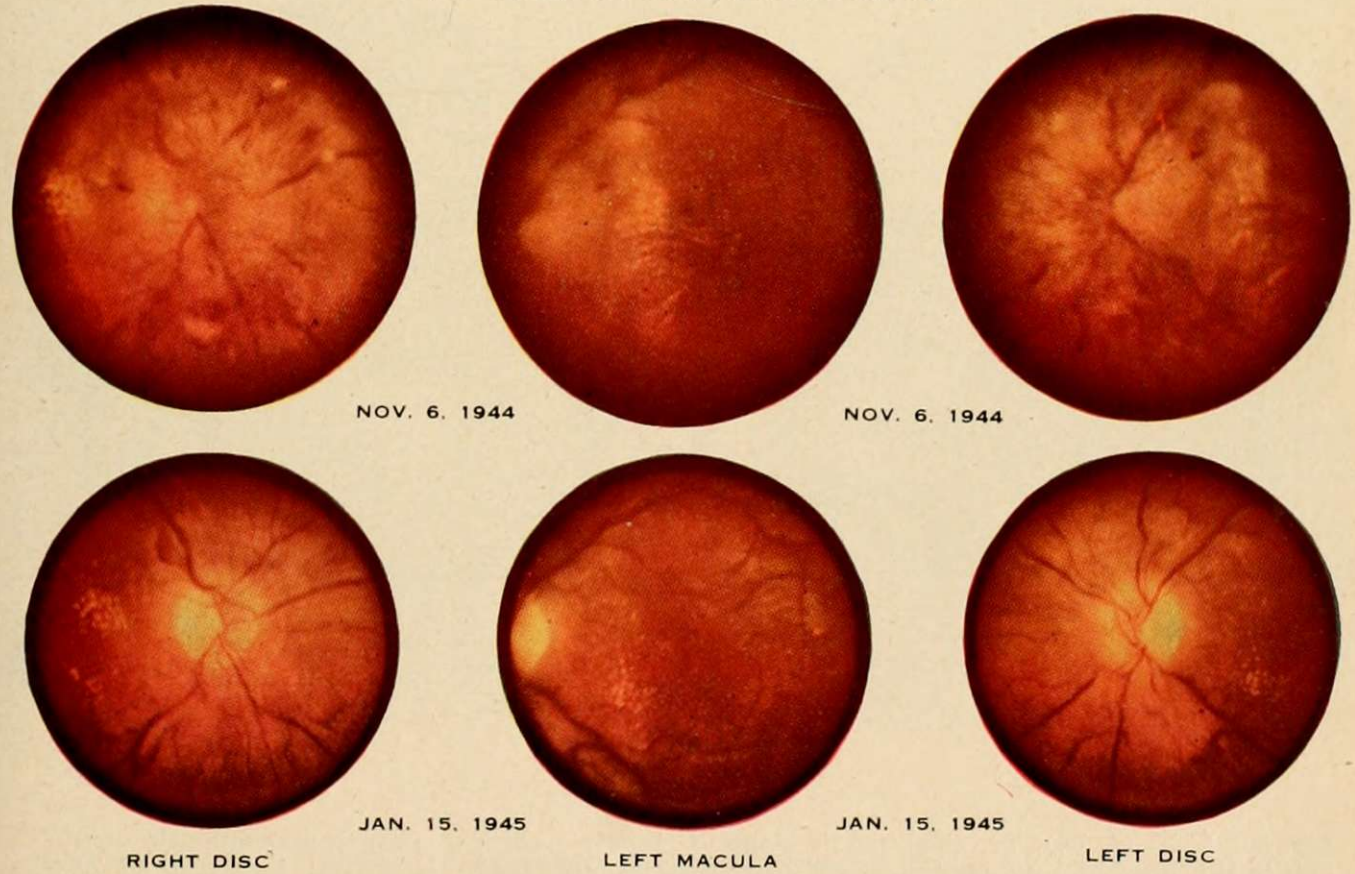
About April 15, 1943, the patient developed a sore throat, night sweats, dysphagia, and swelling under the right jaw; his urine became dark and smoky. On May 2, he went on a fishing trip and got his "legs wet up to the thighs." The following morning, he noticed fatigue and puffiness of the face, but in spite of this, took part in a ball game. Next day the edema was worse, his back ached from the hips to the shoulders, and he had a feeling of tightness in the abdomen, and marked fatigue (he fell asleep in class). He complained of nocturia and generalized muscular aching.

Examination: The patient's height was 168 cm., his weight 73.1 Kg., his temperature 37 C., pulse 50, respiration 16, blood pressure 176 systolic, 101 diastolic. Generalized pitting edema, especially of the face and extremities, was present; the knuckles of the hands were almost invisible. There was generalized lymph node enlargement. The eyelids were puffy. The pupils reacted well to light and accommodation, and there were no pathological findings in the eyegrounds. The teeth were in good repair. The tonsils were red, moderately large and cryptic. The lungs were clear to percussion and auscultation. The heart was markedly enlarged, the rhythm regular; the aortic second sound was louder than the pulmonic second sound; no murmurs were heard. The liver was not enlarged and the spleen was not palpable; there was no tenderness in

* The histories of 2 other patients, a 25 year old man with chronic nephritis, and a 36 year old man with "hypertensive vascular disease," were previously published in this **Journal**[4a].



L.K. (f. 33) Terminal Stage of chronic nephritis. BP before treatment 238/139 mm. Hg., after treatment 110/80 mm. Hg.



L.B. (f. 24) "Hypertensive vascular disease," first noted in pregnancy. BP before treatment 233/157 mm. Hg., after treatment 120/87 mm. Hg.

Fig. 25. Improvement of advanced vascular retinopathy with disappearance of papilledema, hemorrhages, and exudates.

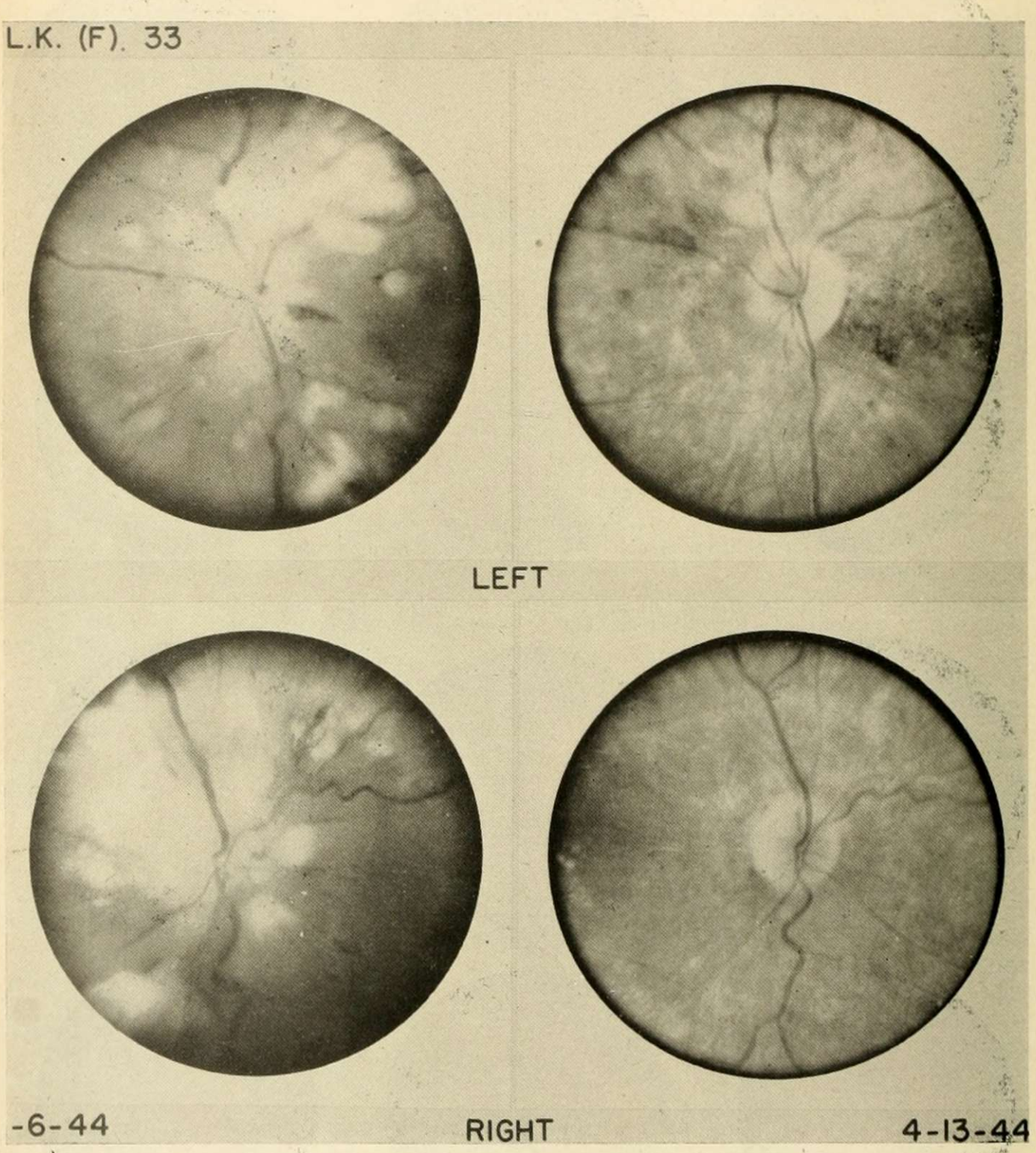


Fig. 26. L. K. (f., 33). Terminal uremic stage of chronic nephritis. Phenolsulfonphthalein excretion in two hours, 1.4 per cent. Rice diet started January 6, 1944. See figures 1, 13, 23, 25. **Disappearance of papilledema, hemorrhages, exudates, venous engorgement, both eyes.**

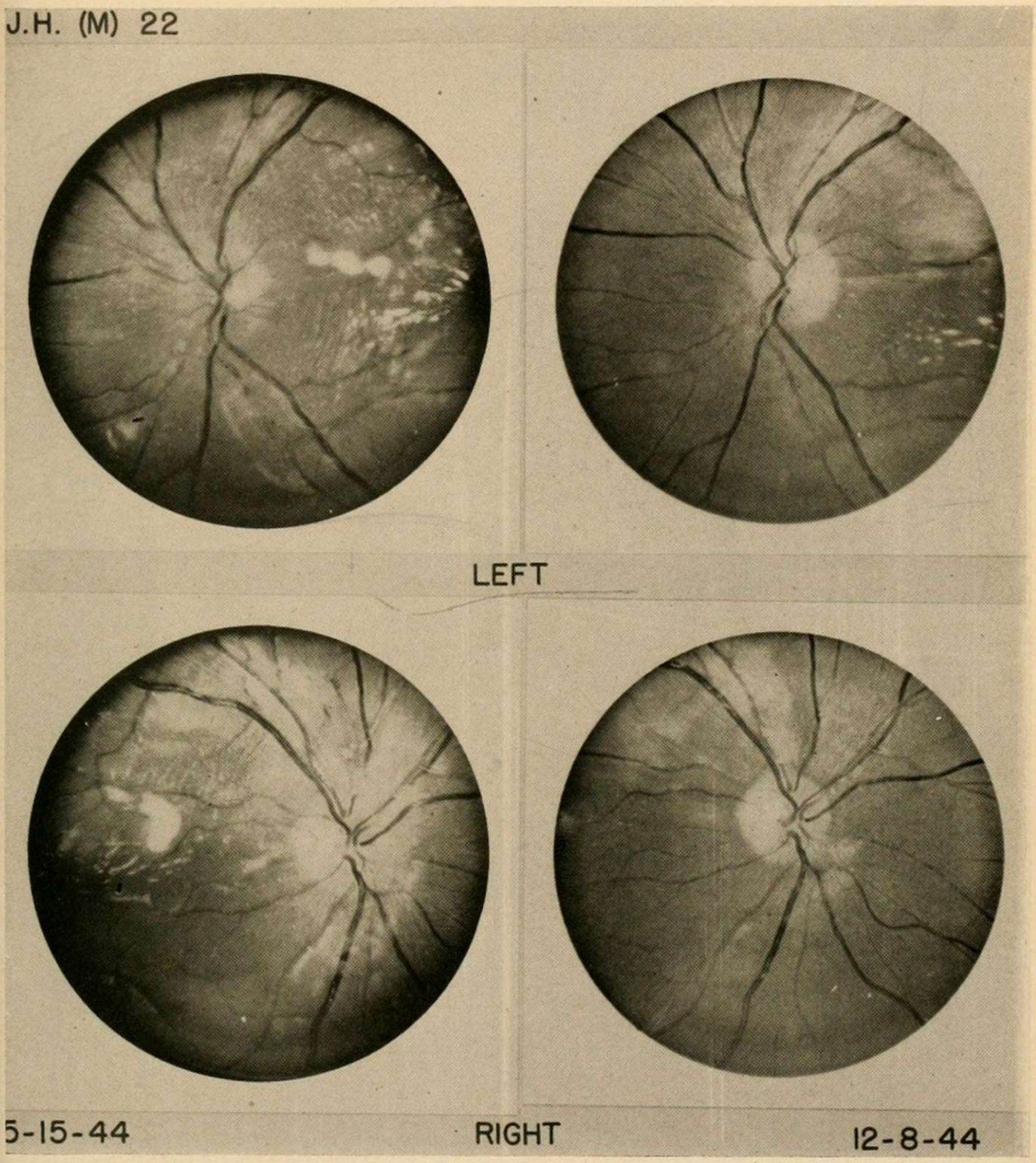


Fig. 27. J.H. (m., 22). Chronic glomerulonephritis. Phenolsulfonphthalein excretion in two hours, 27 per cent. Rice diet from May 14 to August 30, 1944. Blood pressure on May 15, 1944, 164 systolic, 108 diastolic; on December 8, 1944, 134 systolic, 80 diastolic. **Disappearance of hemorrhages, right eye. Disappearance of papilledema, marked decrease of exudates, both eyes.**

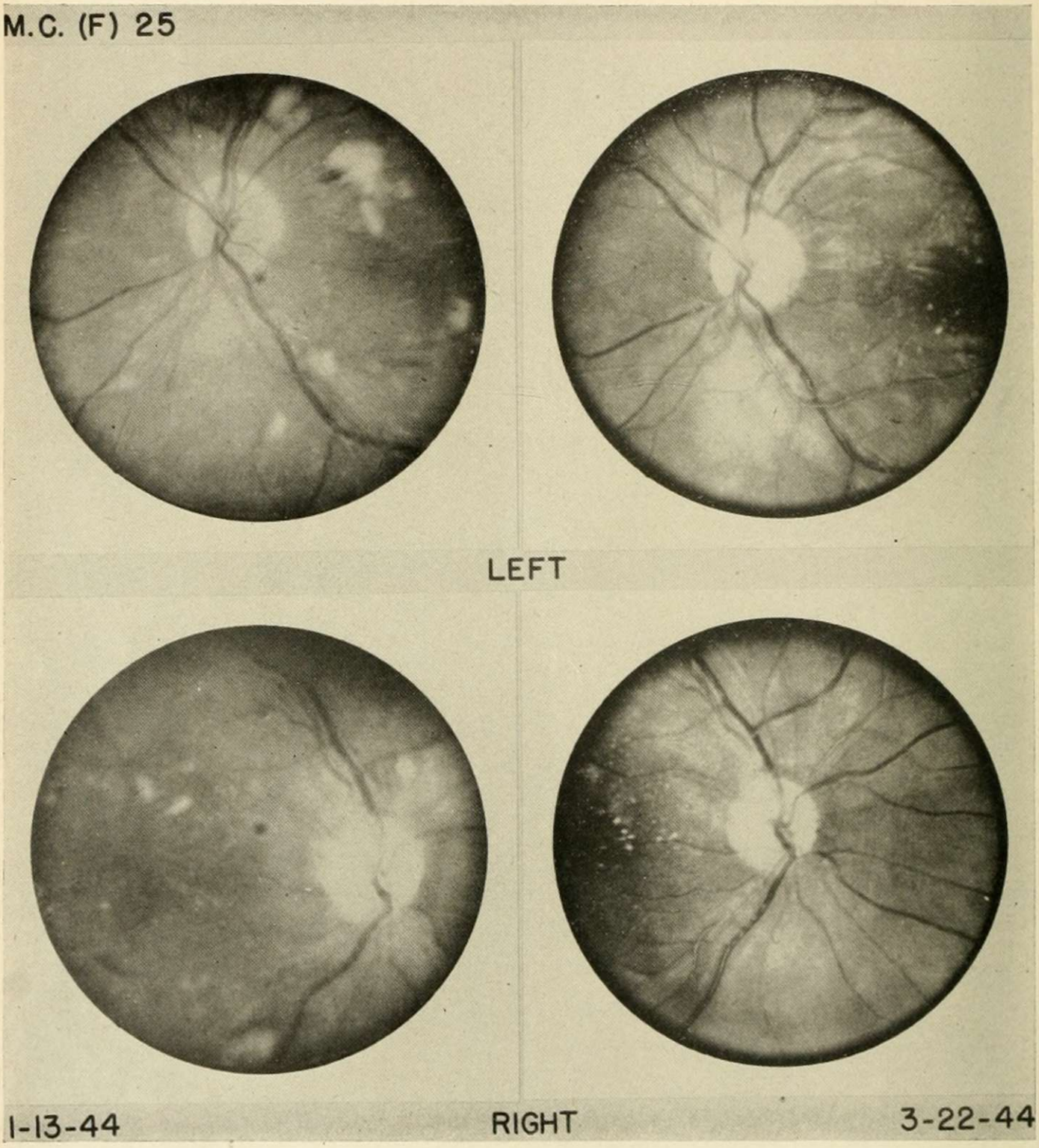


Fig. 28. M.C. (f., 25). Chronic pyelonephritis. Phenolsulfonphthalein excretion in two hours, 12 per cent. Rice diet started January 18, 1944. Before rice diet: Blood pressure 181 systolic, 131 diastolic. Transverse diameter of heart 10.3 cm., nonprotein nitrogen 60 mg. per 100 cc. of blood, albumin 5.5 Gm. per 1000 cc. of urine. After 2½ months of rice diet: Blood pressure 114 systolic, 80 diastolic. Transverse diameter of heart 9.3 cm., nonprotein nitrogen 40 mg. per 100 cc. of blood, albumin 1.1 Gm. per 1000 cc. of urine. **Disappearance of hemorrhages, left eye. Marked decrease of exudates, both eyes.**

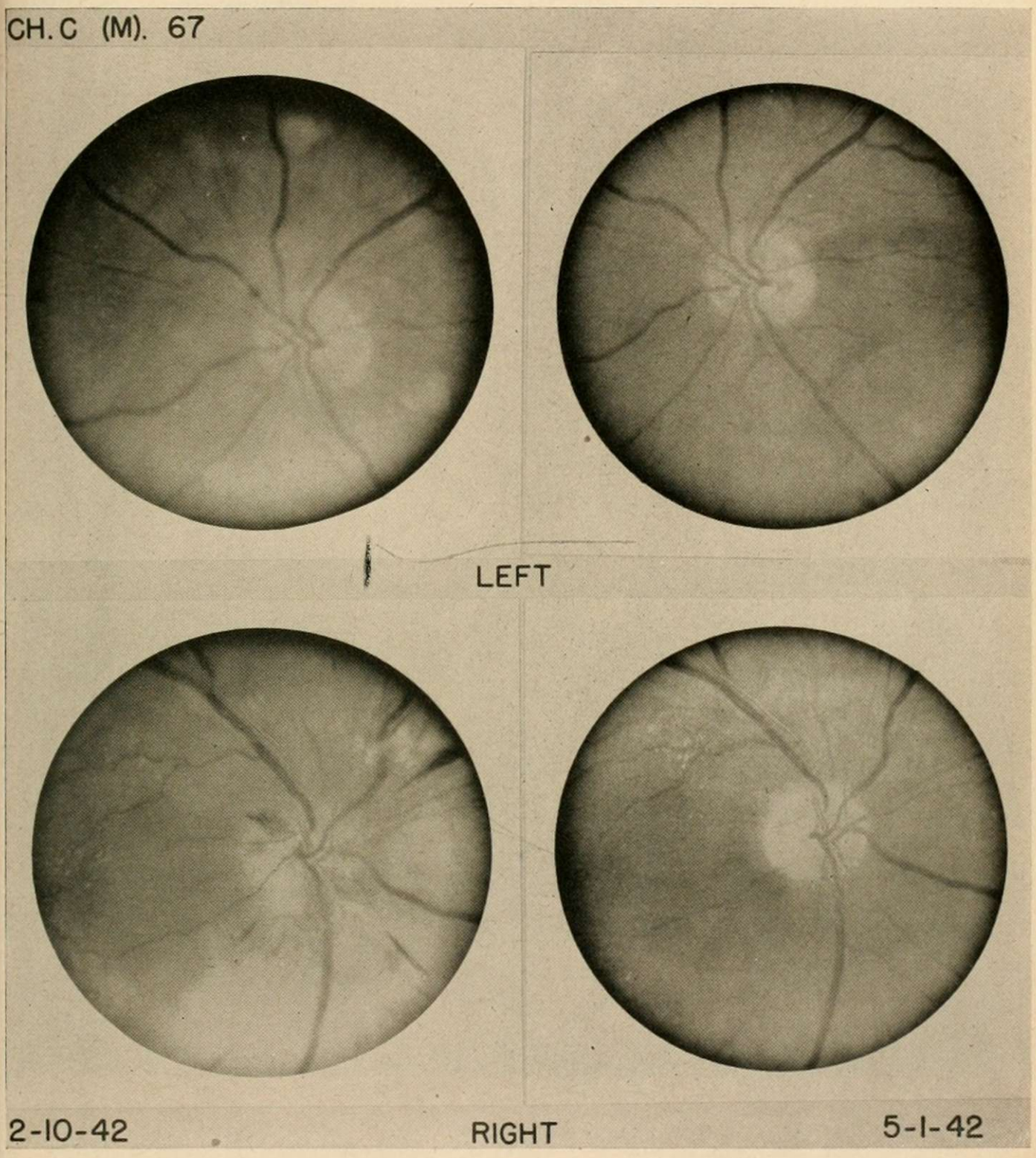


Fig. 29. Ch.C. (m., 67). Arteriosclerosis, "hypertensive vascular disease." Phenolsulfonphthalein excretion in two hours, 40 per cent. Rice diet started February 9, 1942. Before rice diet: Blood pressure 218 systolic, 112 diastolic, nonprotein nitrogen 40 mg. per 100 cc. of blood. After 2½ months of rice diet: Blood pressure 168 systolic, 91 diastolic, nonprotein nitrogen 30 mg. per 100 cc. of blood. **Disappearance of exudates, left eye; of papilledema, hemorrhages, exudates, right eye.**

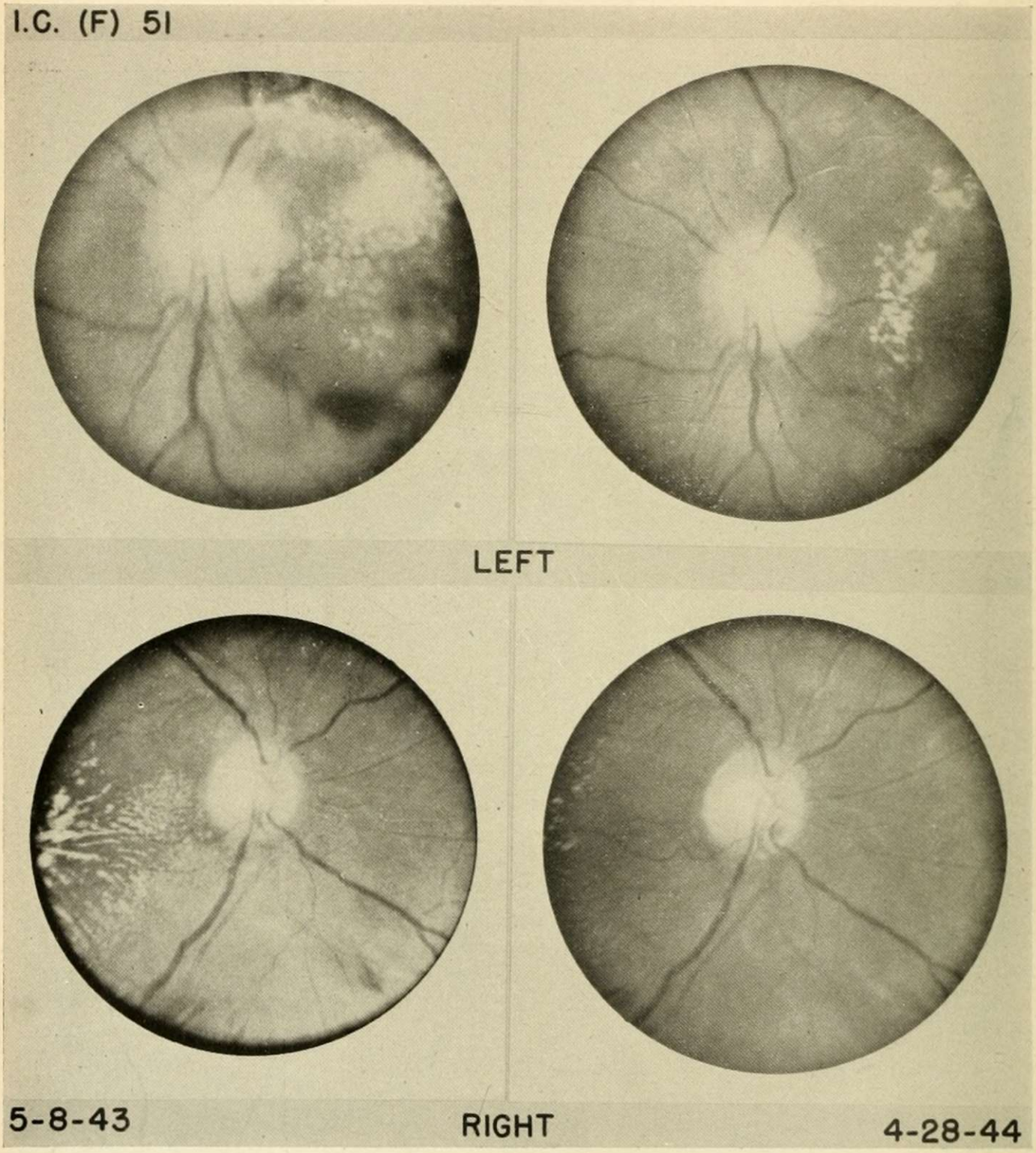


Fig. 30. I.C. (f., 51). "Hypertensive vascular disease." Phenolsulfonphthalein excretion in two hours 59 per cent. Rice diet started April 21, 1943. Before rice diet: Blood pressure 248 systolic, 125 diastolic, nonprotein nitrogen 44 mg. per 100 cc. of blood, cholesterol 292 mg. per 100 cc. of serum, albumin 0.6 Gm. per 1000 cc. of urine. After 11½ months of rice diet: Blood pressure 176 systolic, 100 diastolic, nonprotein nitrogen 30 mg. per 100 cc. of blood, cholesterol 178 mg. per 100 cc. of serum, albumin 0.08 Gm. per 1000 cc. of urine. **Disappearance of edema, hemorrhages, decrease of exudate, left eye. Disappearance of "star figure," right eye.**

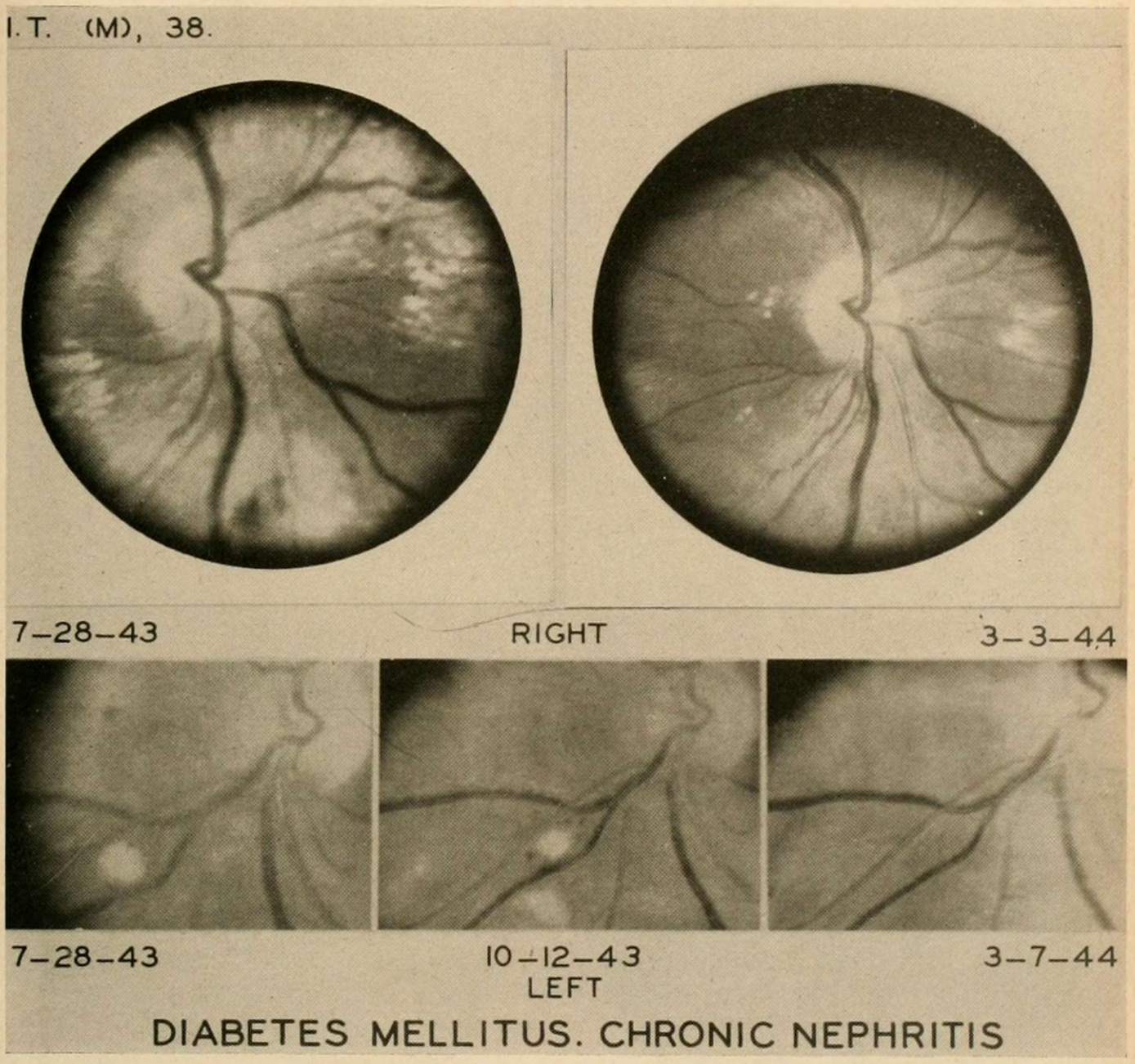


Fig. 31. I.T. (m., 38). Diabetes mellitus, chronic nephritis. Phenolsulfonphthalein excretion in two hours, 50 per cent. Rice diet started April 23, 1943. Before rice diet: Blood pressure 130 systolic, 76 diastolic, nonprotein nitrogen 55 mg. per 100 cc. of blood; total proteins 4.9 Gm. per 100 cc. of plasma; cholesterol 315 mg. per 100 cc. of serum; blood sugar 196 mg. per 100 cc. (35 units of insulin); albumin 3 Gm. per 1000 cc. of urine. After 7 months of rice diet: Blood pressure 130 systolic, 80 diastolic, nonprotein nitrogen 31 mg. per 100 cc. of blood; total proteins 5.8 Gm. per 100 cc. of plasma; cholesterol 230 mg. per 100 cc. of serum; blood sugar 120 mg. per 100 cc. (40 units of insulin); albumin 0.5 Gm. per 1000 cc. of urine. **Disappearance of exudate, left eye; of exudates, hemorrhages, right eye.**

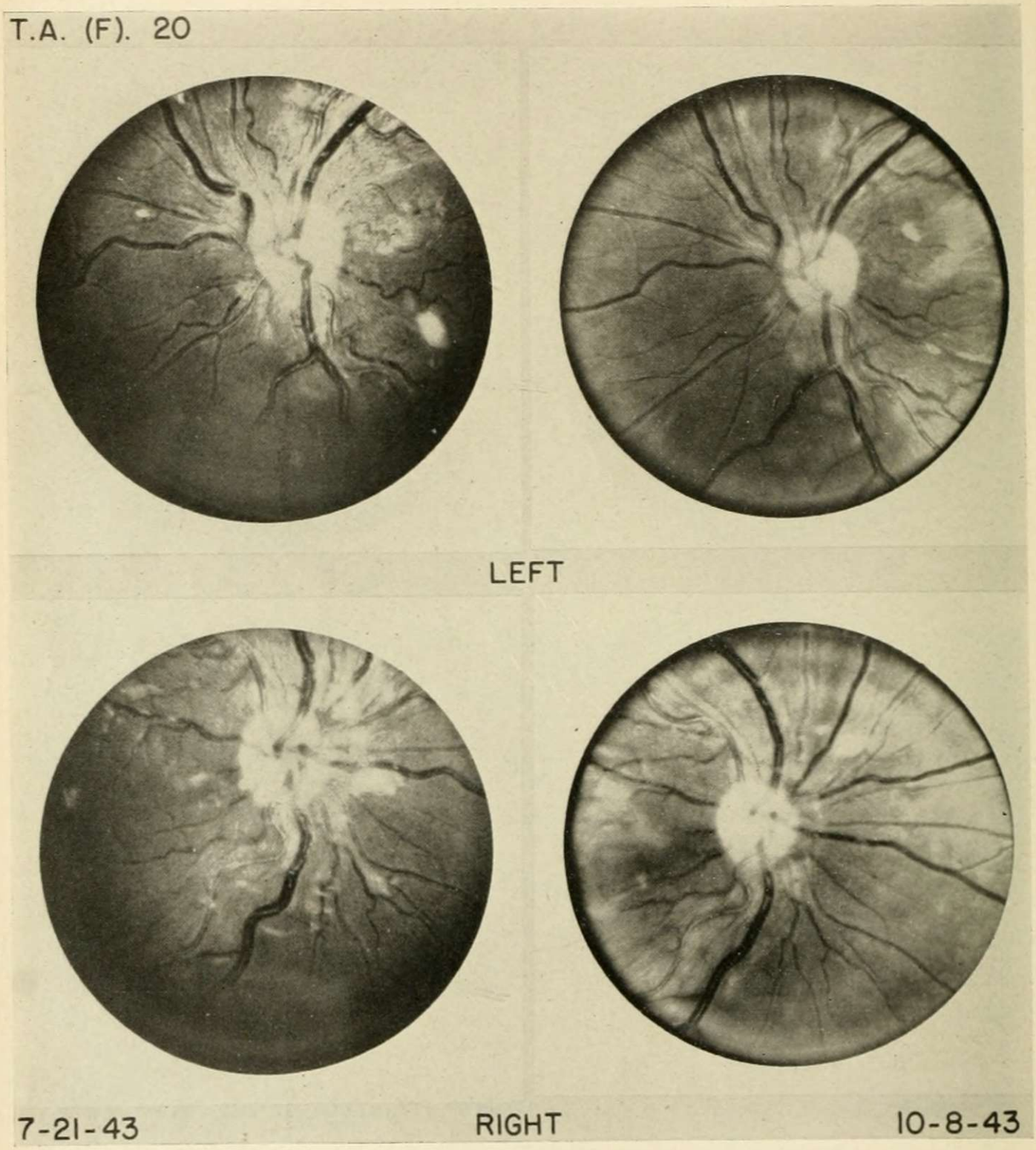


Fig. 32. T.A. (f., 20). Lupus erythematosus disseminatus. Phenolsulfonphthalein excretion in two hours, 85 per cent. Rice diet started July 19, 1943. Before rice diet: Albumin 2 Gm. per 1000 cc. of urine. After 2½ months of rice diet: Albumin 0.4 Gm. per 1000 cc. of urine. See fig. 15. **Marked decrease of exudates and venous tortuosity, both eyes.**

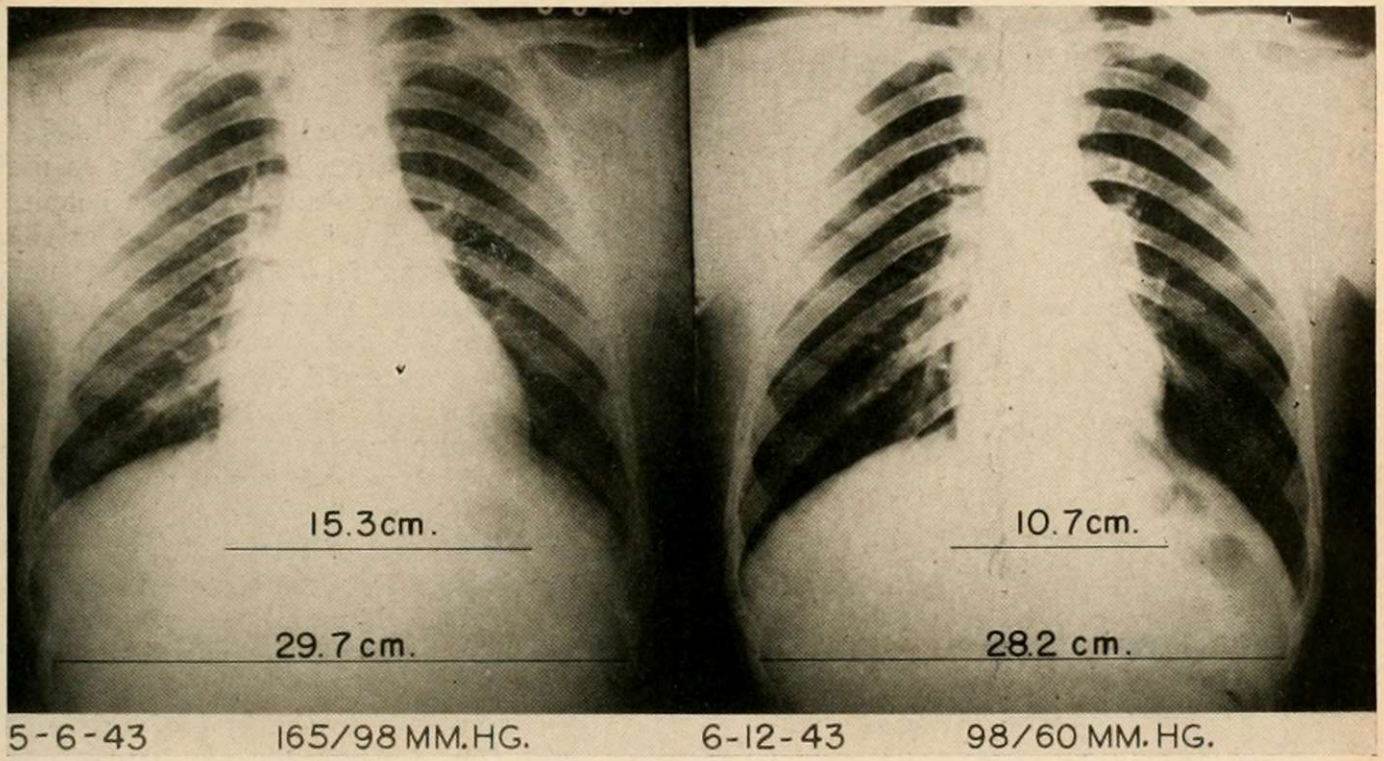


Fig. 33. W.B. Acute glomerulonephritis. Rice diet started May 6, 1943. No digitalis. **Reduction in heart size with change in transverse diameter of 43 per cent.**

either kidney region. An indirect inguinal hernia, descending into the scrotum, was present on the right side. The prostate was small. Neurological examination showed left lower facial paralysis ("birth injury").

A chest film showed the lungs clear, the heart considerably enlarged (fig. 33). A flat plate of the abdomen showed advanced arthritic changes in both sacro-iliac joints; the kidneys were not distinctly seen; the liver was not enlarged. A sinus plate showed old infection in both antra. The electrocardiogram showed upright T-waves in leads 1, 2, and 3, a diphasic T-wave in lead 4, and no axis deviation.

Accessory clinical findings: The hemoglobin was 91 per cent; there were 4,900,000 red blood cells, and 11,900 white blood cells with 2 per cent non-segmented polymorphonuclears, 68 per cent segmented polymorphonuclears, 2 per cent eosinophils, 3 per cent monocytes, 12 per cent large lymphocytes, and 13 per cent small lymphocytes; the corrected sedimentation rate was 5 mm. in one hour. The serological tests for syphilis were negative. The nonprotein nitrogen was 73 mg. per 100 cc. of blood. The total proteins were 6.1 Gm. per 100 cc. of plasma: albumin 2 Gm., globulin 4.1 Gm., albumin-globulin ratio 0.49. Chlorides (as sodium chloride) were 570 mg. per 100 cc. of plasma. The serum cholesterol concentration was 168 mg. per 100 cc. The urine had a specific gravity of 1.010, no sugar; there were 4.5 Gm. of albumin per 1000 cc. (6.3 Gm. in twenty-four hours), 30-35 red blood cells, 4-5 white blood cells per high power field, occasional hyaline and granular casts, and a 4 plus benzidine reaction. The urinary total nitrogen excretion was 15.6 Gm. in twenty-four hours, the urea excretion 18.4 Gm. in twenty-four hours. The results of the phenolsulfonphthalein test were as follows: Appearance time, ten minutes; excretion at the end of the first half hour 25 per cent, at one hour 20 per cent, at one and a half hours 18 per cent, at two hours 12 per cent; total excretion in two hours 75 per cent. Hookworm eggs were found in the stool. A culture from the nose and throat showed Micrococcus catarrhalis and alpha hemolytic organisms.

Impression: Acute glomerulonephritis with edema, hypertension, cardiac enlargement, and azotemia.

Course: The patient was afebrile except from the eighth to the eleventh hospital day, when his temperature went up to 38 C. The rice diet (1800 calories) was started on the first hospital day; fluid intake was limited to 400 cc. of fruit juices daily. During the first week, the weight fell from 73.1 Kg. to 63.25 Kg. (fig. 34), the blood pressure decreased from 176 systolic, 101 diastolic to 120 systolic, 80 diastolic, remaining at a level

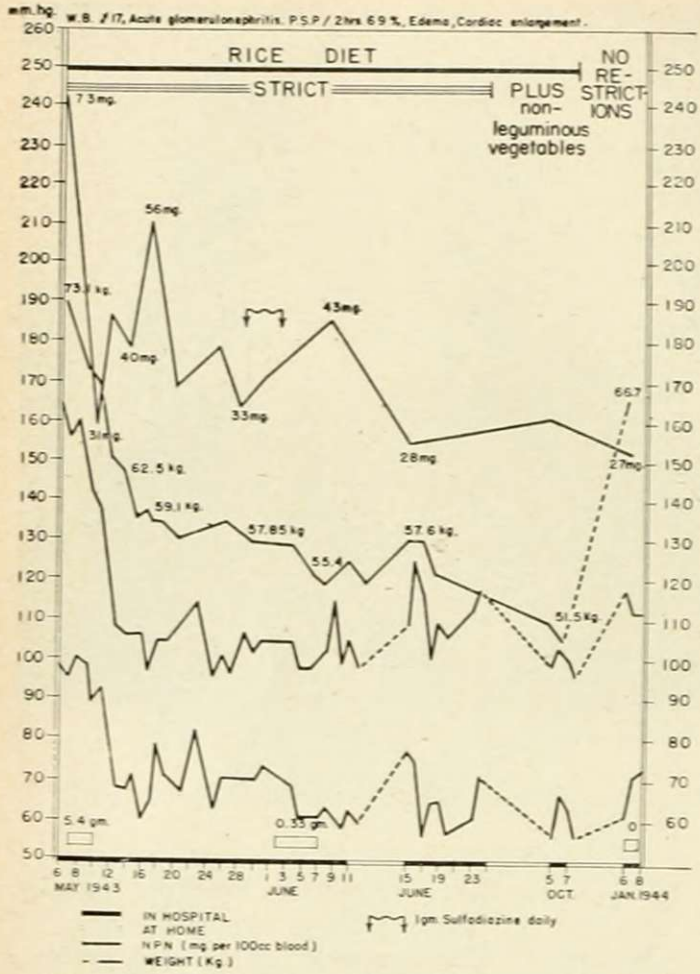


Fig. 34. W.B. Acute glomerulonephritis. Decrease of blood pressure to normal in 6 days on rice diet. Thirty pound weight loss (edema) in 10 days. Disappearance of albuminuria. Decrease of elevated nonprotein nitrogen to normal.

of 105 systolic, 68 diastolic from the second week on (fig. 34). The headache and backache disappeared. On the sixth hospital day the right antrum was irrigated. After fourteen days on the rice diet, the patient's nonprotein nitrogen was 35 mg. per 100 cc. of blood (fig. 34), his weight 58.3 Kg. There were many red blood cells in the urine during the first four weeks. Average albumin excretion during the third week was 1 Gm. per 1000 cc. (1.31 Gm. per twenty-four hours), as compared to an average excretion of 4.5 Gm. per 1000 cc. (6.49 Gm. per twenty-four hours) during the first week. During the fourth and fifth hospital weeks, the albumin excretion decreased to an average of 0.4 Gm. per 1000 cc. of urine (0.51 Gm. per twenty-four hours). Sulfadiazine (0.5 Gm. twice daily) was given for five days in the fourth week. When the patient was discharged in the sixth week, his hemoglobin was 91 per cent, total proteins per 100 cc. of plasma were 5.8 Gm. (albumin 3.0 Gm., globulin 2.8 Gm., albumin-globulin ratio 1.1). His nonprotein nitrogen was 38 mg. per 100 cc. of blood, his weight 56 Kg. He had lost 37 pounds of edema fluid and his heart size had decreased to normal (fig. 33).

The patient continued the strict rice diet at home and was readmitted to the hospital one month later. His blood pressure at that time was 107 systolic, 72 diastolic, his nonprotein nitrogen 28 mg. per 100 cc of blood, urea nitrogen 5.5 mg., urea ratio 20. The total proteins were 5.8 Gm. per 100 cc. of plasma: albumin 3.2 Gm., globulin 2.6 Gm., albumin-globulin ratio 1.2. Chlorides (as sodium chloride) were 512 mg., calcium was 9.6 mg., phosphorus 3.4 mg., cholesterol 80-115 mg. per 100 cc. of serum. The patient's tonsils and adenoids were removed. For the next two and a half months he remained on the rice diet, modified by the addition of nonleguminous vegetables. The urinary total nitrogen excretion at the end of this time was 1.66 Gm. in twenty-four hours, urea excretion 1.7 Gm. in twenty-four hours (1160 cc. of urine). There was no albuminuria, and the patient was completely asymptomatic. The rice diet was discontinued.

Eight months after his first hospitalization, the patient's blood pressure was 114 systolic, 67 diastolic, and his heart size was normal. The nonprotein nitrogen was 27 mg. per 100 cc. of blood, the urea nitrogen 10.2 mg.; chlorides (as sodium chloride) were 604 mg. per 100 cc. of serum. No albumin or red blood cells were present in the urine. Urea clearance was 86 per cent of normal (on a diet containing 50 Gm. of protein). Phenolsulfonphthalein excretion was 60 per cent in one hour. When he was last examined on July 24-27, 1944, he was again completely asymptomatic. There was no indication of any previous kidney disease. The blood pressure was 110 systolic, 70 diastolic; phenolsulfonphthalein excretion was 85 per cent in one hour.

PATIENT 2. *Chronic glomerulonephritis (total phenolsulfonphthalein excretion in two hours 15-35 per cent); hypertension (182 systolic, 117 diastolic); vascular retinopathy. Example of decrease of high blood pressure to normal, and disappearance of retinopathy, heart enlargement, and depression of RT-1.*

N. McL. (A90726), a 33 year old white farmer's widow, was admitted to the hospital on September 17, 1942, complaining of giddiness, failing vision, substernal oppression, and exertional dyspnea.

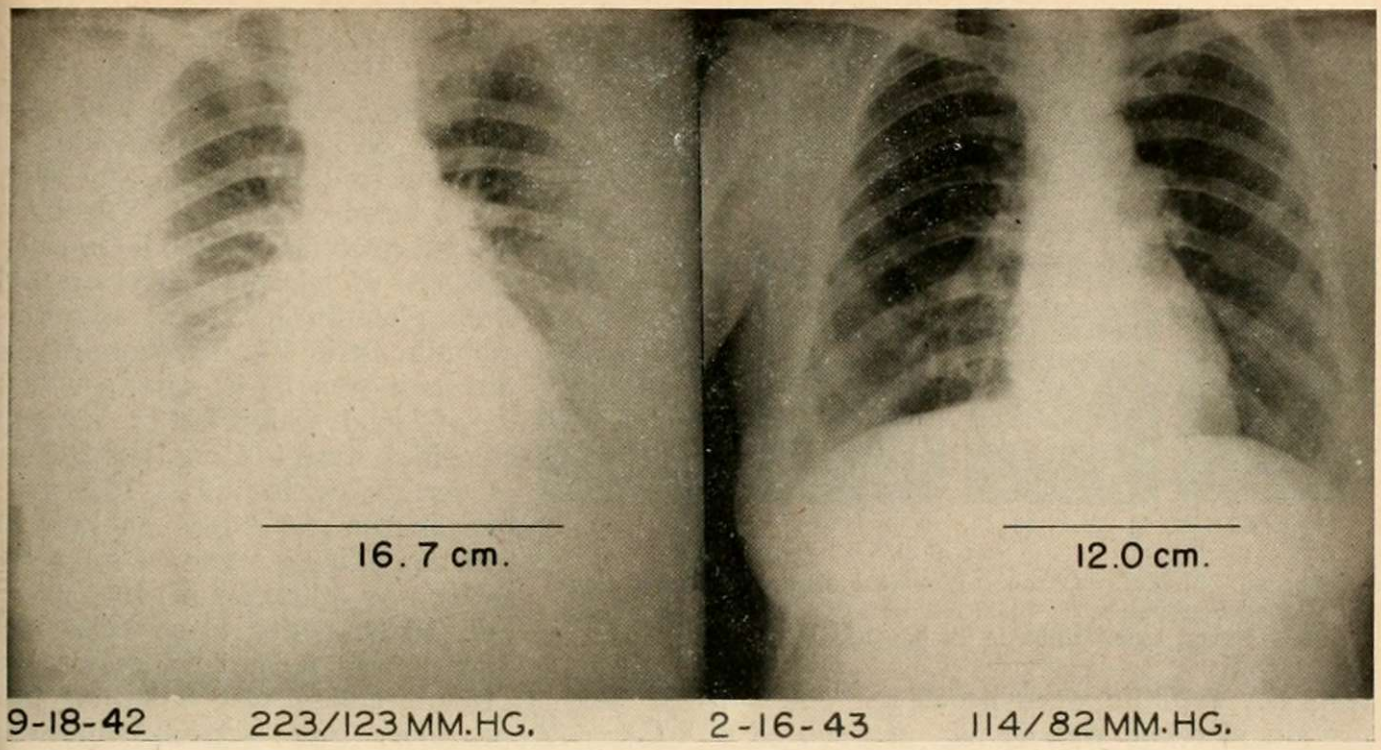


Fig. 35. N. McL. Chronic glomerulonephritis. Rice diet started September 28, 1942. No digitalis. **Reduction in heart size with change in transverse diameter of 39 per cent.**

History: The patient had had measles and pellagra in childhood, and "kidney trouble" at 17. She had received blood transfusions for anemia in the following years. At 22, she was treated for oliguria and dysuria; at 25-26, she had edema of the ankles and face. She had malaria and erysipelas of the leg when she was 27. Between 28 and 29, her vision began to fail; her physician told her that this was due to kidney disease. At 30, she had "something like a stroke," which cleared up after two or three weeks of bed rest. The patient had never been pregnant.

One year before admission, she was treated with "injections" and blood transfusions for anemia, and with diuretics and other medication for hypertension and "kidney trouble." Her vision was poor; she complained of diplopia and scotomata. There was edema of the feet and legs. She had dyspnea on exertion, paroxysmal nocturnal dyspnea, a feeling of substernal oppression, tachycardia and palpitation.

On *examination*, her height was 156 cm., her weight 82.2 Kg., temperature 37.5 C., pulse 88, respiration 20, blood pressure 190 systolic, 120 diastolic. Slight edema of the ankles and lower legs was noted. Extraocular movements were normal; the pupils were equal and reacted well to light and accommodation. Both discs were blurred on the nasal and temporal sides; the arterioles were silverish and moderately tortuous. A hemorrhage was present in the lower nasal region of the left eye. The teeth were carious, the tonsils enlarged. The lungs showed no pathological findings on percussion and auscultation. The heart was enlarged to the left and right; a soft systolic aortic murmur was heard. The abdomen was obese; no masses were felt, the liver was not enlarged, the spleen was not palpable, and no tenderness was present in either kidney region. The uterus was of normal size with a second degree retroversion. Neurological examination did not show any pathological findings.

A chest film (fig. 35) was read: "Lungs clear. Heart enlarged." The transverse diameter of the heart was 16.7 cm. A flat plate of the abdomen and a retrograde pyelogram were reported as follows: "Kidney normal in outline, no stones seen. Calices and pelves on both sides normal. Spleen slightly enlarged." The electrocardiogram (fig. 36) showed a depressed RT segment in lead 1, diphasic T_1, and a normal sinus rhythm. The basal metabolic rate was −11 per cent.

Accessory clinical findings: The hemoglobin was 92 per cent, red blood cells 4,410,000, white blood cells 6,400 with 1 per cent non-segmented polymorphonuclears, 60 per cent segmented polymorphonuclears, 1 per cent basophils, 5 per cent monocytes, 6 per cent large lymphocytes, 27 per cent small lymphocytes; the corrected sedimentation rate was 18 mm. in one hour. Serological

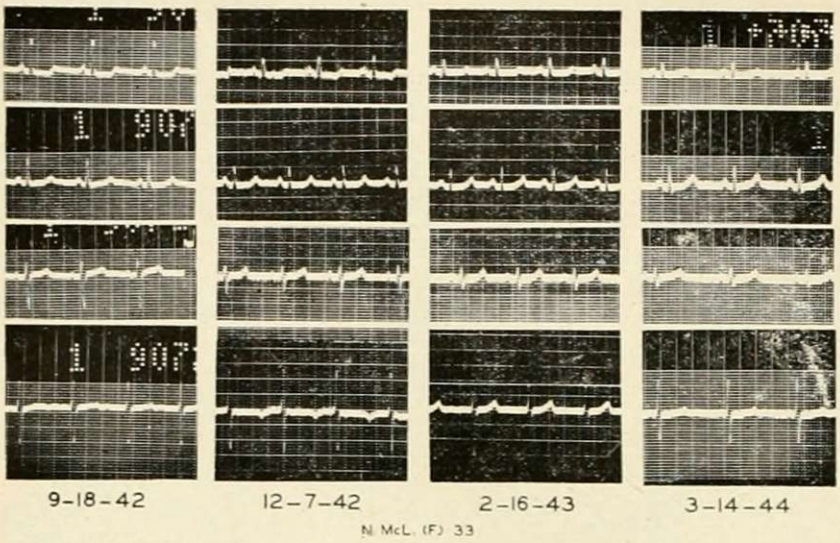


Fig. 36. N. McL. Chronic glomerulonephritis. Rice diet started September 28, 1942. No digitalis. **Increase in angle of electrical axis. Diphasic T_1 has become upright.**

tests for syphilis were negative. The nonprotein nitrogen was 54 mg. per 100 cc. of blood. Total proteins were 6.4 Gm. per 100 cc. of plasma: albumin 3.6 Gm., globulin 2.8 Gm., albumin-globulin ratio 1.3. The urine had a specific gravity of 1.012, no sugar, a 3 plus reaction for albumin, 10-15 white blood cells per high power field, no red blood cells, no casts, a negative benzidine reaction. The results of a phenolsulfonphthalein test were as follows: Appearance time five minutes; excretion at the end of the first half hour 10 per cent, at one hour 7.5 per cent, at one and a half hours 5 per cent, at two hours 2.5 per cent; total excretion in two hours was 25 per cent.

Impression: Chronic glomerulonephritis with hypertension, heart enlargement, diphasic T_1, vascular retinopathy.

Course: For the first eleven days, the patient received a 1500 calorie, salt-poor diet containing 30 Gm. of protein and 2000 cc. of fluids. Her blood pressure during this time averaged 182 systolic, 117 diastolic. The nonprotein nitrogen remained at 54 mg. per 100 cc. of blood. On the twelfth day, the rice diet was started (800-1500 calories, 900-1000 cc. of fruit juices). After six days, the nonprotein nitrogen had decreased to 42 mg. per 100 cc. of blood. The blood pressure at discharge after eleven days of rice diet was 162 systolic, 116 diastolic (fig. 37). The weight was 77.7 Kg., hemoglobin 101 per cent, red blood cells 5,100,000, white blood cells 5,150; the urine gave a 1 to 2 plus reaction for albumin. The patient continued the diet strictly at home, lying down most of the time. She returned to the hospital after eight weeks, feeling much improved. Her blood pressure then was 124 systolic, 84 diastolic, her weight 68.3 Kg., hemoglobin 84 per cent, red blood cells 4,000,000, white blood cells 7,100. The total plasma proteins were 6.8 Gm. per 100 cc. of plasma: albumin 3.6 Gm., globulin 3.2 Gm., albumin-globulin ratio 1.1. The nonprotein nitrogen was 51-64 mg. per 100 cc. of blood. Chlorides (as sodium chloride) were 516 mg. per 100 cc. of serum, calcium was 10.2 mg., phosphorus 4.3 mg., cholesterol 208 mg. There was a 2 plus reaction for albumin in the urine and 10-15 white blood cells per high power field. The results of a phenolsulfonphthalein test were as follows: Appearance time sixteen minutes; excretion at the end of the first half hour 5 per cent, at one hour 4 per cent, at one and a half hours 4 per cent, at two hours 3 per cent; total excretion in two hours 16 per cent. The electrocardiogram (fig. 36) showed a diphasic T_1, upright T_2 and T_3. Examination of the eyegrounds showed the discs more sharply outlined; the hemorrhage in the left eye had been absorbed, leaving a small area of pigmentation.

The patient was readmitted on February 16, 1943, after another two months of strict rice diet at home (1200 calories, 1000 cc. of fruit juices). She felt very well and had no complaints. Her nonprotein nitrogen was 69 mg. per 100 cc. of blood, her blood pressure 120 systolic, 84 diastolic, her weight 66.4 Kg., hemoglobin 78 per cent, total proteins 6.7 Gm. per 100 cc. of plasma, albumin-globulin ratio 0.81; chlorides (as sodium chloride) 528 mg. per 100 cc. of serum, calcium 9.4 mg., phosphorus 3.2 mg., cholesterol 121 mg. The albumin excretion in the urine was 1.52 Gm. in twenty-four hours (675 cc.), the total nitrogen excretion 1.82 Gm. and the urea excretion 2.52 Gm. The total phenolsulfonphthalein excretion in two hours was 15 per cent. There was marked reduction in the size of the heart (fig. 35); the transverse diameter was 12.0 cm. The electrocardiogram (fig. 36) showed the RT_1 segment to be less depressed. The basal metabolic rate was −12 per cent. After twelve days in the hospital, the nonprotein nitrogen was 40 mg. per 100 cc. of blood.

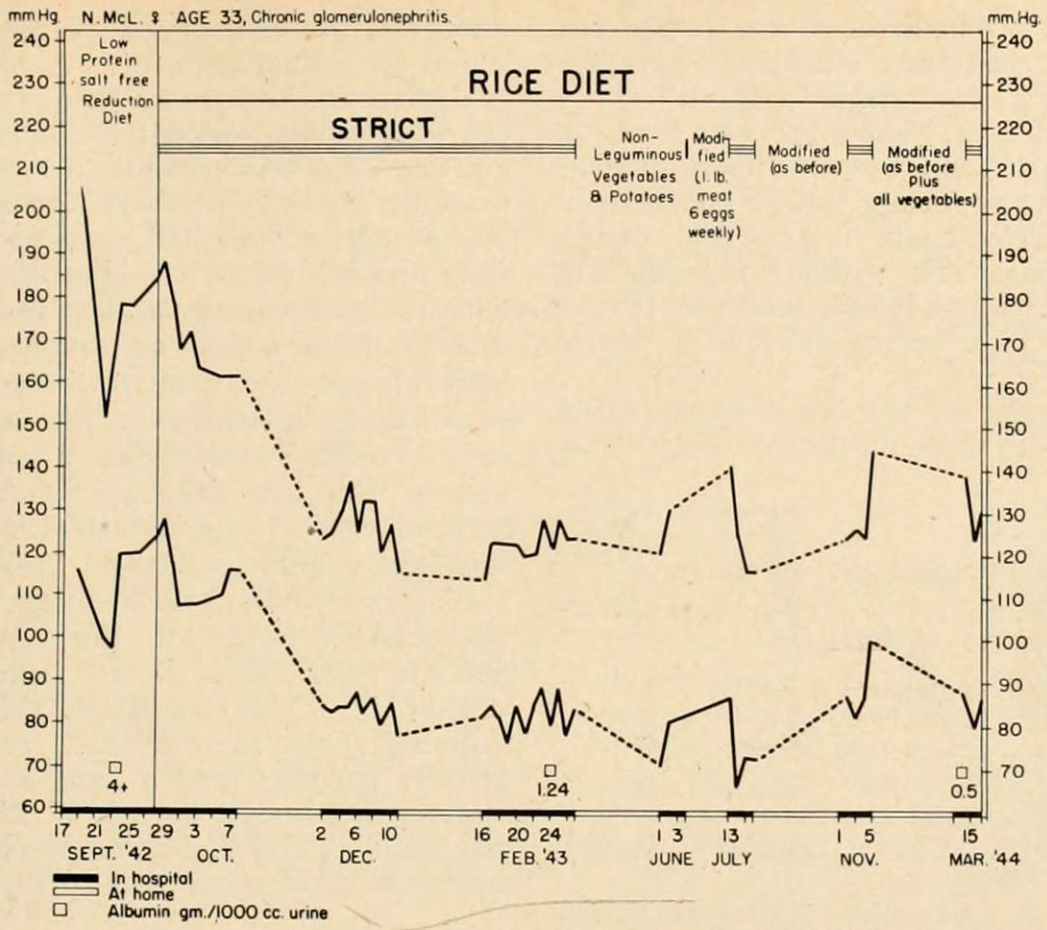


Fig. 37. N. McL. Chronic glomerulonephritis. **Decrease of blood pressure to normal in two months on rice diet.**

The hemoglobin at discharge was 84 per cent. The urine contained 10-12 white blood cells per high power field, but no red blood cells and no casts. The weight was 60.2 Kg. Non-leguminous vegetables and small amounts of Irish and sweet potatoes were added to the strict rice diet.

The patient stayed on this diet for the following three months and was up part of the day. When she was again seen in the hospital on June 1, 1943, she said that she had had no complaints except minimal ankle edema. Her blood pressure was 120 systolic, 70 diastolic, her weight 62.5 Kg. The nonprotein nitrogen was 36 mg. per 100 cc. of blood. Total proteins were 5.8 Gm. per 100 cc. of plasma; the albumin-globulin ratio was 1.2. Chlorides (as sodium chloride) were 592 mg. per 100 cc. of serum, calcium was 8.7 mg., phosphorus 3.4 mg., cholesterol 110 mg. The hemoglobin was 48 per cent, red blood cells 2,200,000, white blood cells 5,440. After five days in the hospital she was discharged on the diet which was started February 27, further modified by the addition of one egg six times a week and ¼ pound of liver, chicken, or lean beef four times a week.

Examination on November 1-5, 1943, gave the following findings: Blood pressure 124 systolic, 86 diastolic; hemoglobin 97 per cent, red blood cells 4,200,000; nonprotein nitrogen 43 mg., urea nitrogen 18 mg. per 100 cc. of blood; total proteins 6.2 Gm. per 100 cc. of plasma (albumin-globulin ratio 2.0); cholesterol 140 mg. per 100 cc. of serum. The urinary total nitrogen excretion was 3.4 Gm., the urea excretion 5.03 Gm. in twenty-four hours (580 cc.). The urea clearance was 46.2 per cent of normal. Phenolsulfonphthalein excretion in two hours was 21 per cent. The transverse diameter of the heart was 10.7 cm. The patient was feeling very well and had been doing light housework. Her diet was further modified to include corn, beans, and peas, besides the eggs, meat, and vegetables allowed before.

On March 13-16, 1944, the blood pressure averaged 131 systolic, 85 diastolic; the weight was 61.5 Kg. The transverse diameter of the heart was 11.0 cm., that of the great vessels 5.3 cm. The nonprotein nitrogen was 46 mg. per 100 cc. of blood; total proteins were 6.1 Gm. per 100 cc. of plasma (albumin 3.2 Gm., globulin 2.9 Gm.). Two phenolsulfonphthalein tests showed a total

excretion in two hours of 35 and 28 per cent. The patient had been completely asymptomatic and was feeling perfectly well.

When last seen, September 4-8, 1944, the patient was still following the liberally modified rice diet and feeling "young and strong." She had married again in April and was doing her housework without noticing any fatigue. She was advised, however, to wait for another year before considering having a child.

The findings on the latest examination, compared with those on the first hospitalization, were:

	September, 1942	*September, 1944*
Blood pressure (mm. Hg.)	182/117	126/82
Hemoglobin (% of 15.5 Gm.)	92	85
RBC (per cubic mm.)	4,410,000	3,900,000
NPN (mg. per 100 cc. of blood)	54	38
Total proteins (Gm. per 100 cc. of plasma)	6.4	6.5
PSP (% excreted in two hours)	25	25
Weight (Kg.)	82.2	58.7
Transverse diameter of heart (cm.)	16.7	11.1
Diameter of great vessels (cm.)	6.8	5.3
T wave in lead 1	Diphasic	Upright
Retinal hemorrhages	+	0

PATIENT 3. *Chronic glomerulonephritis (total phenolsulfonphthalein excretion in two hours 17.5 per cent); hypertension (250 systolic, 174 diastolic); uremia (nonprotein nitrogen 87-153 mg. per 100 cc. of blood). Example of decrease of high blood pressure and nonprotein nitrogen to normal and of recovery of eyesight with disappearance of papilledema, retinal hemorrhages, and exudates.*

C.A. (A99483), a 32 year old white farmer's wife, was admitted to the hospital in a semi-comatose condition, very acutely ill. The *history* was obtained from the husband and, after recovery, from the patient. She had had ten children, of whom six were living. Her blood pressure had been high before delivery of the ninth child. One week before delivery of the tenth child—in February, 1942—she developed ankle edema and headache. She had had high blood pressure "ever since." Attacks of pain in both flanks, radiating into the lower part of the back, had occurred about every four to five weeks since July, 1942. Her vision had been failing since August. Since Christmas, 1942, she had had increasing weakness, intense headache, and vomiting; she had become completely blind, except for light perception. For a few days before admission she had been "out of her mind," and unconscious part of the time. During momentary lucid intervals, she complained of headache and vague abdominal pain.

Upon *examination* on February 2, 1943, her temperature was 36.5 C., pulse 120, respiration 22, blood pressure 250 systolic, 174 diastolic. She was pale and stuporous. There was no edema. She had a marked nephritic stare and mydriasis. The eyegrounds showed bilateral papilledema, engorgement and tortuosity of the veins, and numerous large hemorrhages and exudates; the arterioles were partly invisible. A few small blood clots were seen in the nose. The breath was uremic. She had moderate gingivitis. The neck showed no venous distention; the thyroid was slightly enlarged. There were no pathological findings in the lungs. The heart was enlarged to the left, the point of maximum impulse being 10 cm. from the midsternal line. The sounds were loud, and a slapping aortic second sound, a soft apical systolic murmur, and a loud, harsh aortic systolic murmur were heard. The rhythm was regular, and there was no friction rub. Moderate tenderness was present in the

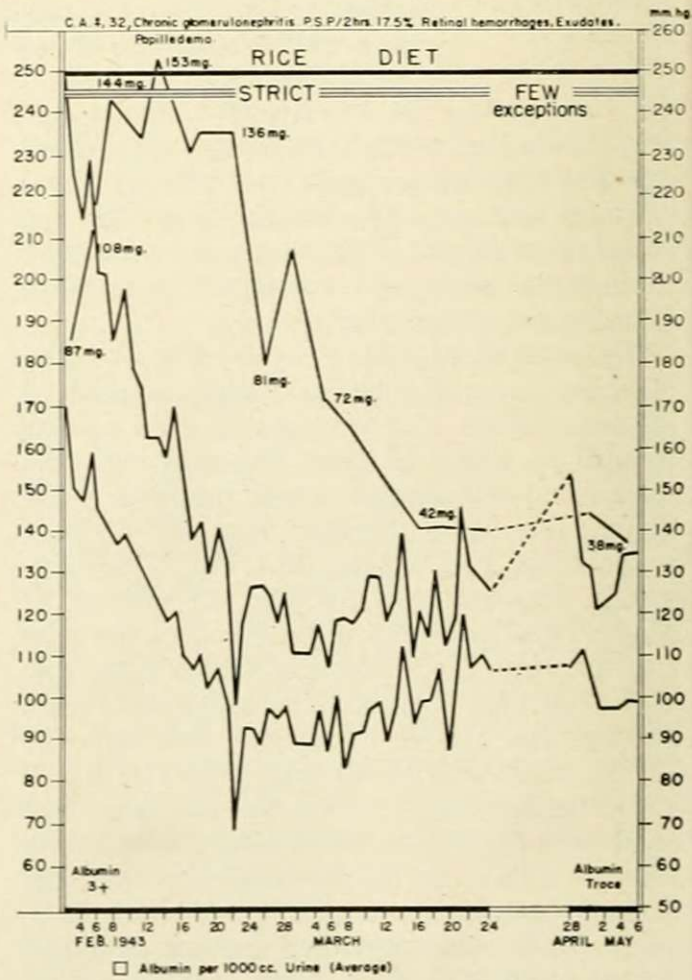


Fig. 38. C.A. Chronic glomerulonephritis. Decrease of blood pressure to normal in 3 weeks on rice diet. Decrease of nonprotein nitrogen and albuminuria.

right lower quadrant. The liver was not enlarged.

Accessory clinical findings: The hemoglobin was 80 per cent, red blood cells 4,000,000, white blood cells 14,350, with 4 per cent juveniles, 10 per cent non-segmented polymorphonuclears, 78 per cent segmented polymorphonuclears, 2 per cent eosinophils, 3 per cent monocytes, 2 per cent large lymphocytes, 1 per cent small lymphocytes. The corrected sedimentation rate was 40 mm. in one hour. Serological tests for syphilis were negative. The nonprotein nitrogen was 87 mg. per 100 cc. of blood. The carbon dioxide combining power of the plasma was 41 volumes per cent. Total proteins were 6.9 Gm. per 100 cc. of plasma: albumin 4.0 Gm., globulin 2.9 Gm., albumin-globulin ratio 1.4. Chlorides (as sodium chloride) were 414 mg. per 100 cc. of serum, calcium 9.6 mg., phosphorus 3.6 mg. The urine gave a 3 plus reaction for albumin and contained 20-30 red blood cells and 10-15 white blood cells per high power field, and many hyaline and granular casts; the benzidine reaction was 1 plus.

Impression: Terminal stage of chronic glomerulonephritis; uremia; hypertension; vascular retinopathy with papilledema, hemorrhages, and exudates.

Course: The patient was started on the rice diet immediately, but during the first few days was able to take only very small amounts of it. Four hundred and fifty to 1300 cc. of fruit juices were given daily, but partly lost by vomiting. Five hundred to 2000 cc. of 10 per cent glucose in water containing nicotinic acid, thiamine chloride, ascorbic acid, and vitamin K were given intravenously during the first two weeks. The only other medication was 1 cc. of dilute hydrochloric acid three times daily by mouth. After ten to fourteen days of mental confusion (excitation state alternating with stupor), with the nonprotein nitrogen rising to 153 mg. per 100 cc. of blood (fig. 38), and the hemoglobin falling to 52 per cent (red blood cells 2,500,000, benzidine reaction of the stool 4 plus), the patient was definitely better and able to take the greater part of the diet. On the fourteenth hospital day, the total nitrogen excretion in the urine was 2.55 Gm. in twenty-four hours. By that time, the blood pressure had gradually decreased to 156 systolic, 112 diastolic (fig. 38). The carbon dioxide combining power of the plasma was 57 volumes per cent. Chlorides (as sodium chloride) were 445 mg. per 100 cc. of plasma. Intravenous glucose was discontinued. The average daily fluid intake in the following two weeks was 1260 cc. of fruit juices. The patient was rational and could answer questions. She was able to distinguish light and dark, but was unable to see objects. On the fifteenth hospital day, she was strong enough to sit up a few minutes so that photographs of the eyegrounds could be taken (fig. 39). The nonprotein nitrogen fell gradually (fig. 38): on the twentieth hospital day, it was 136 mg. per 100 cc. of blood, on the twenty-seventh day 108 mg., on the thirty-fourth day 66 mg., on the forty-second day 42 mg. The blood pressure readings from the twentieth to the fiftieth day averaged 123 systolic, 97 diastolic. Eight days before discharge, the phenolsulfonphthalein excretion at the end of one-half hour was 0, at one hour 7.5 per cent, at one and a half hours 5 per cent, at two hours 5 per cent; the total excretion in two hours was 17.5 per cent. The urine contained 0.1-0.2 Gm. of albumin in 1000 cc.; the hemoglobin was 66 per cent, red blood cells 3,300,000; chlorides (as sodium chloride) were 508 mg. per 100 cc. of plasma. The patient was feeling completely well and was gradually regaining her eyesight. The eyegrounds were very much improved; the engorgement and tortuosity of the veins were decreasing, the papilledema was subsiding, and there were no new hemorrhages or exudates.

The patient was discharged on the fifty-second day on the strict rice regime. She followed this, except for six eggs taken in the last week, until her readmission on April 28. At this time, she was feeling "well and healthy," and said that she had had no headache and had been doing all her housework without getting tired. Her eyesight was fully restored. Her heart size was at the upper limits of normal. The rhythm was regular and there were no murmurs. Her blood pressure (average of seven days) was 130 systolic, 102 diastolic. The nonprotein nitrogen was 38 mg. per 100 cc. of blood, the hemoglobin 67 per cent. The urine contained only a trace of albumin and no red blood cells; the benzidine reaction was negative. The phenolsulfonphthalein excretion was about 20 per cent in two hours. The total nitrogen excretion in the urine was 1.17 Gm. in twenty-four hours. Examination of the eyegrounds (fig. 39) showed the discs sharply outlined; the papilledema had com-

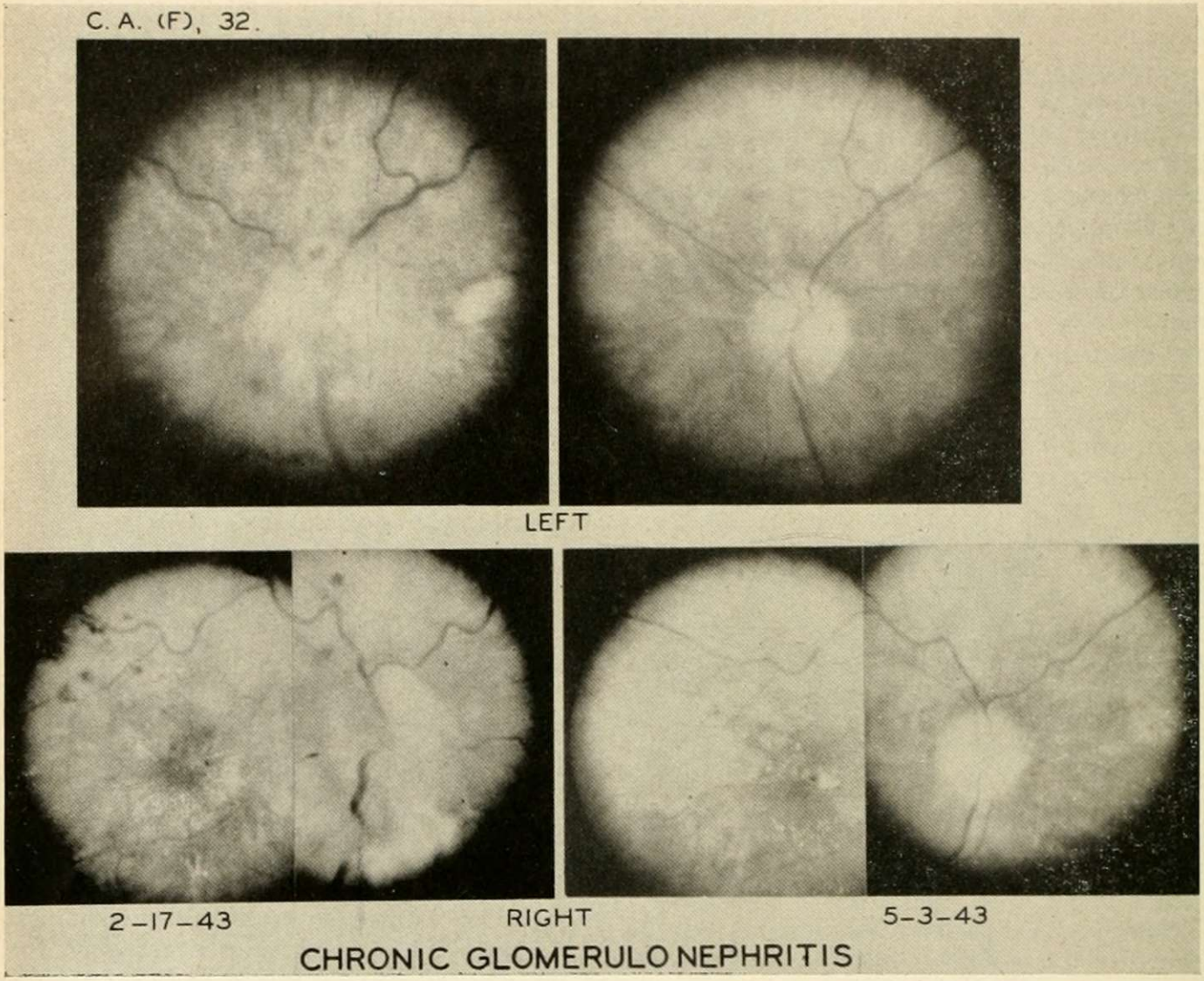


Fig. 39. C.A. (f., 32). Chronic glomerulonephritis. Rice diet started February 2, 1943. **Disappearance of papilledema, hemorrhages, exudates; marked decrease of venous tortuosity and engorgement, both eyes.**

pletely disappeared; hemorrhages and exudates had been absorbed, leaving some pigmentation and scarring; previously tortuous and engorged veins had become delicate and straight.

PATIENT 4. *Chronic pyelonephritis (total phenolsulfonphthalein excretion in two hours 9-25 per cent); hypertension (234 systolic, 144 diastolic); vascular retinopathy. No improvement on salt-poor, meat-free diet. Example of decrease of high blood pressure to normal and disappearance of retinal hemorrhages and heart enlargement on strict rice diet. Elevation of blood pressure following too liberal modification of diet.*

A.E.H. (B3008), a 36 year old white farmer's wife, was admitted to the hospital on April 5, 1943, with the chief complaints of headache, weakness, failing vision, substernal oppression, and exertional dyspnea.

History: The patient had had mumps and pneumonia in childhood, malaria at the age of 17, and influenza at 20 and 36. She had been pregnant six times, had had three abortions, and had three living children. Her last pregnancy had terminated in an abortion in the sixth month—July, 1942. In June and July, 1942, she had severe headache, failing vision, moderate edema, and high blood pressure. After the abortion, her blood pressure was said to have decreased. The headache was milder for one month, but there was no increase in visual acuity, and generalized weakness persisted. In August, 1942, a curettage was performed at the local hospital because of excessive vaginal bleeding. Her blood pressure at that time was said to be normal. She continued to have moderate headache and progressive visual disturbances until the end of September, when the headache increased in severity. The physician whom the patient consulted

about her eyesight found her blood pressure high and suggested a salt-poor, meat-free diet, which she followed with no relief. Starting in December, 1942, she had continuous severe headache, blurred vision, nocturia (five to six times nightly), tachycardia, substernal oppression, and exertional dyspnea, but she had no edema. Her blood pressure was said to have remained high in spite of diet, sedatives, laxatives, and rest. The patient was unable to do her housework because of weakness and headache.

Examination: Her height was 157 cm., her weight 57 Kg., temperature 36.8 C., pulse 96, respiration 20, blood pressure 246 systolic, 159 diastolic. There was no edema. Acne was present over the anterior chest. Examination of the eyes showed mydriasis and moderate photophobia; the pupils reacted equally to light and accommodation. The disc margins in both eyes were not quite distinct. The arterioles were markedly constricted ("silver-wire" arterioles), the veins moderately engorged. Arteriovenous compression and several hemorrhages and patches of yellowish exudate were present in both eyes. The inferior nasal turbinates were swollen. The teeth were in good repair. The lungs showed no pathological findings on percussion and auscultation. The heart was moderately enlarged to the right and left. The sounds were loud and snapping; the aortic second sound was louder than the pulmonic second sound; no murmurs were heard. There were no masses or tenderness in the abdomen; the liver was not enlarged, and the spleen not palpable. The uterus was found to be small and in the mid-pelvis; there was a mild cervicitis. Neurological examination gave no pathological findings.

A chest film (fig. 40) showed the diameter of the great vessels to be 6.2 cm., the transverse diameter of the heart 11.9 cm., the internal chest diameter 26.8 cm. The electrocardiogram (fig. 41) showed diphasic T-waves in lead 1 and upright T-waves in leads 2 and 3; the angle of the electrical axis was + 22 degrees. A flat plate of the abdomen did not show any stones.

Accessory clinical findings: The hemoglobin was 97 per cent, red blood cells 4,960,000, white blood cells 6,040, with 7 per cent non-segmented polymorphonuclears, 58 per cent segmented polymorphonuclears, 2 per cent eosinophils, 5 per cent monocytes, 11 per cent large lymphocytes, 17 per cent small lymphocytes. The corrected sedimentation rate was 36 mm. in one hour. Serological tests for syphilis were negative. The nonprotein nitrogen was 46 mg. per 100 cc. of blood, the carbon dioxide combining power of the plasma 49 volumes per cent. The total proteins were 7.7 Gm. per 100 cc. of plasma:

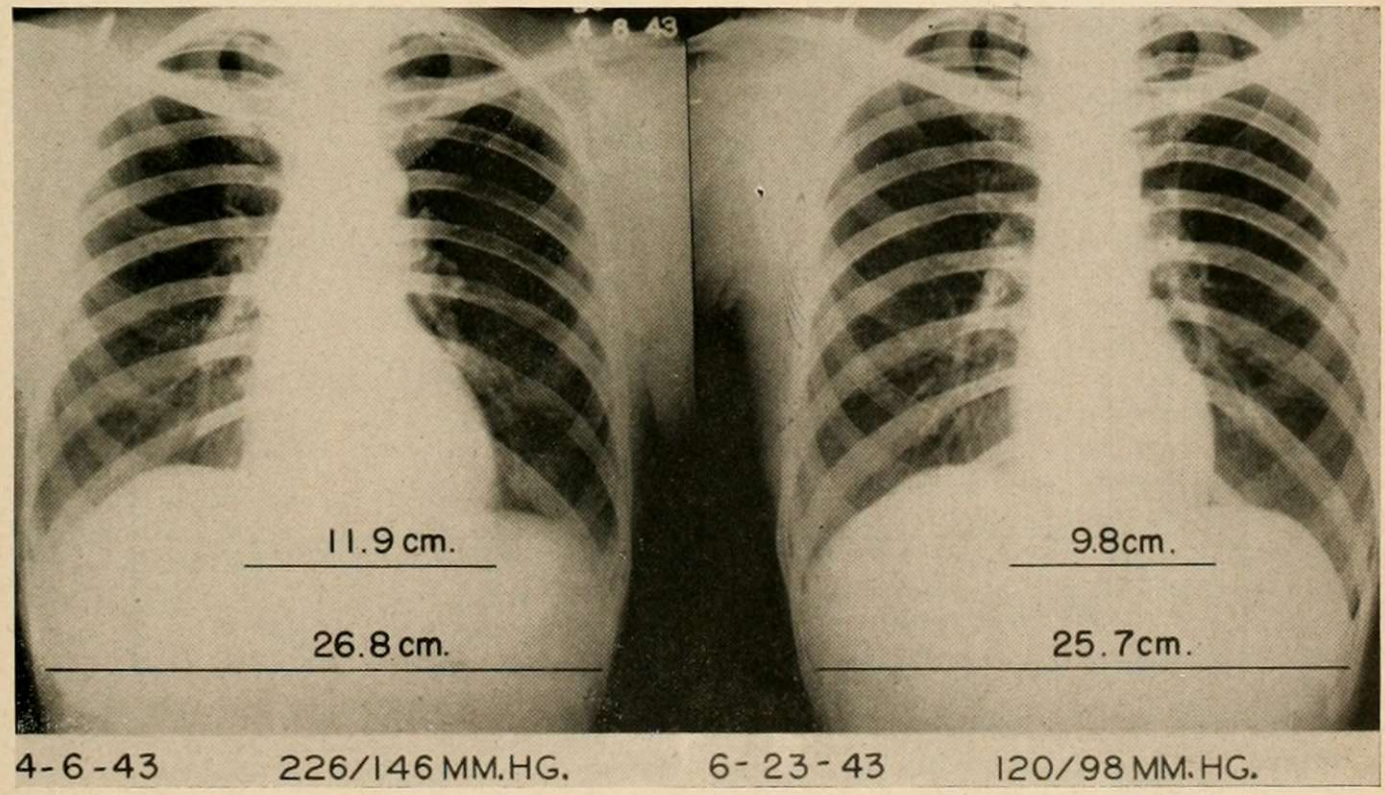


Fig. 40. A.E.H. Chronic pyelonephritis. Rice diet started April 13, 1943. No digitalis. **Reduction in heart size with change in transverse diameter of 21 per cent.**

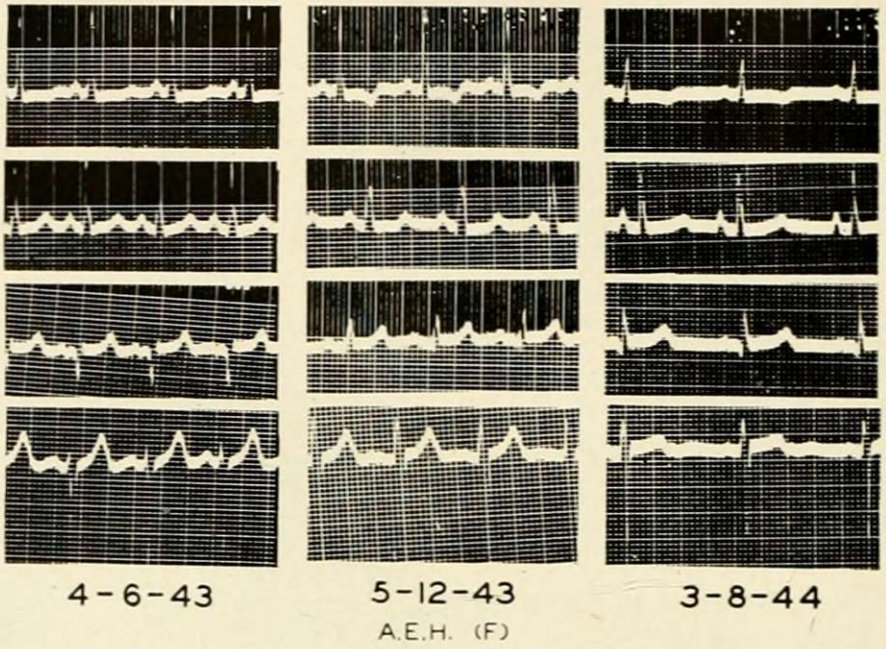


Fig. 41. A.E.H. Chronic pyelonephritis. Rice diet started April 13, 1943. No digitalis. **Increase in angle of electrical axis from +22° to +57°.**

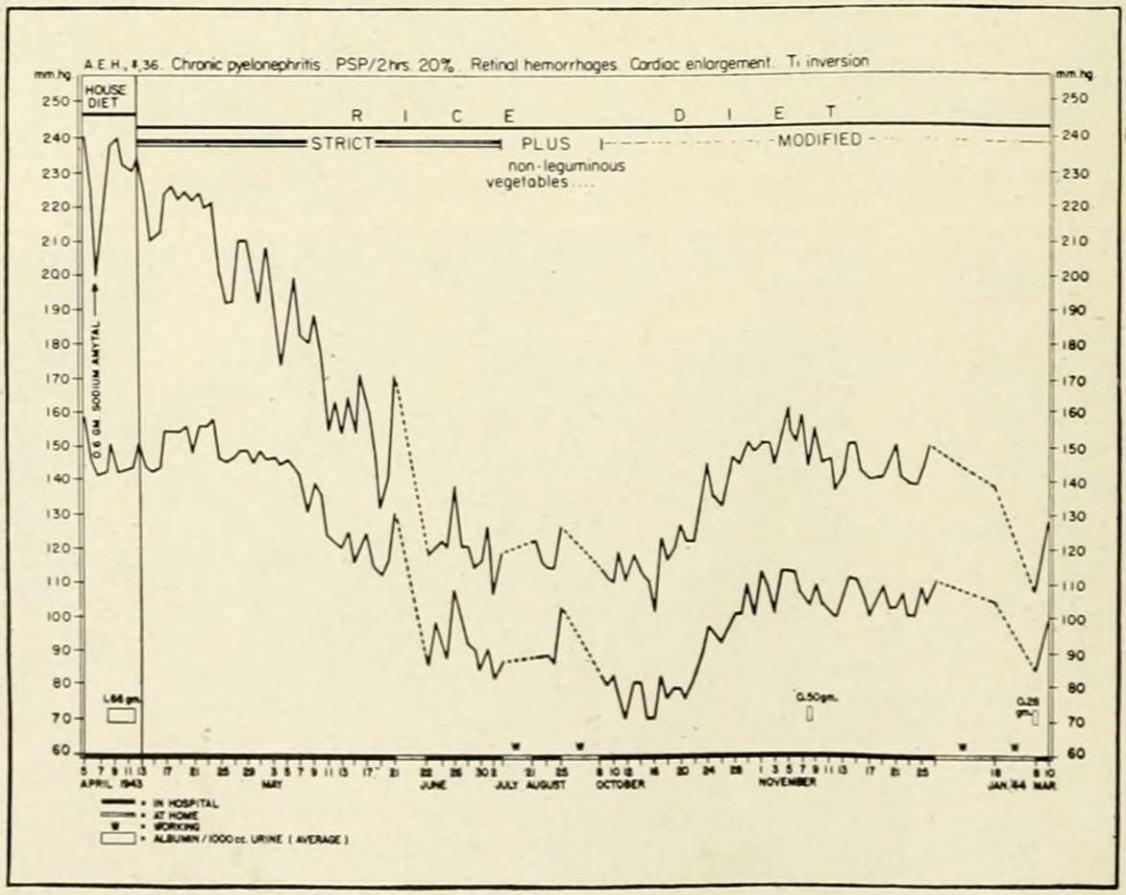


Fig. 42. A.E.H. Chronic pyelonephritis. **Decrease of blood pressure to normal in 2½ months on rice diet. Increase of blood pressure following too liberal modification of diet.**

albumin 3.5 Gm., globulin 4.2 Gm., albumin-globulin ratio 0.83. Chlorides (as sodium chloride) were 574 mg. per 100 cc. of plasma; calcium was 8.7 mg. per 100 cc. of serum, phosphorus 4.2 mg., cholesterol 270 mg. The urine had a specific gravity of 1.002-1.018, and contained 1-5 red blood cells and 3-35 white blood cells per high power field, and many granular casts. The benzidine reaction was 0-1 plus. The first ten albumin determinations showed an average excretion of 1.7 Gm. per 1000 cc. The results of a phenolsulfonphthalein test were as follows: 5 per cent excretion at first half hour, 2.5 per cent at one hour, 2.5 per cent at one and a half hours, less than 2.5 per cent at two hours; total excretion in two hours less than 12.5 per cent. The test was repeated a week later and showed 10 per cent excretion at the first twenty-three minutes, 5 per cent at forty-three minutes, 5 per cent at one and a half hours, less than 2.5 per cent at two hours; total excretion in two hours 20-22.5 per cent.

Impression: Chronic pyelonephritis with hypertension, vascular retinopathy, heart enlargement.

Course: After five days of strict bed rest on a diet containing 65 Gm. of protein, the blood pressure (average from the fifth to the ninth day) was 234 systolic, 144 diastolic (fig. 42). The lowest blood pressure readings during sodium amytal sleep were 190 systolic, 130 diastolic and 184 systolic, 138 diastolic. The patient complained of very intense headache every day. On the ninth hospital day the rice diet was begun (2000 calories, fluids limited to 1500 cc., after two weeks to 1000 cc.). The blood pressure level remained almost unchanged for about three weeks. In the fourth week, first the systolic, then the diastolic pressure began to decrease gradually. After five weeks of rice diet the blood pressure average of five days was 150 systolic, 119 diastolic. The plasma chlorides (as sodium chloride) at this time were 507 mg. per 100 cc. The nonprotein nitrogen was 42 mg. per 100 cc. of blood. The albumin in the urine had decreased to an average of 0.8 Gm. per 1000 cc. The urine sediment contained a great number of white blood cells, but no red blood cells or casts. There were still numerous hemorrhages in both eyes (fig. 43). The patient was discharged on the rice diet on May 21, 1943, feeling very much better. The headaches from which she had much milder after two weeks of the diet and had completely disappeared after four weeks.

The patient continued to follow the rice diet, to which some non-leguminous vegetables were added early in July, and was occasionally seen in the hospital. She had no headaches and no substernal oppression. Her eyesight improved markedly. The retinal hemorrhages were absorbed. The blood pressure decreased almost to normal: the average level from June 22 to July 3, 1943, was 128 systolic, 92 diastolic; from August 21 to 25, 1943, 118 systolic, 90 diastolic. The heart became smaller in size, with a change in the transverse diameter of 21 per cent (fig. 40). The total phenolsulfonphthalein excretion in two hours was 25 per cent.

On October 7, 1943, the patient was readmitted because of diarrhea, anorexia, and weakness. Her blood pressure at that time was 114 systolic, 82 diastolic. The transverse diameter of the heart was 10.05 cm. (as against 11.9 cm. six months before). The electrocardiogram showed the angle of the electrical axis to be +57 degrees (as against +22 degrees six months before). The hemoglobin was 78 per cent, the nonprotein nitrogen 35 mg. per 100 cc. of blood; the chlorides (as sodium chloride) were 466 mg. per 100 cc. of serum, the total proteins 5.9 Gm. per 100 cc. of plasma (albumin 2.3 Gm., globulin 3.6 Gm.). The total nitrogen excretion in the urine was 0.94 Gm. in twenty-four hours.

Sodium chloride (0.6 Gm. to 3 Gm. daily) was added to the diet during the first fourteen days. On the eighth hospital day, the temperature rose to 38.6 C. A catheterized specimen of urine was loaded with white blood cells. One and a half grams of sulfadiazine and 1.8 Gm. of sodium bicarbonate were given daily for seven days. After five days, the temperature returned to normal. The hemoglobin decreased from 78 per cent to 54 per cent, however, and sulfadiazine was discontinued. Because of persisting diarrhea (with stool cultures negative for the typhoid-dysentery group of bacilli, staphylococci, and hemolytic organisms) 2 Gm. of sulfaguanidine were given daily for eight days; the number of stools decreased to about three a day.

Since the patient insisted that she could not eat the strict rice diet any longer, toast, butter, potatoes, eggs, chicken, and liver

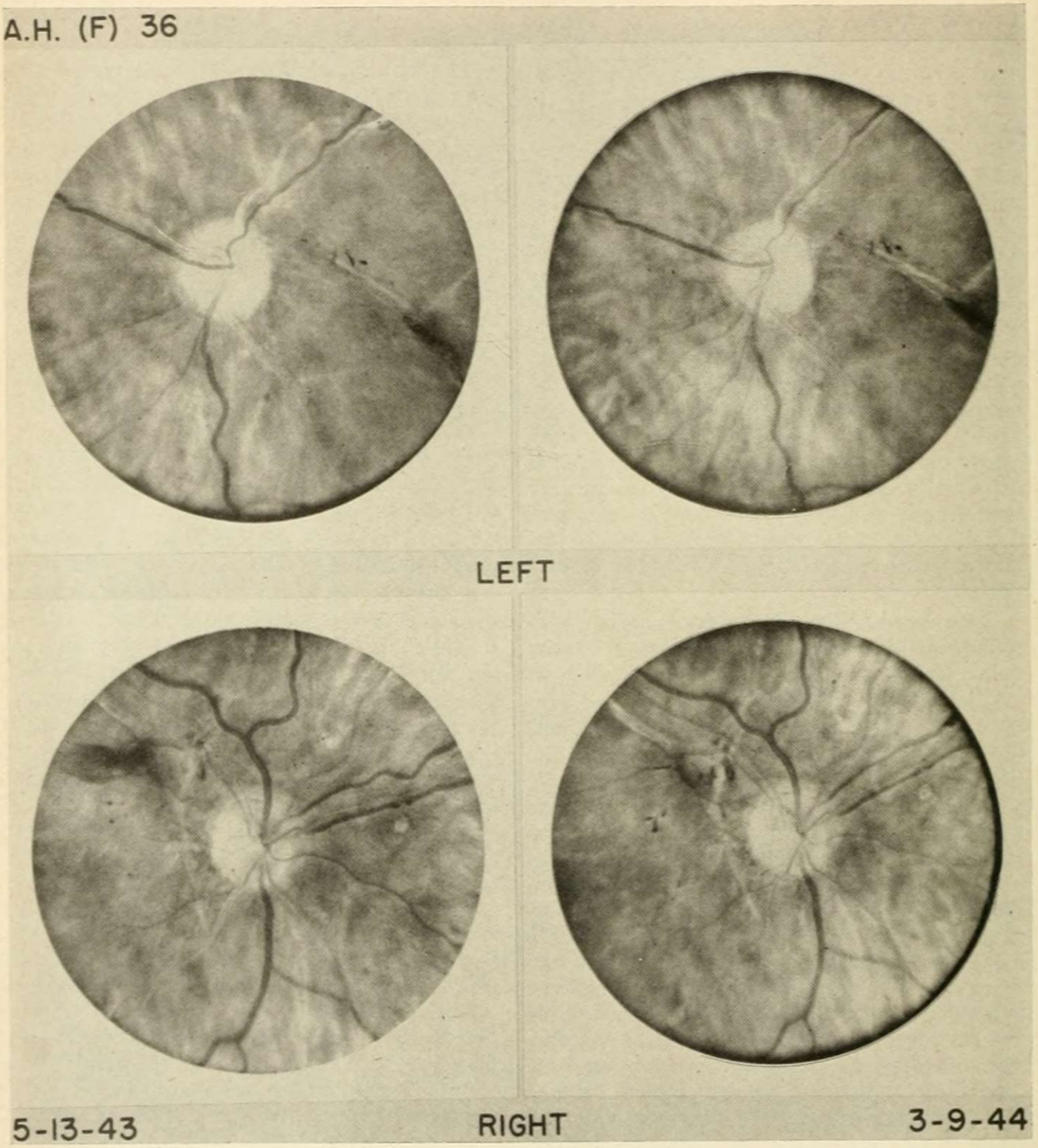


Fig. 43. A.E.H. (f., 36). Chronic pyelonephritis. Rice diet started April 13, 1943. **"Silver-wire" arterioles. Disappearance of hemorrhage, right eye.**

daily, yielding an extra amount of protein of 10-26 Gm. Her blood pressure, which for the past four months had consistently been at a level of 110-130 systolic, 70-95 diastolic, rose as high as 160 systolic, 112 diastolic in the fifth hospital week and averaged 143 systolic, 104 diastolic from the sixth to the eighth hospital week. The patient went home on the rice diet, supplemented by one egg three times weekly, and 2 ounces of beef, chicken, liver, or fish twice weekly. She did not follow this regime strictly but ate one egg about five times a week, and 2 ounces of beef or chicken four times a week. On January 18, 1944, the nonprotein nitrogen was 41 mg. per 100 cc. of blood and the total proteins were 7.1 Gm. per 100 cc. of plasma. She was "feeling strong and well" and had

been working around the house. She had had no headache or any other complaint. Her blood pressure, however, was 138 systolic, 104 diastolic. The patient was warned of the possibility of a recurrence of her disease. Additions to the basic rice diet were restricted to carrots, one egg twice a week, and 2 ounces of beef, chicken, liver, or fish not more than twice a week.

When last seen on March 8-10, 1944, she had been following this diet. She was feeling "healthier than ever before" and doing all her work as a housewife and mother of three children.

The findings on the latest examination compared with those on the first hospitalization here were as follows:

	April, 1943	*March, 1944*
Blood pressure (mm. Hg.)	223/149 (average of 3 weeks)	116/92
Lowest blood pressure (mm. Hg.) in sodium amytal (0.6 Gm.) sleep	187/134	Caffeine given when systolic blood pressure fell below 72.
Hemoglobin (% of 15.5 Gm.)	97	93
RBC (per cubic mm.)	4,960,000	4,400,000
WBC (per cubic mm.)	6,040	7,240
NPN (mg. per 100 cc. of blood)	46	41
Albumin (Gm. per 100 cc. of plasma)	3.5	3.3
Globulin (Gm. per 100 cc. of plasma)	4.2	3.0
Chlorides (as mg. NaCl per 100 cc. of plasma)	574	552
Calcium (mg. per 100 cc. of serum)	8.7	9.8
Phosphorus (mg. per 100 cc. of serum)	4.2	2.6
Cholesterol (mg. per 100 cc. of serum)	270	148
Albumin in urine (Gm. per 1000 cc.)	1.65 (average of 3 weeks)	0.28
PSP (% excreted in two hours)	12.5, 20-22.5	22
Weight (Kg.)	55.82	42.25
Transverse diameter of heart (cm.)	11.9	10.1
Diameter of great vessels (cm.)	6.2	5.2
Angle of electrical axis	+22°	+57°
Retinal hemorrhages	++	0

PATIENT 5. *Nephrolithiasis; chronic pyelitis; terminal uremic stage of chronic nephritis (total phenolsulfonphthalein excretion in two hours 5-10 per cent); "hypertensive vascular disease" (blood pressure 230-270 systolic, 130-160 diastolic); vascular retinopathy with papilledema, hemorrhages, and exudates. Example of decrease of high blood pressure and nonprotein nitrogen and of recovery of eyesight with disappearance of papilledema, hemorrhages, and exudates.*

O.P. (A87953), a 42 year old white widow and office worker, was admitted to the hospital on July 16, 1942, because of intense headaches and progressive failure of vision.

History: The patient had her first attack of kidney colic at the age of 18; an appendectomy was performed at that time. Since then she had had repeated attacks, with fever, chills, nausea, hematuria, pyuria, and occasional passage of stones (about twenty in all). At 22 she developed hypertension and eclamptic convulsions during her first pregnancy. Her second and last pregnancy three years later was normal. Both her children are living. When she was 37 an operation was performed for the removal of a calculus obstructing the lower portion of the right ureter. Two years later three stones were removed from the left kidney pelvis. No stones had been passed since then, and she had had only two more attacks of kidney colic. Except for these attacks of acute pain, she had had very few symptoms referable to the urinary tract; there was occasional nocturia, but no burning on urination. The systolic blood pressure had ranged between 150 and 180 from the age of 22 until "a few years ago"; since then the blood pressure had been "excessively high." She had had occasional moderately severe headaches until 1941-42, when her headaches became very severe and she began having substernal oppression, nocturnal dyspnea, gradual loss of vision, and occasional slight ankle edema; she lost 20 pounds in weight. Since January, 1942, her systolic blood pressure had averaged 285; after two weeks of bed rest it was 250. Her headache became still worse and was only temporarily relieved by bromides and phenobarbital; morphine was given very rarely.

Examination: The patient's height was 157 cm., her weight 54 Kg., temperature 37 C., pulse 80. She looked very ill and pale. There was no edema. She was unable to dis-

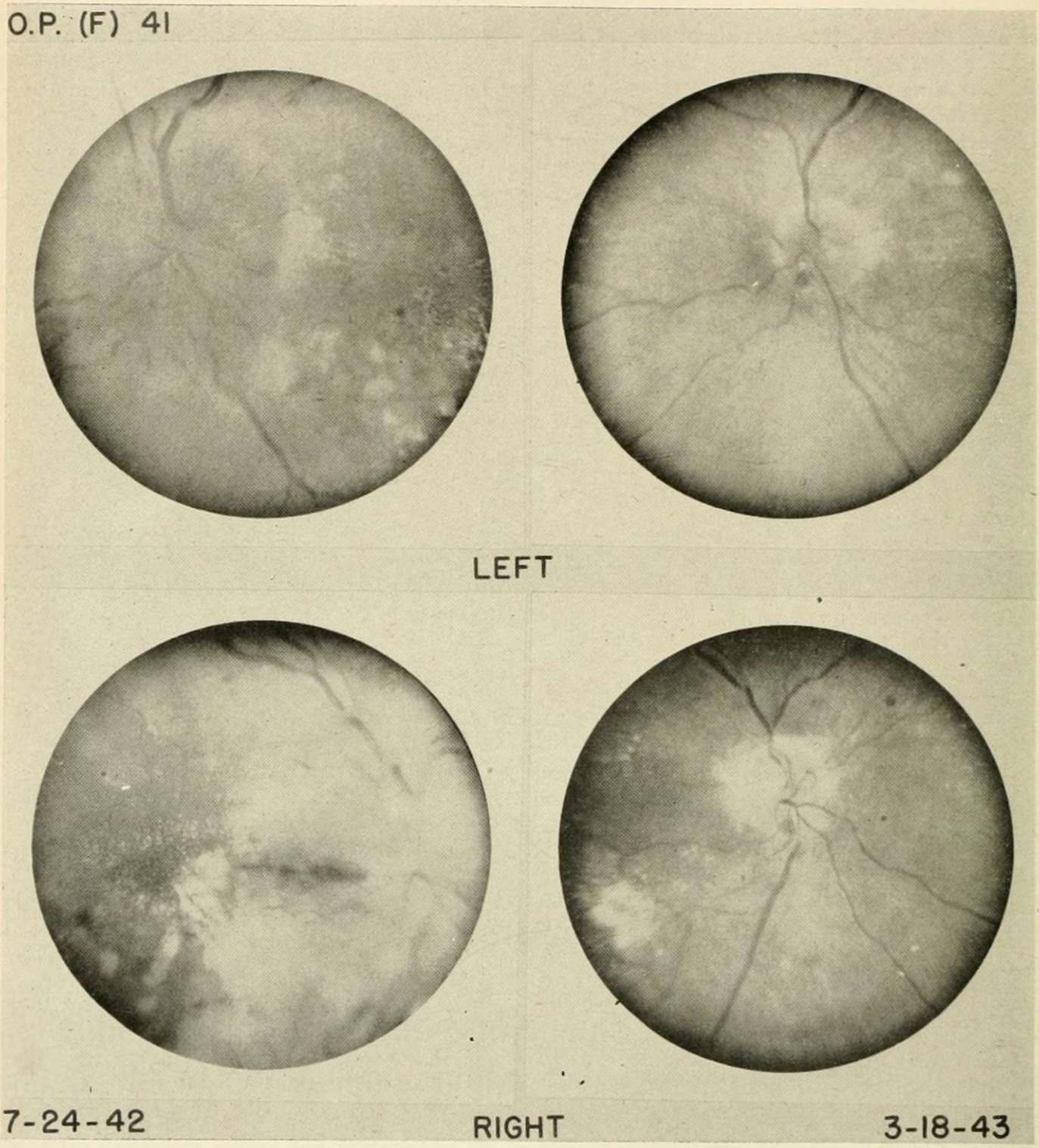


Fig. 44. O.P. (f., 41). Terminal uremic stage of chronic pyelonephritis. Rice diet started July 23, 1942. **Disappearance of papilledema, hemorrhages; marked decrease of exudates, arteriovenous compression, venous engorgement and tortuosity, both eyes.**

tinguish objects, but could distinguish light and dark. Marked bilateral papilledema was present, and there were numerous patches of exudate and numerous hemorrhages throughout both fundi; the arterioles, where visible, were narrow and tortuous; the veins were tortuous and engorged; there was marked arteriovenous compression (fig. 44). The teeth were in good condition; the pharynx was clear. The veins of the neck were not engorged. The lungs were clear on auscultation and percussion. The heart was slightly enlarged to the left; the rhythm was regular and no murmurs were heard; the aortic second sound was loud. The blood pressure range was 230-270 systolic, 130-160 diastolic. The liver was not enlarged and the spleen not palpable. There was tenderness over both kidneys. A chest film showed generalized bronchial thickening. Films of

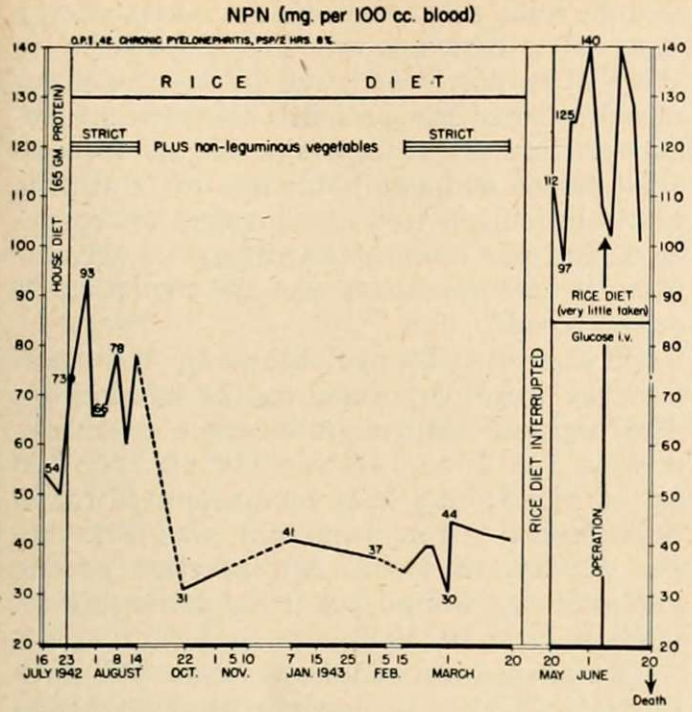


Fig. 45. O.P. Terminal uremic stage of chronic pyelonephritis. **Decrease of nonprotein nitrogen on rice diet. Increase of nonprotein nitrogen after rice diet was interrupted.**

the abdomen showed a collection of small stones in the region of the lower calyx of the right kidney and one large stone, more than 1 cm. in diameter, and numerous small stones below the lower calyx of the left kidney. Hydronephrosis was present on the right. The electrocardiogram showed inverted T-waves in lead 1 and a splintered QRS complex in lead 3; the angle of the electrical axis was +55 degrees.

Accessory clinical findings: The hemoglobin was 60-70 per cent and there were 10,500 white blood cells. The nonprotein nitrogen (fig. 45) ranged from 50-73 mg. per 100 cc. of blood; the carbon dioxide combining power of the plasma was 48 volumes per cent. Total proteins were 5.8 Gm. per 100 cc. of plasma: albumin 3.5 Gm., globulin 2.3 Gm., albumin-globulin ratio 1.5. Chlorides (as sodium chloride) were 556 mg. per 100 cc. of serum, calcium was 10.3 mg., phosphorus 4.0 mg., phosphatase 4.3 Bodansky units. The serum cholesterol was 230 mg. per 100 cc. The urine contained a moderate amount of albumin, 10-15 white blood cells per high power field, many red blood cells, and many small cocci from both kidney pelves. The total phenolsulfonphthalein excretion in two hours was 5-10 per cent.

Impression: Bilateral nephrolithiasis; chronic pyelonephritis with marked decrease of the renal excretory function; hypertension; vascular retinopathy with papilledema, hemorrhages, and exudates.

Course: The patient was able to eat only part of the regular hospital diet and vomited frequently. She complained of intense headache. Her blood pressure during the first eight days averaged 257 systolic, 153 diastolic. The rice diet (1800 calories, 1500 cc. of fruit juices) was started on the ninth day, July 23, 1942. Oxygen inhalation was given for two hours three times a day. After a few days, the nausea subsided, and the headache became less intense. After sixteen days both nausea and headache had completely disappeared, the blood pressure had decreased to a level of 190 systolic, 120 diastolic, and there were no new retinal hemorrhages or exudates. The nonprotein nitrogen remained high (average: 72 mg. per 100 cc. of blood).

After discharge from the hospital on August 14, 1942, the patient continued bedrest and followed the rice regime, with the addition of non-leguminous vegetables. She was readmitted on October 22, 1942. She had had no complaints in the interval. Her headache had never recurred, and she could read fine print with either eye. There was no papilledema; most of the hemorrhages and exudates were clearing up and no new exudates or hemorrhages were present; the previously engorged and tortuous veins were straighter and smaller in caliber; more arterioles were visible, and there was less arteriovenous compression. The blood pressure was 200 systolic, 120 diastolic. The hemoglobin was 68 per cent, and there were 3,480,000 red blood cells and 6,000 white blood cells. The nonprotein nitrogen was 31-35 mg. per 100 cc. of blood, the urea nitrogen 14.9 mg. Chlorides (as sodium chloride) were 596 mg. per 100 cc. of serum, calcium was 10.0 mg., phosphorus 3.4 mg., cholesterol 224 mg. Total proteins were 5.1 Gm. per 100 cc. of plasma: albumin 3.0 Gm., globulin 2.1 Gm., albumin-globulin ratio 1.4. The urine was loaded with white blood cells; there were a few red blood cells, and a 2 plus to 4 plus benzidine reaction; albumin excretion was 0.8-1.2 Gm. per 1000 cc. The total phenolsulfonphthalein excretion in two hours was 7 per cent. Total nitrogen excretion was 1.59 Gm. in twenty-four hours, urea excretion 2.12 Gm. in twenty-four hours (945 cc. of urine).

The patient continued the rice diet with non-leguminous vegetables for another four

months; she felt very well and was up and around a great part of the day. She was seen in the hospital frequently. Her blood pressure averaged about 230 systolic, 130 diastolic, her nonprotein nitrogen 37-41 mg. per 100 cc. of blood; her hemoglobin ranged between 60 and 83 per cent. Total phenolsulfonphthalein excretion in two hours was 10 per cent.

On February 14, 1943, she was readmitted with severe kidney colic on the left side, the pain radiating anteriorly. She had three attacks of precordial pain in the next few days. Her temperature was 37 C., the white blood cell count 8,450. The electrocardiogram showed the T-waves in lead 1 more deeply inverted than on January 8. Her nonprotein nitrogen was 30-44 mg. per 100 cc. of blood. She had no recurrence of renal colic and, after February 20, no pain. Her weight remained unchanged, and she had no visual disturbances. Examination of the eyegrounds on March 18, 1943 (after eight months on a rice diet with non-leguminous vegetables) showed the discs sharply outlined. The hemorrhages and most of the exudates had disappeared, leaving a moderate amount of scarring; the tortuosity of the arterioles had diminished, and there was less arteriovenous compression and no engorgement or tortuosity of the veins (fig. 44).

The patient continued the rice diet at home and felt well until the beginning of April, 1943. Then she began having repeated attacks of severe kidney colic, and substernal oppression, nausea, and vomiting. In the early part of May visual disturbances recurred. She was readmitted to the hospital on May 20 in a critical condition, with edema of the ankles and face. She reported that *the rice regime had been discontinued* in April, and milk, eggs, broth, and toast had been given instead. Her temperature was 37 C., her pulse 100, the nonprotein nitrogen 112 mg. per 100 cc. of blood, the carbon dioxide combining power of the plasma 47 volumes per cent. The hemoglobin was 76 per cent and there were 3,760,000 red blood cells and 9,200 white blood cells.

For the first few days she was unable to take anything by mouth. She was given 800-1000 calories daily by intravenous glucose, and was digitalized. On May 25 anuria developed and she had a chill, her temperature rising to 39.8 C. Both ureters were catheterized; no obstruction was found on the right but the left ureter was obstructed by a large stone. The catheter was finally passed into the kidney pelvis and was left for continuous drainage. The patient's temperature returned to normal and she began to take fruit juices and small amounts of fruit. She felt relatively better and insisted on operation. The last nonprotein nitrogen determination before operation was 108 mg. per 100 cc. of blood.

On June 7, 1943, pyelolithotomy and nephrostomy were performed on the left kidney. The highest nonprotein nitrogen after operation (on June 11) was 140 mg. per 100 cc. of blood; the last nonprotein nitrogen determination (on June 17) was 101 mg. per 100 cc. of blood. An infection of the nephrostomy wound set in, and the patient died on June 20, 1943.

The anatomical diagnosis was: "Nephrolithiasis. Marked pyelonephritis, hydronephrotic atrophy, right; marked destruction of tubules and glomeruli; secondary endarteritis obliterans. Marked chronic pyelonephritis, moderate hydronephrotic atrophy, left. Marked endarteritis obliterans of large vessels of pancreas. Infection of nephrostomy wound with massive perirenal abscess and acute pyelitis and ureteritis. Hemorrhagic infarct of lower pole of left kidney. Infected infarct of spleen."

PATIENT 6. *Terminal stage of chronic nephritis (total phenolsulfonphthalein excretion in three hours less than 1 per cent); uremia (nonprotein nitrogen 156-174 mg. per 100 cc. of blood); hypertension (blood pressure 223 systolic, 141 diastolic); vascular retinopathy. Example of decrease of high blood pressure, nonprotein nitrogen, and cardiac enlargement.*

J.K. (B40490), a 33 year old white man was admitted to the hospital on November 1, 1944, with the chief complaints of intense headache, dizziness, and tinnitus.

History: The patient had had measles, mumps, chickenpox, and whooping cough in childhood. He was "always healthy and well" except for occasional sore throats. His blood pressure had been normal in 1941. In 1942, at the age of 31, he began having spells of slight burning on urination, "dull low back pain" on the right side and nocturia three to four times nightly. In the spring of 1943, there was a gradual onset of generalized malaise, sleeplessness, and easy fatigability. In the fall he developed ankle edema which persisted until the spring of 1944, when he

had to give up his work as a painter. During all of 1944, he was conscious of a smothering sensation when he was walking or lying flat in bed. He noticed occasional puffiness around the eyes, increasing weakness, and blurring of vision. He was told that he had high blood pressure (220 systolic), kidney disease, and anemia. After "several blood transfusions and liver injections" he felt temporarily "stronger," but there was no improvement in the anemia, and his blood pressure remained high. In May, 1944, his physician placed him on a slightly modified rice diet. However, after an attack of dysuria, frequency, and back pain, the diet was discontinued. Further blood transfusions were given (making a total of nine) as well as vitamins, iron, and sedatives. For two weeks preceding admission, he had considerable distress from "throbbing headaches," dizziness, and tinnitus.

Examination: The patient's height was 180 cm., his weight 71.2 Kg., temperature 37 C., pulse 88, respiration 22, blood pressure 250 systolic, 130 diastolic. He was a well developed, pale man who appeared chronically ill and had a strongly uremic odor. There was no edema. The pupils reacted well to accommodation and light; the discs were blurred, and the arterioles tortuous; silvery and cottony exudates were scattered throughout both fundi. The nasal septum was deflected and breathing space was inadequate bilaterally. Several teeth were carious; the tongue was coated, the tonsils moderately enlarged. The lungs were clear. The heart was enlarged to the left. A blowing apical systolic murmur was heard, and the aortic second sound was accentuated. The liver was felt at the costal margin and descended two fingers' breadth on deep inspiration. The spleen was not palpable. There was no tenderness in either kidney region.

Accessory clinical findings: The hemoglobin was 53 per cent, red blood cells 2,490,000, white blood cells 7,280 with 71 per cent segmented polymorphonuclears, 1 per cent eosinophils, 28 per cent small lymphocytes. The corrected sedimentation rate was 10 mm. in one hour, the reticulocyte count 0.6 per cent, the hematocrit reading 17.4 volumes per cent. Serological tests for syphilis were negative. The nonprotein nitrogen was 156-174 mg. per 100 cc. of blood, the urea nitrogen 105 mg.; the blood sugar was 112 mg. per 100 cc. Chlorides (as sodium chloride) were 544 mg. per 100 cc. of plasma; calcium was 8.0 mg. per 100 cc. of serum, phosphorus 7.3 mg., cholesterol 295 mg. The total proteins were 6.8 Gm. per 100 cc. of plasma: albumin 4.0 Gm., globulin 2.8 Gm., albumin-globulin ratio 1.4. The urine contained 60-75 red blood cells and 1-2 white blood cells per high power field, occasional

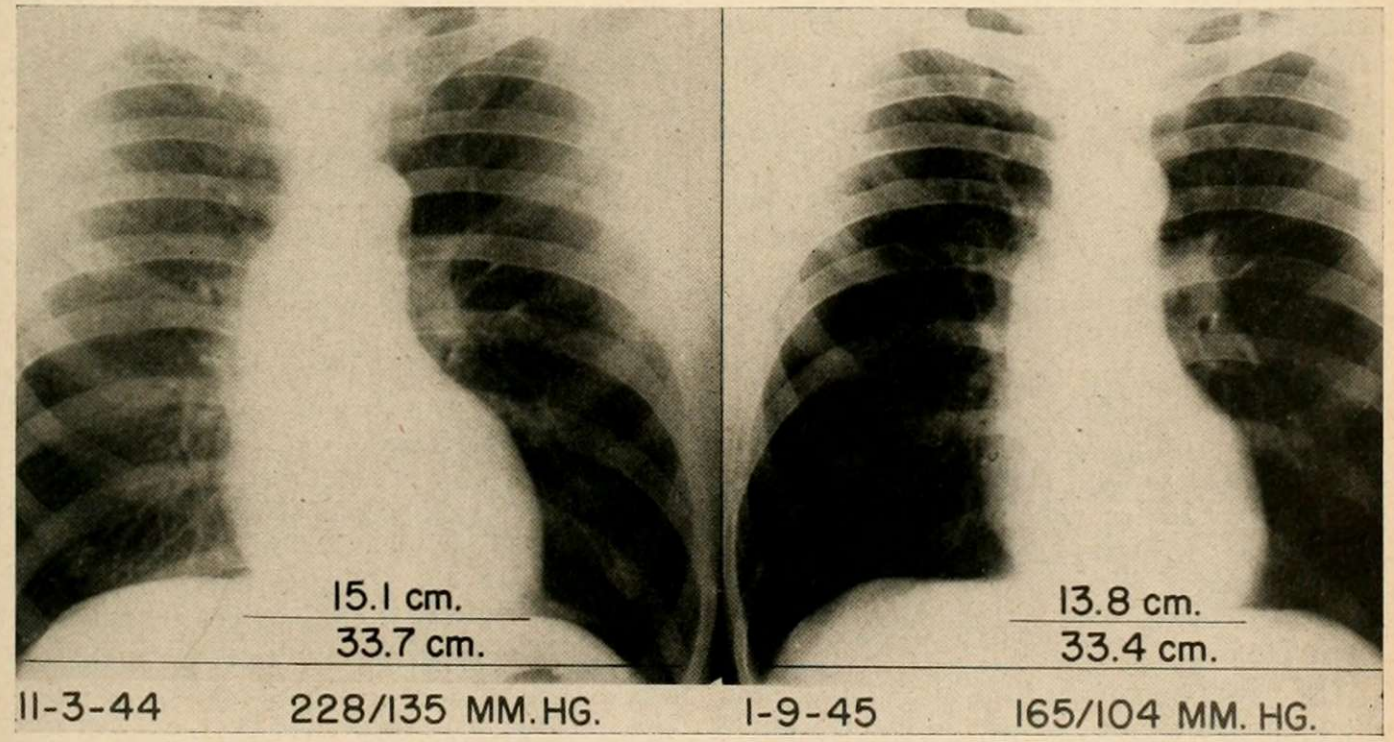


Fig. 46. J.K. Terminal uremic stage of chronic nephritis. Rice diet started November 1, 1944. No digitalis. Reduction in heart size with change in transverse diameter of 9 per cent. Right side of ascending aorta less bulging.

epithelial cells, and occasional granular and hyaline casts. The average albumin excretion in the first five days was 5 Gm. per 1000 cc. Tests for sugar gave a trace to a 2 plus reaction. The concentration-dilution test showed a range of 1.011-1.014. In the phenolsulfonphthalein test no dye appeared, although collections were made every thirty minutes for three hours; when the test was repeated, only a faint trace of the dye appeared in the ninety minute specimen, although collections were again made every thirty minutes for three hours. The total nitrogen excretion was 5.9 Gm., the urea excretion 7.2 Gm., and the chloride excretion 1.27 Gm. in twenty-four hours (1140 cc. of urine).

A chest plate showed the lungs clear, the heart enlarged; the transverse diameter was 15.1 cm. (fig. 46), and the internal diameter of the chest 33.7 cm. The report on a flat plate of the abdomen was as follows: "Liver somewhat enlarged. Left kidney elongated." The electrocardiogram showed the T-waves in lead 1 inverted, in leads 2 and 3 upright, in lead 4 diphasic; the angle of the electrical axis was −11 degrees.

Impression: Terminal uremic stage of chronic nephritis; hypertension; cardiac enlargement; vascular retinopathy.

Course: The patient was immediately started on a 2400 calorie rice diet with fluids limited to 1000 cc. of fruit juices. He was kept on strict bed rest; no digitalis or other medication was given. During the four weeks he stayed in the hospital, his blood pressure (fig. 47) decreased from 223 systolic, 141 diastolic (average of the first week) to 197 systolic, 121 diastolic (average of the fourth week). By the twenty-seventh hospital day the nonprotein nitrogen had decreased from 156-174 mg. per 100 cc. of blood to 84 mg., the urea nitrogen from 105 mg. per 100 cc. of blood to 48.4 mg., the urea ratio from 67.3 to 57.6 per cent, the plasma chlorides (as sodium chloride) from 544 to 466 mg. per 100 cc. There were only 2-4 red blood cells per high power field in the urine; the amount of albumin excreted remained about the same. The weight had decreased from 71.25 to 67.2 Kg.

The patient continued the rice diet at home for six more weeks and was in bed for about twenty-two hours every day. He felt much better and "like a different person." He had had no dysuria, frequency, or back pain, and

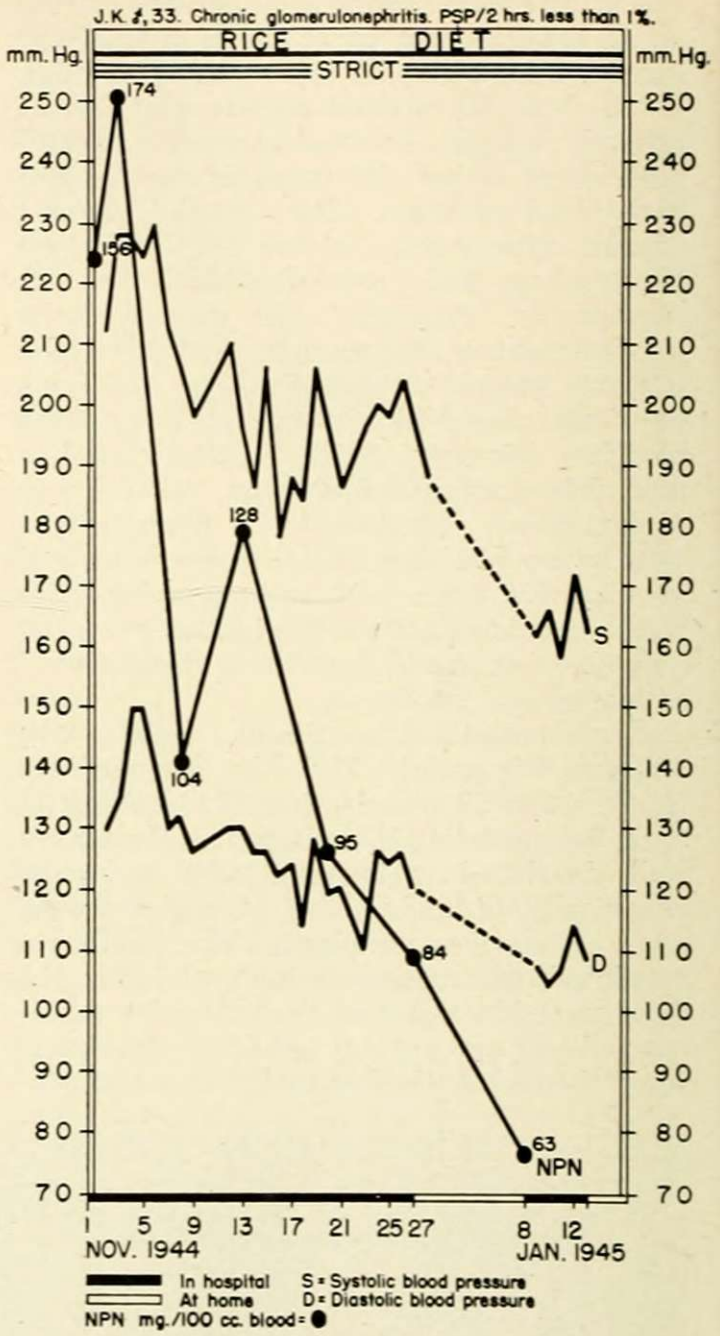


Fig. 47. J.K. Terminal uremic stage of chronic nephritis. Decrease of blood pressure and nonprotein nitrogen in 2 months on rice diet.

no dyspnea or orthopnea. The headaches, dizziness, and tinnitus had disappeared; his vision had improved.

When he was re-examined on January 8-13, 1945, his weight was 65 Kg., temperature 37 C., pulse 80, respiration 22, blood pressure 164 systolic, 106 diastolic (average of five days). The optic discs were sharply outlined, but numerous small silvery exudates were still present. The heart was smaller in size (fig. 46); there had been a 9 per cent change in the transverse diameter since November 3, and the right side of the ascending aorta was less bulging. The electrocardio-

gram showed the T-waves in leads 1 and 2 inverted, in lead 4 diphasic; the angle of the electrical axis was +15 degrees. The liver was not enlarged. The hemoglobin was 50 per cent, red blood cells 2,500,000, white blood cells 7,000, reticulocytes 0.7 per cent. The corrected sedimentation rate was 0 mm. in one hour. The nonprotein nitrogen was 60-66 mg. per 100 cc. of blood, the urea nitrogen 34.1 mg., the urea ratio 51.7 per cent. Total proteins were 6.8 Gm. per 100 cc. of plasma: albumin 3.7 Gm., globulin 3.1 Gm., albumin-globulin ratio 1.2. Chlorides (as sodium chloride) were 452 mg. per 100 cc. of plasma; calcium was 9.4 mg. per 100 cc. of serum, phosphorus 5.2 mg., cholesterol 212 mg. Blood sugar was 123 mg. per 100 cc. The urine contained 3.6 Gm. of albumin per 1000 cc., 4-12 white blood cells per high power field, occasional red blood cells, no casts, and no sugar. Total nitrogen excretion in twenty-four hours (1710 cc. of urine) was 3.1 Gm., urea excretion 0.3 Gm., chloride excretion (as sodium chloride) 0.27 Gm. In the phenolsulfonphthalein test, no dye appeared in the first one and a half hours, and only a trace of the dye appeared in the three-hour specimen.

The patient was advised to continue the strict rice regime and to rest at least twenty hours a day for another eight weeks.

Findings on re-examination, compared with findings at the beginning of the rice diet, are as follows:

	November 1-7, 1944	*January 8-13, 1945*
Blood pressure (mm. Hg.)	223/141	164/106
Hemoglobin (% of 15.5 Gm.)	53	50
RBC (per cubic mm.)	2,490,000	2,500,000
WBC (per cubic mm.)	7,280	7,000
NPN (mg. per 100 cc. of blood)	156-174	60-66
Urea N (mg. per 100 cc. of blood)	105	34.1
Albumin (Gm. per 100 cc. of plasma)	4.0	3.7
Globulin (Gm. per 100 cc. of plasma)	2.8	3.1
Chlorides (as mg. NaCl per 100 cc. of plasma)	544	452
Calcium (mg. per 100 cc. of serum)	8.0	9.4
Phosphorus (mg. per 100 cc. of serum)	7.3	5.2
Cholesterol (mg. per 100 cc. of serum)	295	212
Urine albumin (Gm. per 1000 cc.)	5.0	3.6
PSP (% excreted in three hours)	Trace	Trace
Weight (Kg.)	71.2	65
Papilledema	+	0
Retinal exudates	++	+
Angle of electrical axis	−11°	+15°
T wave in lead 1	Inverted	Inverted
Transverse diameter of heart (cm.)	15.1	13.8

PATIENT 7. *Nephrolithiasis; chronic nephritis (total phenolsulfonphthalein excretion in two hours 18-35 per cent); "hypertensive vascular disease" (blood pressure 188 systolic, 111 diastolic); vascular retinopathy; anemia. Example of decrease of high blood pressure and nonprotein nitrogen to normal, disappearance of T_1 inversion, heart enlargement, and retinal hemorrhages and exudates.*

J.A.G. (A98258), a 52 year old white cotton mill worker was admitted to the hospital on January 11, 1943. His chief complaints were weakness, dizziness, headache, and failing vision.

History: The patient had had measles, chickenpox, mumps, whooping cough, and typhoid fever in childhood. Varicose veins and ulcers had been present on both legs since adolescence. In 1929 he had an appendectomy and a left inguinal herniorrhaphy. Since about 1938 he has had an indirect right inguinal hernia. In 1932 he had an attack of renal colic on the left side, with "pus in the urine." In 1940 erysipelas of the left leg developed and he was told again that he had "pus on the kidneys." Since that time he has had nocturia (six times nightly). There had been no edema and no hypertension until 1941, when he had a "bad cold" and his blood pressure was found to be "over 200." Shortly afterwards he began having generalized throbbing headaches, accompanied by dizziness, some nausea and vomiting, and blurring of vision with occasional "blind spells." The systolic blood pressure then ranged from 180 to 210. He had no dyspnea or precordial pain. Edema of the ankles and hands, and puffiness of the face and eyelids developed. He had to stop working about three weeks before admission to the hospital.

Examination: The patient was a pale man appearing chronically ill. His height was 179 cm., his weight 65 Kg., temperature 37.2 C.,

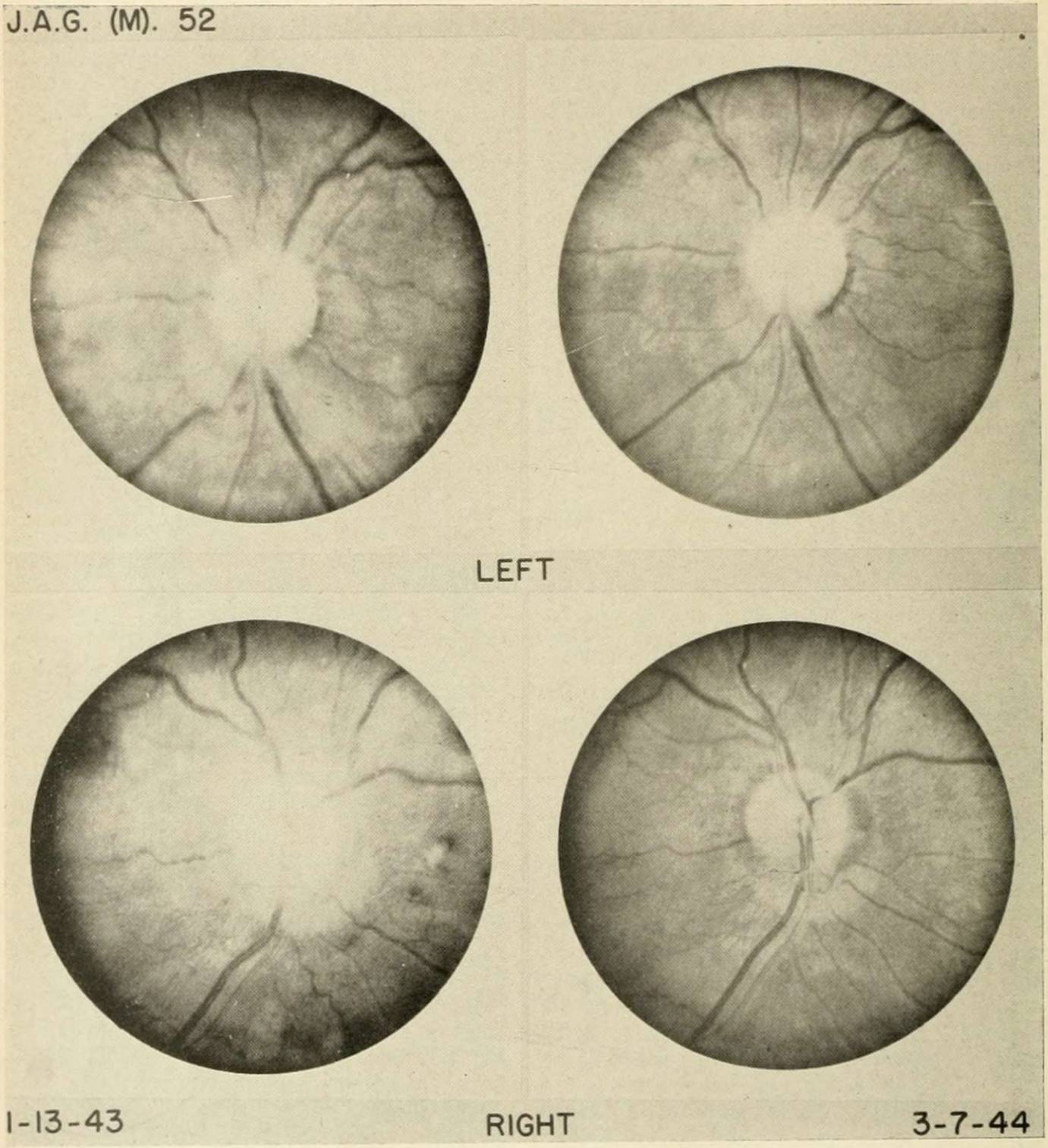


Fig. 48. J.A.G. (m., 52). Nephrolithiasis, chronic nephritis, "hypertensive vascular disease." Rice diet started January 21, 1943. **Disappearance of hemorrhages, exudates, right eye; of edema and venous tortuosity, both eyes.**

pulse 68, respiration 18, blood pressure 220 systolic, 120 diastolic. Moderate pitting edema of the feet and ankles and some puffiness of the eyelids were noted. He had a slight nephritic stare. The pupils were equal and reacted well to light and accommodation. The eyegrounds (fig. 48) showed moderate diffuse edema around both discs, blurred disc margins, and narrowed, "silverish," and tortuous arterioles. Arteriovenous compression and scattered fresh hemorrhages were seen in both eyes. There were a few exudates in the left eye, and several in the right eye. The patient had marked dental caries and pyorrhea. The tonsils were small. The veins of the neck were very slightly distended; the thyroid was not enlarged. A few moist rales were heard at the base of the left lung. The heart was enlarged to the left and right; the rhythm was regular; the sounds were

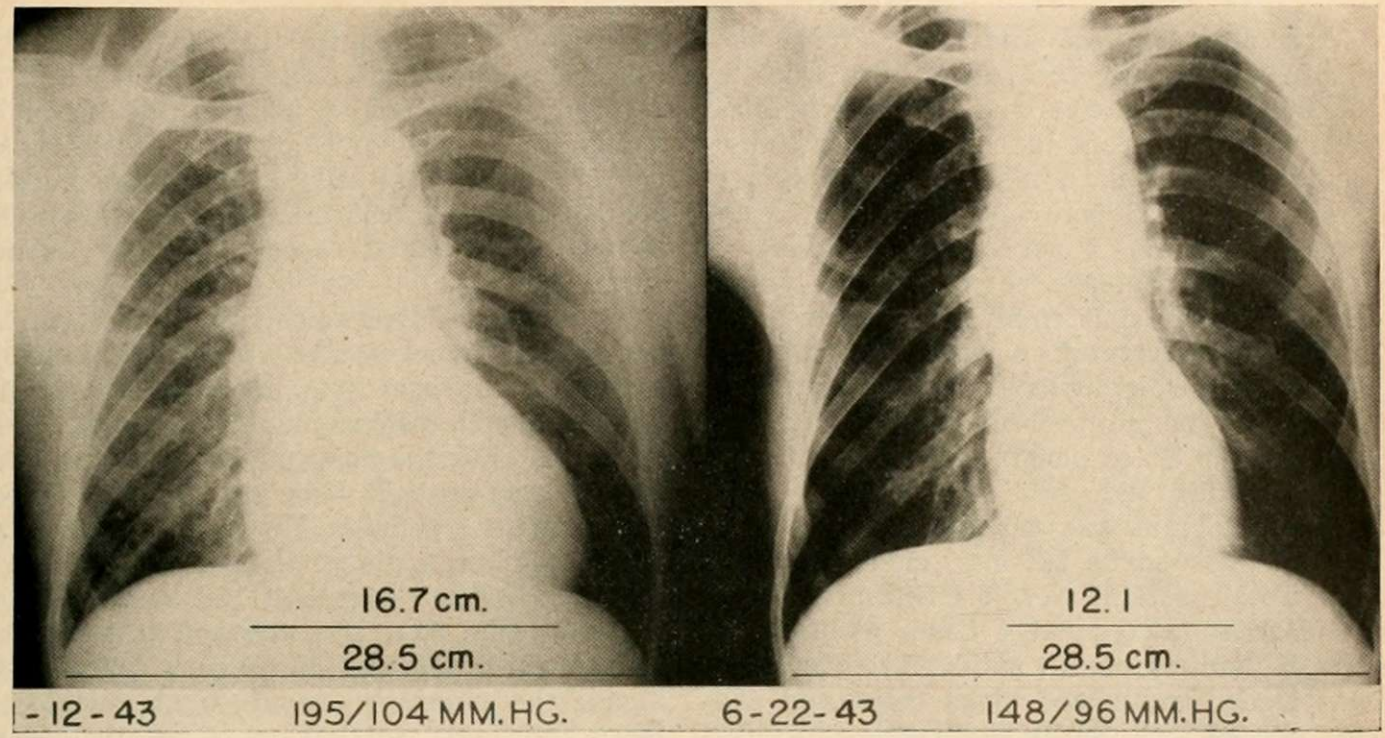


Fig. 49. J.A.G. Nephrolithiasis, chronic nephritis, "hypertensive vascular disease." Rice diet started January 21, 1943. No digitalis. **Reduction in heart size with change in transverse diameter of 38 per cent.**

loud, and there was a soft apical murmur. The liver was palpable 4 cm. below the costal margin and was moderately tender. The spleen was not palpable, and there was no tenderness in either kidney region. A right inguinal hernia was easily reducible. The prostate was slightly enlarged. The skin of both legs showed pigmentation from ulcers and dermatitis. The neurological examination gave no pathological findings.

X-ray examination showed marked alveolar absorption in both jaws and root infection in two incisors. Many teeth were carious. Some thickening of the membrane was seen in the left antrum, and a shadow (polyp ?) in the floor. The transverse diameter of the heart was 16.7 cm. (fig. 49); the aorta was tortuous. The lung fields were clear. A flat plate of the abdomen and a retrograde pyelogram were reported as follows: "Urinary tract indistinct. Opaque shadow overlying left kidney (appears to be stone)." "Calyces, pelves, ureters normal except for stone in superior calyx, left. Bladder small, outline irregular." The electrocardiogram showed a normal sinus rhythm and inverted T-waves in lead 1; the angle of the electrical axis was +3 (fig. 50).

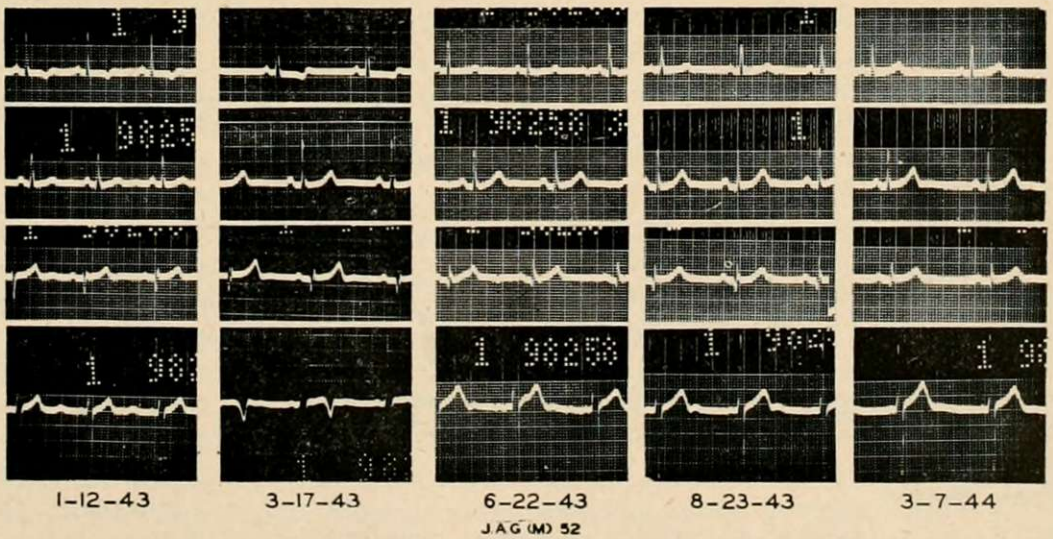


Fig. 50. J.A.G. Nephrolithiasis, chronic nephritis, "hypertensive vascular disease." Rice diet started January 21, 1943. No digitalis. **Increase in angle of electrical axis from +3° to +46°. Inverted T_1 has become upright.**

Accessory clinical findings: The hemoglobin was 57 per cent, and there were 2,820,000 red blood cells and 7,600 white blood cells with 1 per cent juvenile polymorphonuclears, 2 per cent non-segmented polymorphonuclears, 63 per cent segmented polymorphonuclears, 1 per cent eosinophils, 7 per cent monocytes, 8 per cent large lymphocytes, 18 per cent small lymphocytes. The corrected sedimentation rate was 3 mm. in one hour. Serological tests for syphilis were negative. The nonprotein nitrogen was 46 mg. per 100 cc. of blood. Chlorides (as sodium chloride) were 582 mg. per 100 cc. of plasma, calcium was 8.6 mg. per 100 cc. of serum, phosphorus 2.2 mg., cholesterol 225 mg. Total proteins were 6.1 Gm. per 100 cc. of plasma (albumin 3.4 Gm., globulin 2.7 Gm., albumin-globulin ratio 1.2). The urine was loaded with red blood cells and contained occasional white blood cells and granular and hyaline casts; the benzidine reaction was 4 plus, the reaction for albumin 3 plus, the reaction for sugar negative. A culture from the urine of the right ureter was positive for Bacillus pyocyaneus. The results of the phenolsulfonphthalein test were as follows: Appearance time five minutes; excretion at the end of the first half hour 10 per cent, at one hour 5 per cent, at one and a half hours, 2.5 per cent, at two hours 2.5 per cent; the total execretion in two hours 20 per cent. The concentration-dilution test showed a range of specific gravity from 1.011 to 1.013.

Impression: Nephrolithiasis, left; chronic nephritis; "hypertensive vascular disease"; cardiac enlargement; T_1 inversion; vascular retinopathy; hypochromic anemia.

Course: For the first ten hospital days the patient was on a 65 Gm. protein house diet with 1500 cc. of fluids. No digitalis or other medication was given. His blood pressure during this time averaged 188 systolic, 111 diastolic (fig. 51). His nonprotein nitrogen on the ninth day was 58 mg. per 100 cc. of blood, the chlorides (as sodium chloride) were 602 mg. per 100 cc. of plasma. His weight was 60.25 Kg. From the eleventh hospital day until discharge (on the twenty-third hospital day) the patient was on the rice diet (2000 calories, 1500 cc. of fruit juices). His blood pressure level at discharge was 169 systolic, 112 diastolic, his nonprotein nitrogen 39 mg. per 100 cc. of blood, his hemoglobin 71 per cent. The urine contained few red blood cells per high power field; the benzidine reaction was negative. One and a half grams of albumin were excreted in twenty-four hours.

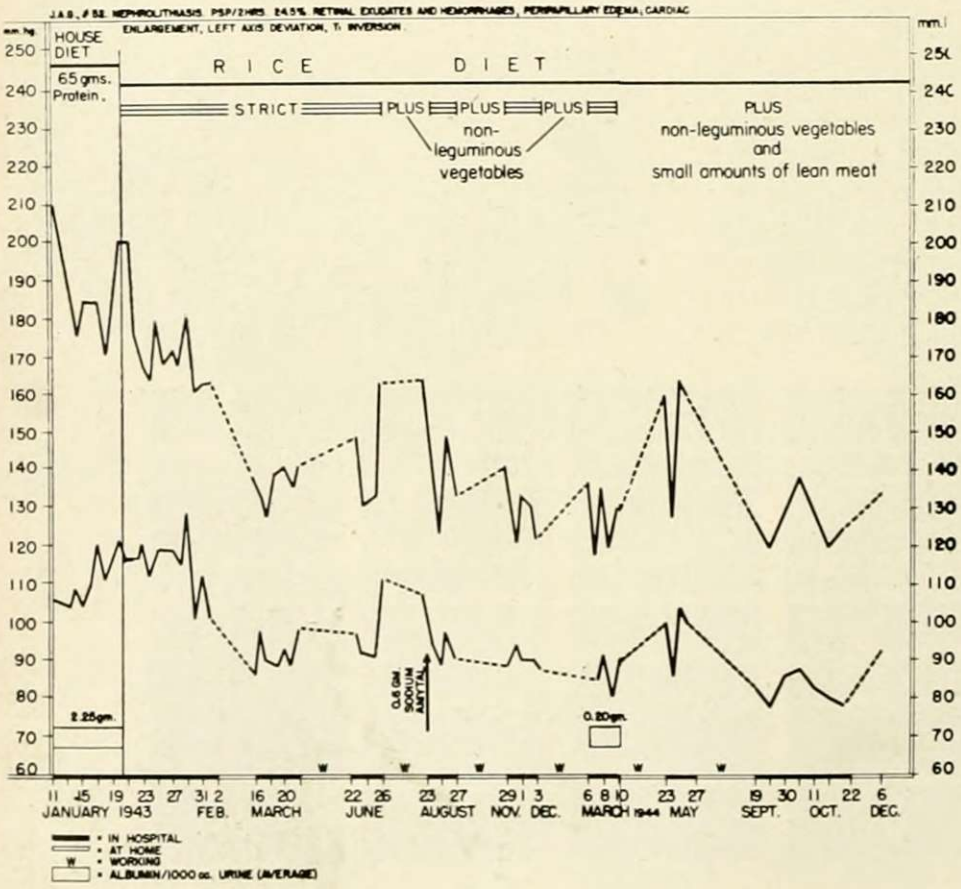


Fig. 51. J.A.G. Nephrolithiasis, chronic nephritis, "hypertensive vascular disease." **Decrease of blood pressure to normal in eight weeks on rice diet. Moderate increase of blood pressure following too liberal modification of diet.**

The patient followed the rice diet strictly at home for six weeks. He felt very well, except for occasional mild frontal headaches, a few episodes of epistaxis, and a short period of nervousness and insomnia. His vision was still impaired. At readmission (March 16-23, 1943) his average blood pressure was 136 systolic, 91 diastolic (fig. 51). His hemoglobin was 80-86 per cent, red blood cells 3,460,000-4,290,000, the corrected sedimentation rate 17 mm. in one hour. The nonprotein nitrogen was 37-40

mg. per 100 cc. of blood, chlorides (as sodium chloride) were 490 mg. per 100 cc. of plasma, calcium was 8.9 mg. per 100 cc. of serum, phosphorus 4.3 mg., cholesterol 160 mg. Total proteins were 7.1 Gm. (albumin 3.1 Gm., globulin 4.0 Gm.). The urine contained rare white blood cells, no red blood cells, no casts, and only a slight trace of albumin; the benzidine reaction was negative. The total nitrogen excretion was 3.44 Gm. in twenty-four hours, the urea excretion 4.92 Gm. in twenty-four hours (1645 cc. of urine). The results of the phenolsulfonphthalein test were as follows: Appearance time ten minutes; excretion at the end of the first half hour 15 per cent, at one hour 10 per cent, at one and a half hours 5 per cent, at two hours 5 per cent; total excretion in two hours 35 per cent. The eyegrounds showed marked decrease of peripapillary edema and less arteriovenous compression. Most of the hemorrhages and exudates present in January had been absorbed, but there were still a few scattered through both retinae. The electrocardiogram showed the T-waves in lead 1 to be diphasic, those in lead 4 inverted; the angle of the electrical axis was +27 degrees (fig. 50). A chest film showed the lungs clear, the aorta tortuous, the heart size "within normal limits" (transverse diameter 13.1 cm.).

The patient was advised to continue the rice diet at home for another five months; he returned twice to the hospital for re-examination during this period. He was completely asymptomatic (except for an episode of abdominal pain followed by weakness of about five days' duration) and went back to work as a janitor and night watchman in a cotton mill. His blood pressure remained at a level of 145 systolic, 97 diastolic (average of eight readings during the two admissions). His weight was 57.4-57.25 Kg., the hemoglobin 87-89 per cent, the nonprotein nitrogen 49-50 mg. per 100 cc. of blood; chlorides (as sodium chloride) were 500 mg. per 100 cc. of serum (in June) and 475 mg. per 100 cc. of plasma (in August). Calcium was 10.0-10.1 mg. per 100 cc. of serum, phosphorus 3.3-2.7 mg., cholesterol 124 mg. Total proteins were 6.8-6.3 Gm. per 100 cc. of plasma; the albumin-globulin ratio was 0.70-0.96. The urine contained 0-3 red blood cells and 0-8 white blood cells per high power field, and rare granular and hyaline casts; the benzidine reaction was negative. The average albumin excretion during three days in August was 0.27 Gm. per 1000 cc. of urine; the total nitrogen excretion was 4.8 Gm. in twenty-four hours in June, 1.7 Gm. in August; the urea excretion was 7.1 Gm. in twenty-four hours in June, 1.73 Gm. in August. The total phenolsulfonphthalein excretion in two hours was 21 per cent. Examination of the eyegrounds showed the discs sharply outlined; the edema had completely disappeared and the tortuosity and engorgement had decreased; all the hemorrhages and exudates were absorbed. A chest film showed the transverse diameter of the heart to be 12.1 cm. (fig. 49). The electrocardiogram showed the T-waves in leads 1 and 4 to be normally upright; the angle of the electrical axis was +44 degrees (fig. 50).

After the fourth admission, August 23-28, 1943 (seven months after the rice regime was started), non-leguminous vegetables were added to the diet. The patient was re-examined November 29 - December 3, 1943. He had been feeling very well and working six days a week. There had been no weakness, no urinary tract symptoms, and no visual disturbances. On this examination his blood pressure averaged 128 systolic, 91 diastolic; his weight was 58.2 Kg.; the hemoglobin was 79 per cent, red blood cells 3,900,000; the nonprotein nitrogen was 46 mg per 100 cc. of blood; the total proteins were 6.5 Gm. per 100 cc. of plasma. The transverse diameter of the heart was 13.2 cm., the angle of the electrical axis +49 degrees. He remained on the rice diet plus non-leguminous vegetables for the next three months. When he returned for re-examination on March 10, 1944, he reported that in the interval he had had several teeth extracted, and had had a head cold and an accidental cut in the arm with profuse bleeding; but he was completely asymptomatic with regard to his hypertensive cardiovascular disease and was feeling "strong and well." He had been working eight hours daily. The diet was further modified by the addition of 1 ounce of beef, chicken, liver, or fish four times a week.

On May 22, 1944, he was re-admitted for the sixth time because of a recurrence of the dermatitis on the leg, which healed well with elevation of the leg and the application of saline compresses and gentian violet. The average blood pressure during the six days in the hospital was 153 systolic, 98 diastolic. The patient was advised not to eat more than 2 ounces of meat per week for the time

being. He still was feeling "strong and healthy," and was working full time.

On September 13, 1944, he noticed the onset of painless jaundice with general weakness. He was re-admitted on September 18 with marked jaundice. The bilirubin was 20.1 mg. per 100 cc. of serum and increased to 30.5 mg. on September 29, then gradually decreased to 4.4 mg. on October 23. The liver could be felt 2-4 fingers' breadth below the costal margin and was slightly tender to palpation. The blood pressure was 120 systolic, 80 diastolic. The hemoglobin was 85 per cent, red blood cells 3,600,000, white blood cells 7,000; the nonprotein nitrogen was 45 mg. per 100 cc. of blood, the urea nitrogen 22.6 mg. Total proteins were 7.5 Gm. per 100 cc. of plasma (albumin 3.2 Gm., globulin 4.3 Gm.). Chlorides (as sodium chloride) were 480 mg. per 100 cc. of plasma, phosphorus was 4.1 mg. per 100 cc. of serum, cholesterol 117 mg. The urine showed an occasional granular cast; the benzidine reaction was negative. Albumin excretion was 0.6 Gm. per 1000 cc. of urine. The test for urobilinogen was negative for about twelve days, then strongly positive. The results of the bromsulfalein test (5 mg. of dye per kilogram of weight) were as follows: after fifteen minutes, 20 per cent retention; after thirty minutes, 20 per cent retention; after forty-five minutes, 10 per cent retention. The galactose tolerance test (40 Gm. of galactose) showed no sugar in the urine. Urine diastase and serum lipase were not increased. A barium enema and a gastrointestinal series were reported negative. The preliminary impression was "catarrhal jaundice."

One hundred grams of chicken (about 20 Gm. of protein) per day was added to the strict rice diet. Fluids were increased to 1600 cc. daily (1200 cc. of fruit juices, plus 200 cc. of 20 per cent dextrose with additional vitamins B and C and Hykinone intravenously twice a day). He was given 0.6 Gm. of choline chloride three times daily and kept on strict bed rest. His average blood pressure was 127 systolic, 83 diastolic. The angle of the electrical axis was +53 degrees.

He was discharged on October 23 and told to stay in bed and continue the rice diet, including non-leguminous vegetables and 100 Gm. of chicken daily. Upon reexamination (December 6-7, 1944), he was "feeling perfectly well." The serum bilirubin was 1.1 mg. per 100 cc. The liver had decreased in size, the edge being palpable only on deep inspiration. A gallbladder series showed a "poorly functioning gallbladder without stones." The blood pressure averaged 134 systolic, 92 diastolic. The angle of the electrical axis had decreased to +12 degrees. The patient was advised to continue the same regime for another three months and to resume work.

Findings on the latest examination, compared with findings on the first admission, before the beginning of the rice diet, are shown below:

	January 11-21 1943	*December 6-7 1944*
Blood pressure (mm. Hg.)	188/111	134/92
Hemoglobin (% of 15.5 Gm.)	57	73
RBC (per cubic mm.)	2,820,000	3,700,000
WBC (per cubic mm.)	7,600	7,400
NPN (mg. per 100 cc. of blood)	46, 58	32
Albumin (Gm. per 100 cc. of plasma)	3.4	4.0
Globulin (Gm. per 100 cc. of plasma)	2.7	3.0
Chlorides (as mg. NaCl per 100 cc. of plasma)	582, 602	524
Calcium (mg. per 100 cc. of serum)	8.6	9.8
Phosphorus (mg. per 100 cc. of serum)	2.2	3.6
Cholesterol (mg. per 100 cc. of serum)	225	153
Urine albumin (Gm. per 1000 cc.)	2.25	0.2
Hematuria	++++	0
PSP (% excreted in 2 hours)	20, 22.5	29
Weight (Kg.)	65-60	66.2
Transverse diameter of heart (cm.)	16.7	12.6
Angle of electrical axis	+3°	+12°
T wave in lead 1	Inverted	Upright
Retinal hemorrhages and exudates	++	0

PATIENT 8. *"Hypertensive vascular disease" with renal involvement (blood pressure 225 systolic, 130 diastolic). No improvement on rest, aminophylline, and reduction diets leading to a weight loss of 55 pounds. Example of decrease of high blood pressure and heart enlargement on strict rice diet. Increase in blood pressure when food of pa-*

tient's own choice was added, although weight was lower than when the blood pressure was at its minimal level.

W.C.F. (A73824), a 63 year old white farmer and businessman, was admitted to Duke Hospital for the fourth time on February 16, 1943. His chief complaints were severe frontal headache, shortness of breath, nocturnal dyspnea, and wheezing.

History: Between the ages of 16 and 21, he had had "repeated" gonorrheal infections with bilateral epididymitis. At 21 he passed a "kidney stone," and when he was 26 a urethrostomy was performed for an impacted calculus. He had influenza and pneumonia at 37, and malaria at 61. He began to become obese when he was about 40. He had led a "very active life" until the age of 54, when moderate exertional dyspnea appeared and he had a "feeling of getting old." *At 56 he weighed 102 Kg.* (his height was 166 cm.). Between 56 and 61, his systolic blood pressure rose to 185. He had occasional albuminuria, nocturia, and frontal headaches; he was treated by rest, restriction of diet, diuretics, and laxatives. In November, 1941, he was admitted to Duke Hospital because of increasing dyspnea and rather sudden attacks of epigastric discomfort. *His weight at that time was 93 Kg.* Pulmonary emphysema was present and the heart was enlarged in all diameters (transverse diameter 17.7 cm.). There was marked widening and tortuosity of the aorta. His blood pressure ranged from 170 to 210 systolic and from 114 to 129 diastolic. The electrocardiogram showed the T-waves in leads 1 and 4 inverted; the angle of the electrical axis was −55 degrees. The urine gave a 1 plus reaction for albumin; the phenolsulfonphthalein excretion in one half hour was 23 per cent, the total excretion in two hours 44 per cent. There were prostatic stones. A diagnosis of "hypertensive vascular disease" was made, and the patient was put on a 1200 calorie reduction diet and given aminophylline.

Several re-examinations were made in this hospital because of the same complaints. The blood pressure was slowly rising (fig. 52), in spite of continued weight loss on the reduction diet.

The *examination* on the patient's fourth admission showed the following findings: *His weight was 77 Kg.*, his blood pressure 225 systolic, 130 diastolic. The heart (fig. 53) was greatly enlarged; the transverse

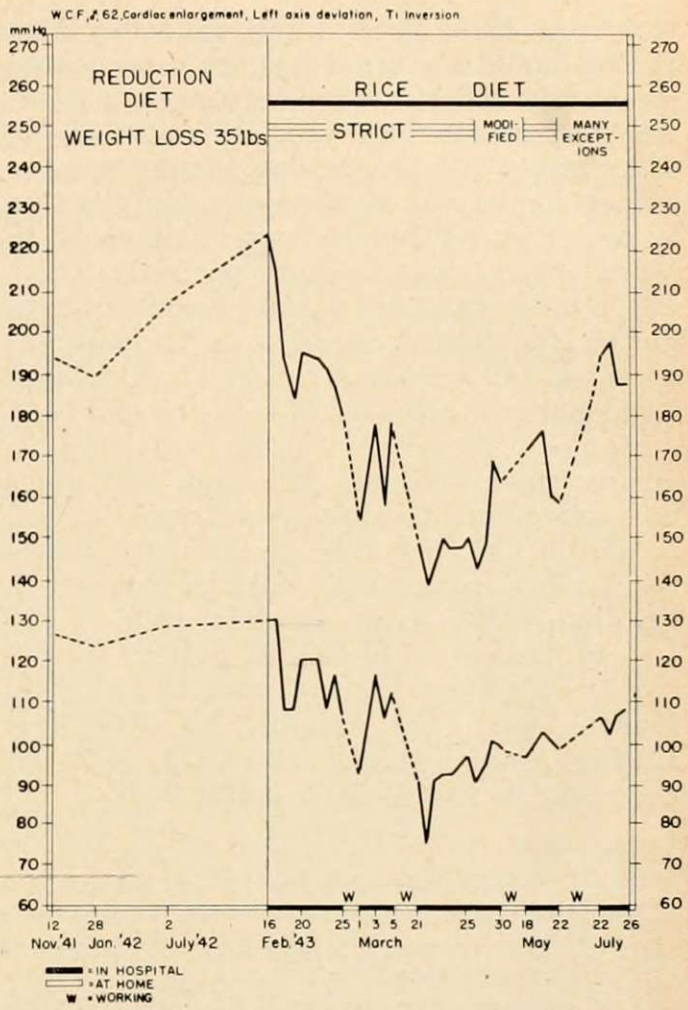


Fig. 52. W.C.F. "Hypertensive vascular disease." Increase of blood pressure in spite of weight loss of 35 pounds in 15 months before rice diet. Decrease of blood pressure in 5 weeks on rice diet. Increase of blood pressure in spite of further weight loss after eating other food in addition to the rice diet.

diameter was 18.0 cm. The electrocardiogram showed the T-waves in lead 1 inverted; the angle of the electrical axis was −66 degrees. The hemoglobin was 88 per cent, red blood cells 4,580,000, white blood cells 12,350. The serological tests for syphilis were negative. The nonprotein nitrogen was 42 mg. per 100 cc. of blood, chlorides (as sodium chloride) were 586 mg. per 100 cc. of plasma, calcium was 8.7 mg. per 100 cc. of serum, phosphorus 3.0 mg., cholesterol 172 mg. Total proteins were 7.2 Gm. per 100 cc. of plasma: albumin 3.6 Gm., globulin 3.6 Gm. The urine had a specific gravity of 1.011, and contained 1.8 Gm. of albumin per 1000 cc. and 40-60 white blood cells per high power field.

Course: The rice regime was started immediately (2000 calories, 1000-1200 cc. of fruit juices). No digitalis or other medication was given, and the only additional therapeutic measure was oxygen inhalation for

two hours three times a day. The shortness of breath and nocturnal dyspnea disappeared completely within two weeks, and the patient felt very much improved. He followed the diet strictly for forty days. During part of this period he was at home and "quite active on his farm." When he was re-admitted on March 21, he was feeling "perfectly well." *His weight was 69 Kg.* His blood pressure during the first four days in the hospital averaged 149 systolic, 91 diastolic. The heart was smaller in size (fig. 53) ; there had been a change of 28 per cent in the transverse diameter since February 17, 1943. The albumin excretion had decreased from 1.8 Gm. to 0.5-1.0 Gm. per 1000 cc. of urine. Since the patient insisted that meat be included in his diet, he was given one trial meal of 100 Gm. of steak plus 10 Gm. of butter; following this his blood pressure rose to a slightly higher level (155 systolic, 96 diastolic). Urinary total nitrogen and urea nitrogen excretion in twenty-four hours were:

	Total nitrogen	*Urea nitrogen*
March 23	2.27 Gm.	1.15 Gm.
March 25 (100 Gm. steak plus 10 Gm. butter)		
March 26	3.89 Gm.	2.46 Gm.
March 29	3.08 Gm.	1.64 Gm.
March 30	2.23 Gm.	1.30 Gm.

The patient was advised to follow the diet strictly at home, but he did not do so. Although he took the rice, fruit, and fruit juices, he occasionally added small amounts of steak, oysters, fish, cheese, and cereal. He felt very well and had no dyspnea or headaches. On readmission, May 18-22, the heart was still much smaller than before the rice regime (transverse diameter 13.3 cm.), *the weight was 65.2 Kg.*, the albumin excretion in the urine was 0.3-0.4 Gm. per 1000 cc., and the phenolsulfonphthalein excretion in one half hour was 20 per cent (on the first admission, in November, 1941, it has been 23 per cent). The blood pressure, however, had risen to an average of 167 systolic, 99 diastolic. The patient was warned not to trust his subjective feeling of complete health, but to resume the rice diet without "modifications." He did so when he ate at home, but made a number of exceptions, including even barbecue, when eating with friends.

He returned to the hospital on July 21, stating on admission that he had been without complaints. *His weight was 66.4 Kg.*, his blood pressure during his stay at the hospital (six days) averaged 190 systolic, 104 diastolic. The electrocardiogram showed the T-waves in lead 1 inverted; the angle of the electrical axis was −70 degrees. The nonprotein nitrogen was 39 mg. per 100 cc. of blood, the urea nitrogen 18.9 mg., the urea ratio 48.5 per cent. Chlorides (as sodium chloride) were 614 mg. per 100 cc. of plasma; calcium was 9.8 mg. per 100 cc. of serum, phosphorus 4.3 mg., cholesterol 145 mg. Total proteins were 6.2 Gm. per 100

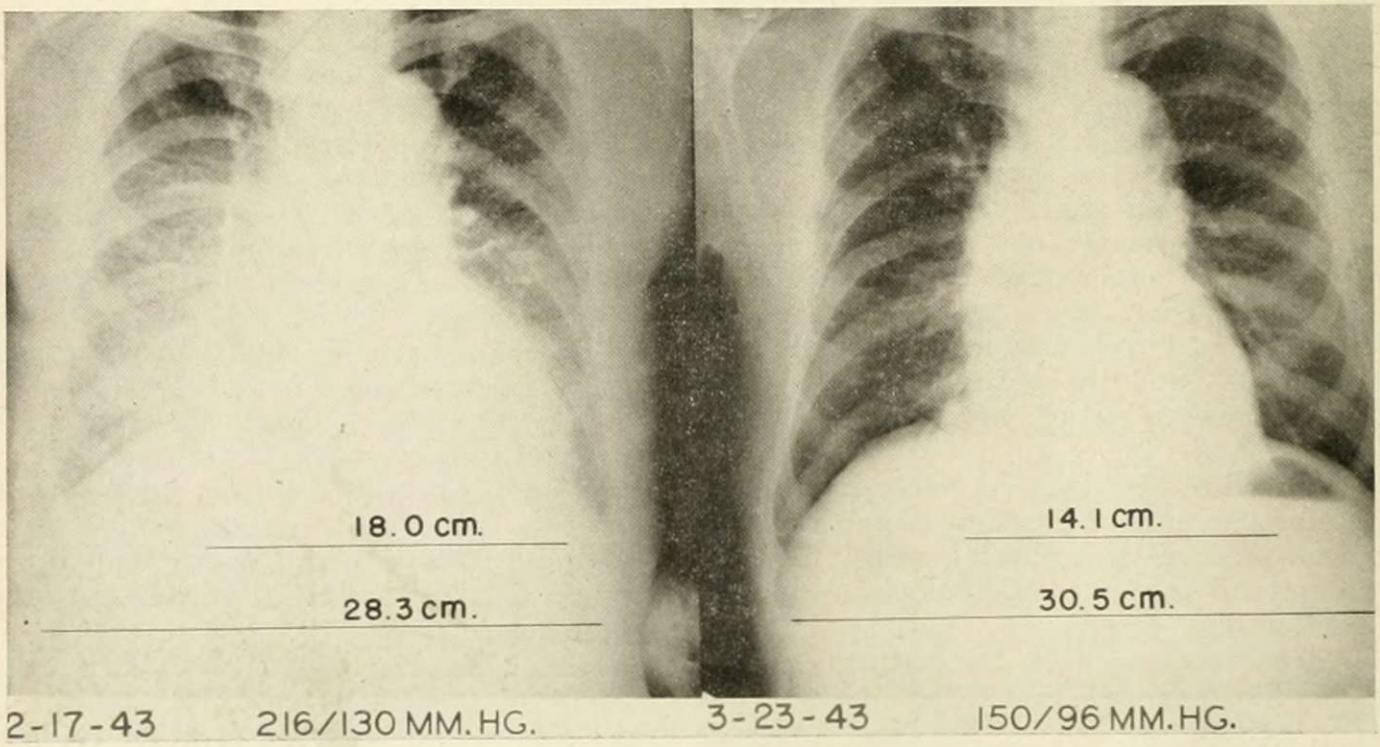


Fig. 53. W.C.F. "Hypertensive vascular disease." Rice diet started February 16, 1943. No digitalis. Reduction in heart size with change in transverse diameter of 28 per cent.

cc. of plasma (albumin 2.6 Gm., globulin 3.6 Gm.). The urine had a specific gravity of 1.011, and contained 0.4 Gm. of albumin per 1000 cc. and 20-30 white blood cells per high power field. Urea excretion in the urine was 5.5 Gm. in twenty-four hours. At discharge the situation was again explained to the patient and he was warned of the danger of disregarding the diet. A short time later he was taken to a local hospital because of a cerebral vascular accident.

PATIENT 9. *"Hypertensive vascular disease" with renal involvement (blood pressure 230 systolic, 140 diastolic); cardiac failure; hypoproteinemia; vascular retinopathy. Example of decrease of blood pressure, loss of edema (63 pounds), increase in plasma proteins, decrease of T_1 inversion, disappearance of heart enlargement, and recovery of eyesight with disappearance of retinal hemorrhages, exudates, and papilledema.*

J.M. (A93523), a 44 year old white truck driver, was admitted to the hospital on October 19, 1942, complaining of swollen legs, failing vision, "sick headaches," shortness of breath, and substernal oppression.

History: The patient had had measles, mumps, chickenpox, and whooping cough as a child, influenza at 19, and malaria at 37 and 38. In 1932, when he was 34, he developed weight loss, weakness, polydipsia, and polyuria. He was told that he had diabetes and was treated with diet for one year. In 1935 blisters appeared on his big toe. He improved on a diabetic diet and insulin, but the weakness persisted. Shortness of breath and some swelling of the feet and legs developed in 1939, and he began to have paroxysmal nocturnal dyspnea in 1940. In February, 1942, his vision began to fail, objects becoming hazy and lights dim. Since May, 1942, he had noticed swelling about the face and eyes, particularly in the morning. The dyspnea grew progressively worse, and he began to have headache with nausea and vomiting. The swelling of the legs was increasing; the skin was reddened and peeling off in large scales.

Examination: The patient's height was 176 cm., his weight 88.15 Kg., temperature 36.1 C., pulse 80, respiration 20, blood pressure 230 systolic, 140 diastolic. He looked acutely ill and was in marked respiratory distress. There were moderate sacral and scrotal edema and severe pitting edema of the legs as high as the hips. Erythema with scaling was present on both lower legs. The eyelids were swollen. The nasal side of the left disc was blurred (fig. 54) and there was papilledema in the right eye. Numerous patches of exudates and hemorrhages were scattered throughout both fundi. The arterioles were very narrow, irregular and tortuous; some of them were invisible at a short distance from the disc. The veins were variable in caliber, and were tortuous and engorged; a loop (congenital?) was seen in the left inferior nasal vein. There was complete compensated edentia. Fine moist rales were heard over both lung bases. The heart was enlarged mainly to the left, the point of maximal impulse being 13 cm. from the midsternal line in the sixth interspace. There was a diastolic gallop rhythm, and a soft systolic murmur was heard over the entire precordium. The liver was felt 3 cm. below the costal margin; the spleen was not palpable; there was no tenderness in either kidney region. An indirect inguinal hernia was present on the left side. The neurological examination was negative. A portable film of the chest showed a transversely enlarged heart with moderate vascular congestion. The electrocardiogram showed inverted T-waves in leads 1 and 4, and diphasic T-waves in leads 2 and 3.

Accessory clinical findings: The hemoglobin was 87 per cent, and there were 3,960,000 red blood cells and 12,600 white blood cells with 5 per cent non-segmented polymorphonuclears, 67 per cent segmented polymorphonuclears, 6 per cent eosinophils, 1 per cent basophils, 3 per cent monocytes, 4 per cent large lymphocytes, 14 per cent small lymphocytes. The serological tests for syphilis were negative. The nonprotein nitrogen was 42 mg. per 100 cc. of blood, sugar 98 mg. per 100 cc. of blood. The carbon dioxide combining power of the plasma was 64 volumes per cent. Total proteins were 3.9 Gm. per 100 cc. of plasma (albumin 1.7 Gm., globulin 2.2 Gm., albumin-globulin ratio 0.77). Calcium was 8.5 mg. per 100 cc. of serum, phosphorus 5.0 mg., cholesterol 318 mg. The urine contained occasional red blood cells, clumped white blood cells and 4-5 cellular casts per high power field, and gave a 1 plus benzidine reaction; albumin excretion was 7.5-15 Gm. in twenty-four hours, sugar excretion 1.5-2.9 Gm. in twenty-four hours. The results of the phenolsulfonphthalein test were as follows: Excretion at the end of the first half hour 5 per cent, at one hour 10 per

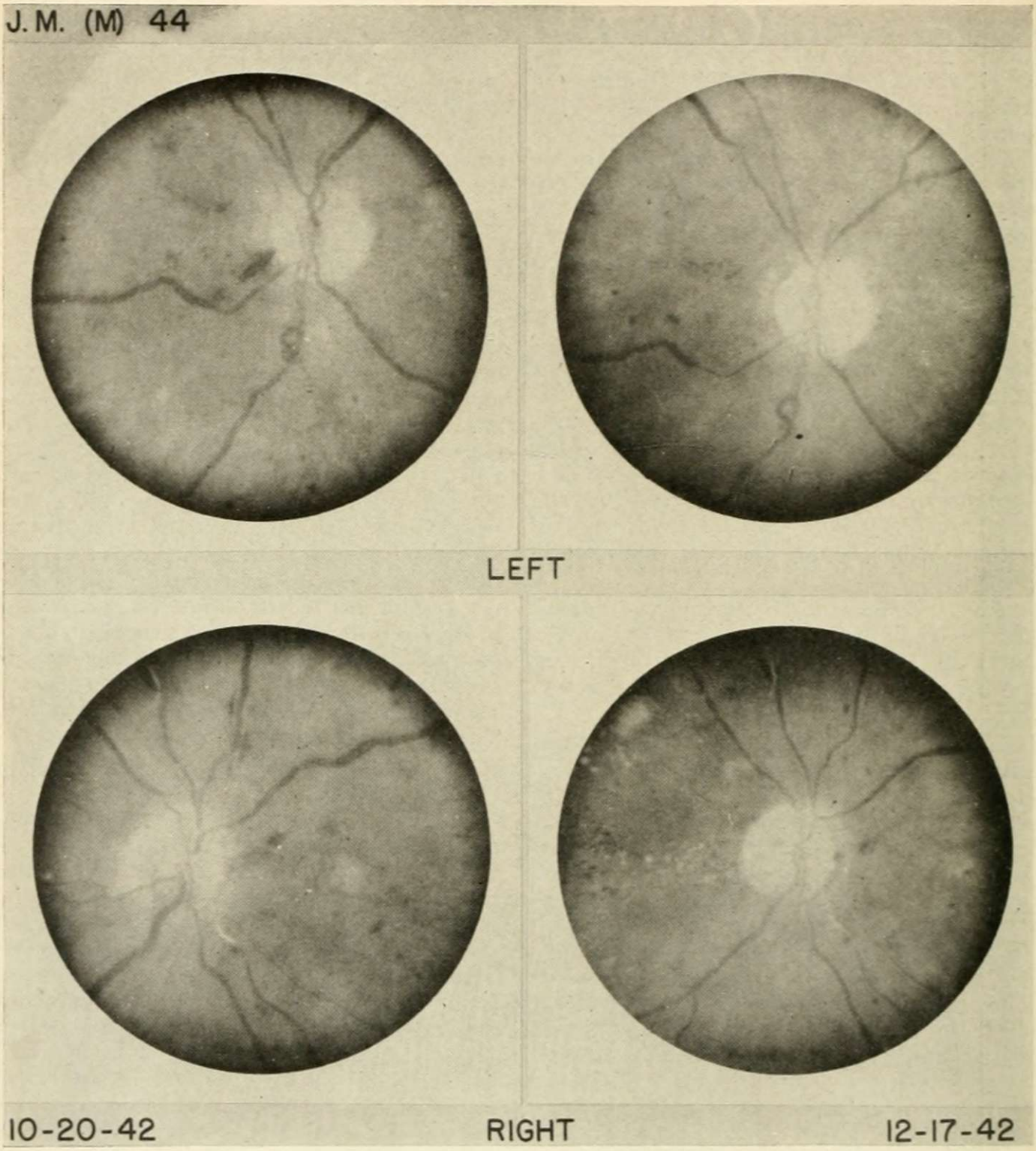


Fig. 54. J.M. (m., 44). "Hypertensive vascular disease." Rice diet started October 20, 1942. **Disappearance of papilledema, right eye. Most of hemorrhages absorbed; marked decrease of venous engorgement, tortuosity, both eyes.**

cent, at one and a half hours 5 per cent, at two hours 5 per cent; the total excretion in two hours was 25 per cent.

Impression: "Hypertensive vascular disease" with renal involvement; cardiac failure; vascular retinopathy with papilledema, hemorrhages, and exudates.

one day and was then placed on the rice diet (2000 calories, 1000 cc. of fruit juices). He was given no digitalis, insulin, or other medication; the only therapeutic measure in addition to the diet was oxygen inhalation (one and a half hours three times a day). The edema and shortness of breath began gradually

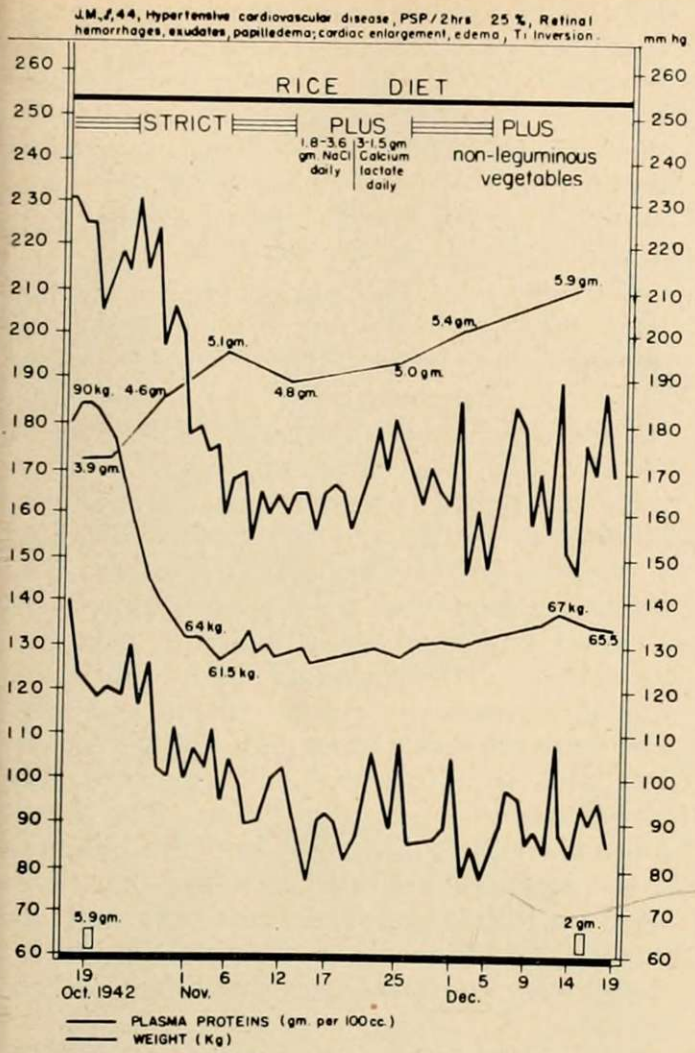


Fig. 55. J.M. "Hypertensive vascular disease." Decrease of blood pressure on strict rice diet. Loss of 63 pounds of edema in 16 days. Improvement in plasma proteins. Decrease of albuminuria (from 5.9 Gm. to 2 Gm. per 1000 cc.).

lost 63 pounds of weight. The total proteins increased from 3.9 Gm. to 5.1 Gm. per 100 cc. of plasma. The blood pressure ranged from 155 to 170 systolic, and from 90 to 105 diastolic (fig. 55). After twenty-three days of strict rice diet, the serum chlorides had decreased to 480 mg. per 100 cc., the serum calcium to 6.1 mg. per 100 cc. Sodium chloride (1.8-3.6 Gm.) was given for four days, and the chlorides increased to 510 mg. per 100 cc. of serum, the calcium to 8.8 mg. Calcium lactate (1.5-3 Gm. per day) was given by mouth for the next eight days. At the end of this time the serum calcium was 8.9 mg. per 100 cc., the plasma chlorides were 542 mg. per 100 cc. There was a definite rise in blood pressure (fig. 55). The total nitrogen excretion in the urine was 2.7 Gm. in twenty-four hours, the urea nitrogen excretion 1.85 Gm. in twenty-four hours.

After eight weeks of rice diet (twenty-three days strict diet, twelve days with additional sodium chloride and calcium, twenty-one days with the addition of some non-leguminous vegetables), the patient was up and feeling well. He had no edema, headache, dyspnea, or substernal oppression. The heart was smaller in size. The blood pressure varied between 148 and 190 systolic and 74 and 100 diastolic (fig. 55). The T-waves in leads 2, 3, and 4 were upright, the T-wave in lead 1 was flat diphasic. Total proteins were 5.9 Gm. per 100 cc. of plasma, the albumin-globulin ratio 1.2. There were only rare red blood cells and casts in the urine; the amount of albumin had decreased considerably and the reaction for sugar was negative.

Examination of the eyegrounds showed no papilledema. Most of the hemorrhages and exudates had been absorbed. The veins were still unequal in caliber, but engorgement and tortuosity had markedly decreased (fig. 54). The patient, who during the first hospital week was unable to recognize a hand at a distance of one or two feet, and after the first month of the rice regime still could not distinguish colors, was now able to read moderate size print and distinguish colors clearly.

Findings on discharge compared with those on admission were as follows:

	October 19-20, 1942	*December 17, 1942*
Blood pressure (mm. Hg.)	230/140	167/90 (average of last 10 days)
Hemoglobin (% of 15.5 Gm.)	87	77
RBC (per cubic mm.)	3,960.000	3,900,000
WBC (per cubic mm.)	12,600	7,500
NPN (mg. per 100 cc. of blood)	42	46
Albumin (Gm. per 100 cc. of plasma)	1.7	3.3
Globulin (Gm. per 100 cc. of plasma)	2.2	2.6
Calcium (mg. per 100 cc. of serum)	8.5	8.9
Phosphorus (mg. per 100 cc. of serum)	5.0	4.3
Urine albumin (Gm. in 24 hours)	10.0 (average of first week)	3.8
Weight (Kg.)	90.5	65.5
Retinal hemorrhages and exudates	+++	+
Papilledema	++	0
T-waves in lead 1	Inverted	Flat diphasic

PATIENT 10. *"Hypertensive vascular disease" first noted in pregnancy (no conclusive evidence of renal involvement); vascular retinopathy with papilledema, hemorrhages, and exudates. Example of decrease of high blood pressure to normal and disappearance of retinopathy and heart enlargement.*

L.B. (B36420), a 24 year old white farmer's wife, was admitted to the medical ward of the hospital on October 30, 1944, complaining of intense headaches and progressive dimness of vision.

History: The family history was positive for hypertension, nephrolithiasis, and diabetes. The patient had had measles, whooping cough, and scarlet fever in early childhood; malaria and mumps at 15. Except for "some headache" since she was about 10, she had always been "strong and healthy" and "working hard." Her first pregnancy (at 19) was complicated by edema of the feet and severe headache; the systolic blood pressure went to 210. There were no symptoms of urinary tract disease and no albuminuria, so far as the patient knows. The systolic blood pressure after delivery was 170. After that the systolic blood pressure was "always over 200." She had frequent headaches (three or four times a week), most of which occurred on awakening in the morning. At 23 she became pregnant again and was not seen by a physician until the end of the fifth month (August 18, 1944). Her blood pressure was then found to be "extremely high" (above 260 systolic). On September 1, 1944, she was seen in Duke Hospital Obstetrical Clinic; her blood pressure was 260 systolic, 145 diastolic. Ophthalmoscopic examination at that time showed arteriovenous compression and narrowing of the arterioles, but no retinal exudates or hemorrhages. She had slight ankle edema and albuminuria. The urinary sediment showed only occasional white blood cells. Hysterotomy was advised but was refused by the patient. On September 5, 1944, her blood pressure was 248 systolic, 140 diastolic. On September 26, after bed rest, sedation with phenobarbital, and a "low salt, high protein, low calorie diet with limited fluids," it was 190 systolic, 135 diastolic; there was marked albuminuria, and occasional red blood cells and hyaline casts were seen in the urine. On October 2, 1944, she was admitted to the Duke Hospital Obstetrical Ward because of vaginal bleeding. Her blood pressure was higher than 260 systolic, 170 diastolic. On October 5, breech delivery of a stillborn infant was performed. Blood pressure readings (twice daily) from October 6 to October 11 averaged 224 systolic, 147 diastolic. After discharge on October 11, she continued to have progressive dimness of vision and headache. She was admitted to the Medical Ward of this hospital on October 30, 1944.

Examination: The patient was a moderately obese young woman in no acute distress. Her height was 158.5 cm., her weight 78.25 Kg., temperature 37.5 C., pulse 102, respiration 20, blood pressure 233 systolic, 157 diastolic. There was no edema. The pupils reacted well to accommodation and light. The discs (fig. 25 and 56) were obliterated by papilledema and peripapillary edema. The arterioles, as far as they were visible, were tortuous and narrowed; the veins were tortuous and distended, and their continuity was interrupted by retinal edema and massive hemorrhages and exudates of the cotton-wool and metallic type. The lungs were clear to percussion and auscultation. The heart was enlarged to the right and the left; the aortic second sound was very loud, but there were no murmurs. The liver was not enlarged and the spleen was not palpable; there was no tenderness in either kidney region.

A chest film (fig. 57) showed the transverse diameter of the heart to be 16.6 cm., the internal diameter of the chest 32.0 cm. No abnormalities were seen on a flat plate of the abdomen. The electrocardiogram showed the T-waves upright in all leads; the angle of the electrical axis was +18 degrees.

Accessory clinical findings: The hemoglobin was 95 per cent, red blood cells 4,800,000, white blood cells 9,900. The corrected sedimentation rate was 10 mm. in one hour. Serological tests for syphilis were negative. The nonprotein nitrogen was 26 mg. per 100 cc. of blood, the urea nitrogen 9.5 mg., the urea ratio 36.5 per cent. Chlorides (as sodium chloride) were 560 mg. per 100 cc. of plasma, calcium was 9.6 mg. per 100 cc. of serum, phosphorus 2.7 mg., cholesterol 240 mg. Total proteins were 7.2 Gm. per 100 cc. of plasma (albumin 3.9 Gm., globulin 3.3 Gm., albumin-globulin ratio 1.2). The blood sugar was 93 mg. per 100 cc. The urine showed an acid reaction and a specific gravity of 1.015; no sugar, no red blood cells and no casts were present, but there were many epithelial cells and 2-3 white blood cells per

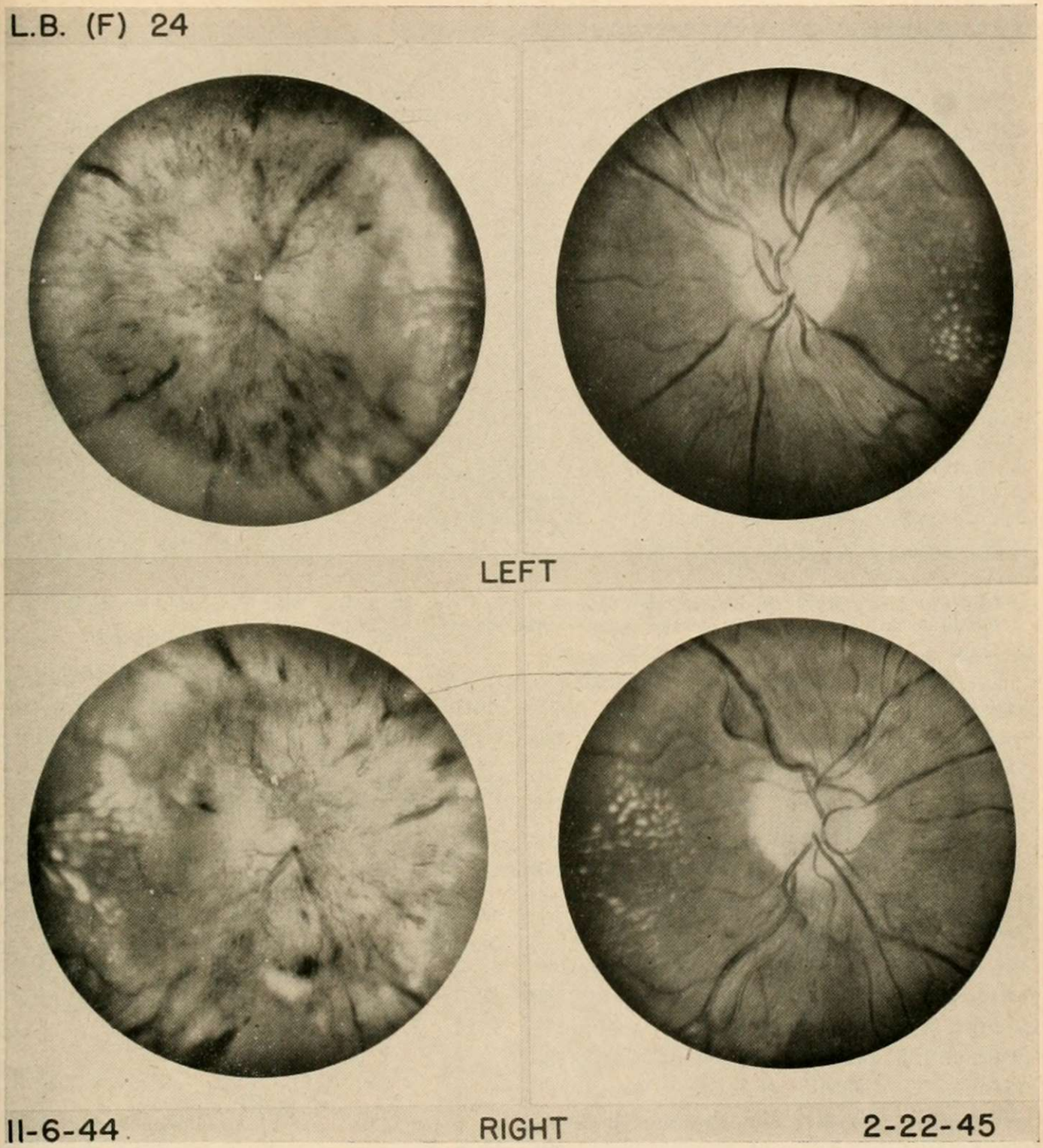


Fig. 56. L.B. (f., 24). "Hypertensive vascular disease." Rice diet started October 30, 1944. **Disappearance of papilledema, hemorrhages; marked decrease of exudates, both eyes.** See also fig. 25.

high power field; the benzidine reaction was negative; albumin excretion was 0.67 Gm. per 1000 cc. of urine. The results of the phenolsulfonphthalein test were as follows: Excretion at the end of the first half hour 35 per cent, at one hour 22 per cent, at one and a half hours 4 per cent, at two hours no specimen; total excretion in two hours was 61 per cent. The test was repeated and showed a total excretion in two hours of 58 per cent. The concentration-dilution test showed a range of specific gravity from 1.010 to 1.030. The urea clearance was 55.7 per cent of normal (after sixteen days on the rice diet).

Impression: "Hypertensive vascular disease" (first noted in pregnancy) without conclusive evidence of renal involvement; vascular retinopathy with papilledema, hemorrhages, and exudates.

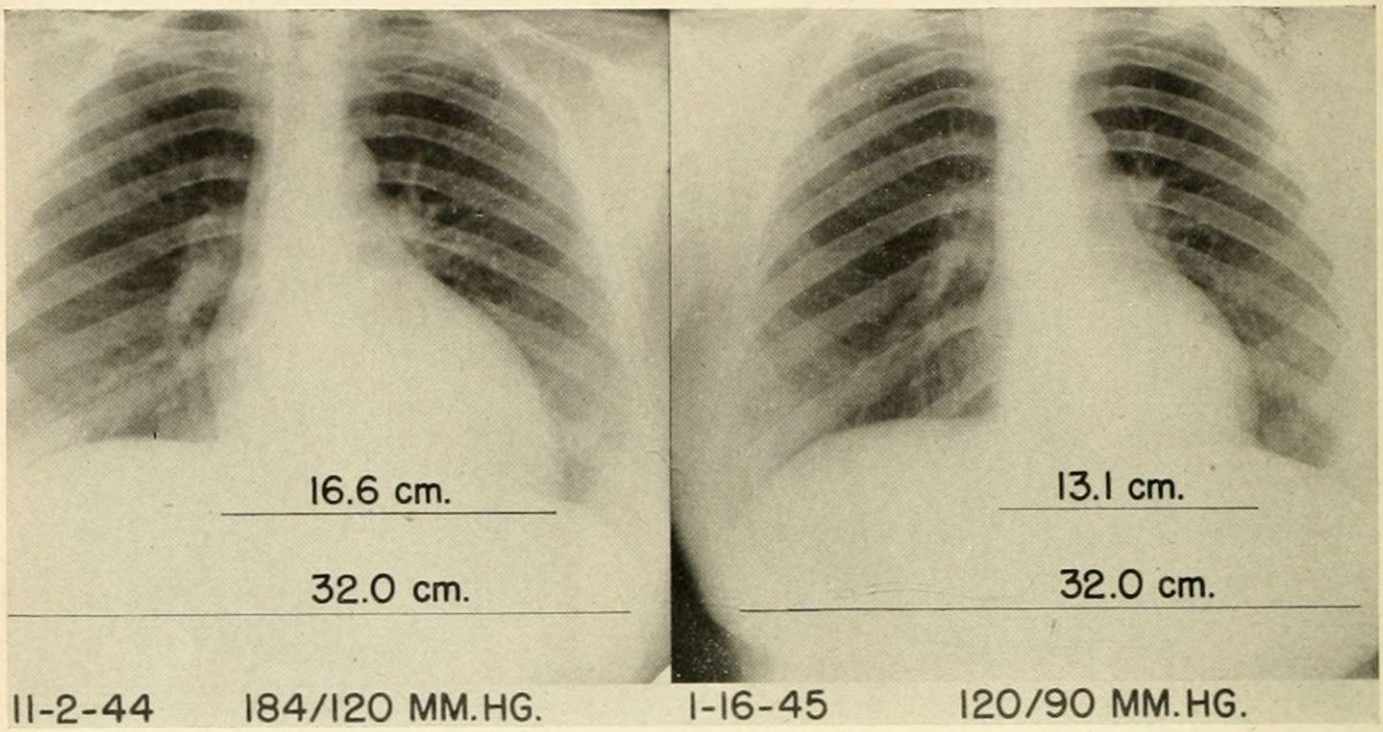


Fig. 57. L.B. "Hypertensive vascular disease." Rice diet started October 30, 1944. No digitalis. Reduction in heart size with change in transverse diameter of 26 per cent.

Course: The patient was immediately started on a 2000 calorie rice diet with fluids limited to 900 cc. of fruit juices daily. She was kept on strict bed rest, and oxygen inhalations were given for one hour three times daily (beginning November 5). She received no digitalis or any other medication except sodium amytal for the sodium amytal tests. The venous pressure on November 6 was 12.2 cm. of saline. The blood pressure decreased rapidly (fig. 58), averaging 180 systolic, 126 diastolic the first week, 155 systolic, 105 diastolic the second week, 138 systolic, 97 diastolic the third week, and 130 systolic, 91 diastolic the fourth week. The patient lost 5 Kg. of weight during the four weeks in the hospital. At the time of discharge on November 30, 1944, there was marked improvement in her eyesight, and the heart was smaller in size, with a change in the transverse diameter of 12.9 per cent. She had only occasional mild headaches. The average excretion of albumin in the urine during the fourth week was 0.24 Gm. per 1000 cc. The patient was advised to follow the strict rice diet at home and to be up for not more than one hour daily.

She returned to the hospital for re-examination on December 18, 1944. During the eighteen days at home she had had a slight

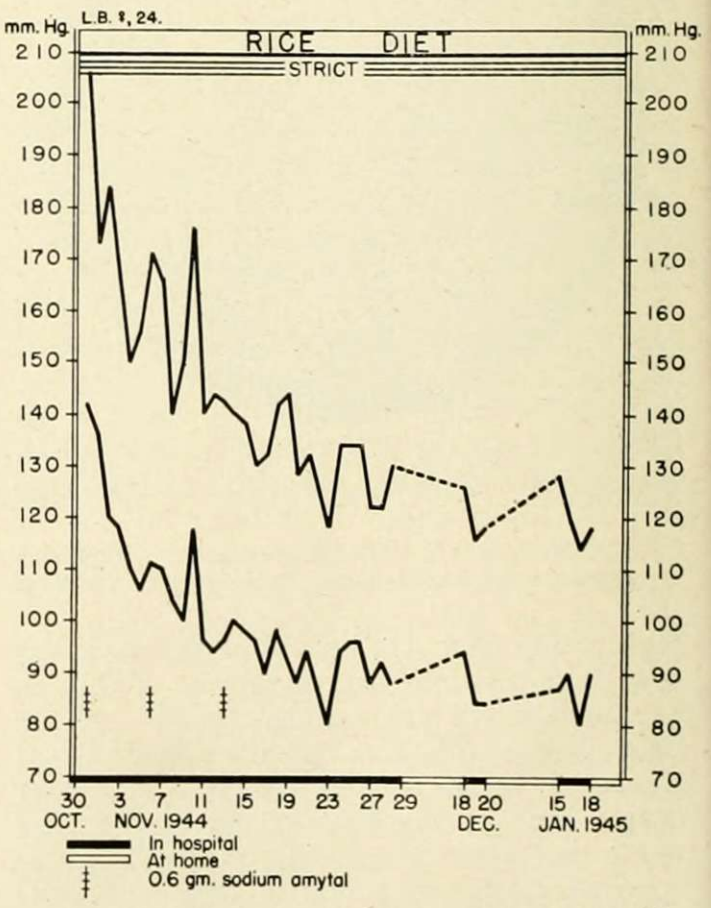


Fig. 58. L.B. "Hypertensive vascular disease." Decrease of blood pressure to normal in 3 weeks on rice diet.

headache on only two occasions and her vision had continued to improve. She felt considerably better. Her blood pressure averaged 120 systolic, 87 diastolic. Her weight was 70 Kg. The retinae showed marked improvement; the papilledema had decreased, and there remained only a few hemorrhages and patches of exudates. The transverse diameter of the heart was 14.2 cm (a change of 16 per cent in seven weeks); the internal diameter of the chest was 32.2 cm. The electrocardiogram showed the angle of the electrical axis to be +51 degrees.

The hemoglobin was 103 per cent, red blood cells 5,000,000, white blood cells 5,900. The nonprotein nitrogen was 24 mg. per 100 cc. of blood, the urea nitrogen 1.2 mg., the urea ratio 5.0 per cent. Chlorides (as sodium chloride) were 572 mg. per 100 cc. of plasma; calcium was 9.4 mg. per 100 cc. of serum, phosphorus 4.0 mg., cholesterol 153 mg. Total proteins were 6.7 Gm. per 100 cc. of plasma: albumin 3.8 Gm., globulin 2.9 Gm., albumin-globulin ratio 1.3. The urine showed an acid reaction and a specific gravity of 1.010; there was no sugar; the albumin excretion was 0.2 Gm. per 1000 cc. Total nitrogen excretion was 2.9 Gm. per 1000 cc. of urine; urea excretion 4.3 Gm.; chloride excretion (as sodium chloride) 0.22 Gm. The results of the phenolsulfonphthalein test were as follows: Excretion at the end of the first half hour 15 per cent, at one hour 20 per cent, at one and a half hours 10 per cent, at two hours no specimen; total excretion in two hours 45 per cent.

The patient was discharged for another four weeks on strict rice diet and was advised to stay in bed except for about an hour and a half a day. Her vision continued to clear up and she had no headaches. Upon examination on January 15, 1945, the eyegrounds showed further improvement (fig. 25). The disc margins were more sharply outlined; some metallic exudates were still present, but the greater part of the retinal edema, hemorrhages and cotton-wool exudates had disappeared. The heart was smaller, with a change in the transverse diameter of 26 per cent compared with the chest film of November 2 (fig. 57). The aortic second sound was not louder than the pulmonic second sound. The patient was advised to continue on the strict rice regime and to rest at least twenty hours a day for another six weeks.

She followed the rice regime but was up and around for about eight hours every day doing the cooking and light housework for her family. She was completely asymptomatic and was feeling healthy and strong. Examination of the eyegrounds on Febuary 20 showed the optic discs sharply outlined; most of the exudates had disappeared (fig. 56). She was advised to continue the rice diet, to which non-leguminous vegetables were added, and to return to the hospital for re-examination after two months.

A comparison of the findings on the patient's four admissions is given below:

	Oct. 30-Nov. 2, 1944	*Dec. 18-Dec. 20, 1944*	*Jan. 15-Jan. 18, 1945*	*Feb. 20-Feb. 23, 1945*
Blood pressure (mm. Hg.)	233/157	120/87	120/87	121/87
Hemoglobin (% of 15.5 Gm.)	95	103	90	82
RBC (per cubic mm.)	4,800,000	5,000,000	4,610,000	4,600,000
WBC (per cubic mm.)	9,900	5,900	5,800	5,100
NPN (mg. per 100 cc. of blood)	26	24	26	25
Urea N (mg. per 100 cc. of blood)	9.5	1.2	1.8	3.0
Albumin (Gm. per 100 cc. of plasma)	3.9	3.8	3.8	3.8
Globulin (Gm. per 100 cc. of plasma)	3.3	2.9	3.1	3.3
Chlorides (as mg. NaCl per 100 cc. of plasma)	560	572	520	532
Calcium (mg. per 100 cc. of serum)	9.6	9.4	10.1	9.1
Phosphorus (mg. per 100 cc. of serum)	2.7	4.0	2.2	3.5
Cholesterol (mg. per 100 cc. of serum)	240	153	132	110
Urine albumin (Gm. per 1000 cc.)	0.67	0.2	0.18	0.28
PSP (% excretion in 2 hours)	61, 58	45	57	47
Weight (Kg.)	78.25	70	68.5	64
Papilledema	++++	+	0	0
Retinal hemorrhages and exudates	++++	+++	++	+
Angle of electrical axis	+18°	+51°	+43°	+58°
T wave in lead 1	Upright	Upright	Upright	Upright
Transverse diameter of heart (cm.)	16.6	14.2	13.1	12.9

Summary

Two hundred and thirteen patients with acute or chronic primary kidney disease or with "hypertensive vascular disease," with or without cardiac involvement, retinopathy or uremia, were treated with a diet limited to rice, sugar, fruit and fruit juices, supplemented by vitamins and iron. The fluid intake was usually limited to 700-1000 cc. of fruit juices daily. The patients followed the diet strictly or with modifications for periods varying from four days to thirty-two months.

Protein equilibrium

In spite of the low protein intake, the protein equilibrium of the patients on the rice diet is maintained. The nitrogen excretion in the urine decreases to amounts considerably smaller than those found in fasting individuals (the average total nitrogen excretion per twenty-four hours after two months of the diet was 2.26 Gm.). Plasma proteins and hemoglobin remain at a constant level: The average concentration of the total plasma proteins in 120 patients was 6.3 Gm. per 100 cc., both before the rice diet and after ninety days (average) on the diet; the average hemoglobin value of 165 patients was 79.9 per cent (of 15.5 Gm.) before, and 80.1 per cent after seventy-five days (average) on the diet.

Plasma and urine chlorides

With the low chloride intake of the diet, the chloride concentration in plasma and urine decreases. After a month of the rice diet, the chloride concentration in the urine is about 100 mg. per 1000 cc. The average plasma chloride concentration of 91 non-uremic patients after an average of forty-four days on the rice diet was 91.7 milli-equivalents (as sodium chloride, 536 mg. per 100 cc.), as compared to 97.0 milli-equivalents (as sodium chloride, 567 mg. per 100 cc.) before the diet.

Blood pressure

Of 192 patients with hypertension on the basis of acute or chronic primary kidney disease or of "hypertensive vascular disease," 25 died after six to eighty-one days on the strict diet (average twenty-five days). In 60 of the remaining 167 patients *(36 per cent) there was no improvement in the hypertension*: The decrease in their mean arterial pressure was less than 20 mm. of to a level of 180 systolic, 114 diastolic, after an average time of thirty-nine days* on the strict or modified diet. In 10 of 47 patients with chronic primary kidney disease the average blood pressure decreased from a level of 208 systolic, 132 diastolic to a level of 192 systolic, 124 diastolic in an average time of sixty-seven days*. In 22 of 50 patients who had "hypertensive vascular disease" with "secondary" kidney involvement, the average blood pressure decreased from a level of 212 systolic, 129 diastolic to a level of 200 systolic, 126 diastolic after an average of thirty-nine days. In 28 of 65 patients with "hypertensive vascular disease" without conclusive evidence of renal excretory dysfunction, the average blood pressure decreased from a level of 179 systolic, 108 diastolic to a level of 160 systolic, 102 diastolic in an average time of thirty days.

In 107 of the 167 patients *(64 per cent) the hypertension improved*: The decrease in their mean arterial pressure was 20-96.5 mm. of mercury, the average blood pressure decreasing from a level of 200 systolic, 122 diastolic to a level of 149 systolic, 96 diastolic after an average time of sixty-two days on the strict or modified diet. The blood pressure of 5 patients with acute glomerulonephritis decreased from a level of 170 systolic, 109 diastolic (average) to 108 systolic, 66 diastolic (average), in an average period of fifteen days on the rice diet. In 37 of 47 patients with chronic primary kidney disease, the average blood pressure decreased from a level of 194 systolic, 124 diastolic to a level of 140 systolic, 96 diastolic after seventy-seven days (average) on the rice diet. In 28 of 50 patients with "hypertensive vascular disease" with "secondary" kidney involvement, the average blood pressure decreased from a level of 219 systolic, 128 diastolic to a level of 165 systolic, 102 diastolic in an average of seventy-three days. In 37 of 65 patients with "hypertensive vascular disease" without conclusive evidence of renal excretory dysfunction, the average blood pressure decreased from a level of 197 systolic, 115 diastolic to a level of 151 systolic, 97 diastolic after an average of forty-eight days on the rice diet.

Electrocardiographic changes

In 23 of 82 patients with chronic primary kidney disease or "hypertensive vascular

disease" who followed the strict or modified rice diet for one to thirty-two months (average, four months) there was a definite change in T_1 during the treatment. In 3 patients (13 per cent) the change in T_1 was in the direction from upright to inverted; in 20 patients (87 per cent), from inverted to upright.

In 76 patients, the electrical axis could be evaluated. In 43 patients there were no changes, or only minor changes in the angle of the electrical axis (less than $\pm$15 degrees); 33 patients had a definite change in the angle of the electrical axis.

Six of the 33 patients (18 per cent) had a decrease in the angle of the electrical axis (average of 20.2 degrees); 27 of the 33 patients (82 per cent) had an increase in the angle of the electrical axis (average of 26.4 degrees).

Heart size

In 72 patients with chronic primary kidney disease or "hypertensive vascular disease" who followed the strict or modified rice diet for an average period of four months, the heart size could be measured.

In 6 of the 72 patients (8.3 per cent) the heart became larger: The transverse diameter of the heart increased by 0.9 to 4.9 per cent (average, 3.2 per cent).

In 66 of the 72 patients (91.7 per cent) the heart became smaller, with a change in the transverse diameter of 1.8 to 51.8 per cent (average, 13.3 per cent).

Nonprotein nitrogen

Of 171 patients whose nonprotein nitrogen was determined before and after the rice diet, 22 patients died after an average time of twenty-five days, one patient after twenty months. The average nonprotein nitrogen at the start of the diet in these patients was 115 mg. per 100 cc. of blood; the average nonprotein nitrogen before death was 186 mg. per 100 cc. of blood.

Of the remaining 148 patients, 35 (24 per cent) had either an increase or no decrease of the nonprotein nitrogen (average nonprotein nitrogen before the diet 42.7 mg. per 100 cc. of blood; after an average of sixty-three days on the diet, 50.2 mg. per 100 cc. of blood). In 113 patients (76 per cent) the nonprotein nitrogen decreased (average nonprotein nitrogen before the diet 53.1 mg. per 100 cc. of blood; after an average of seventy-eight days on the diet, 36.0 mg. per 100 cc. of blood).

Urea nitrogen

Of 63 patients whose blood urea nitrogen was determined before and after strict or modified rice diet, 6 patients (9.5 per cent), including 2 patients who died, had an increase of the urea nitrogen (average urea nitrogen before the diet 57.6 mg. per 100 cc. of blood; after an average of twenty-five days on the diet, 85.6 mg. per 100 cc.). In 57 of the 63 patients (90.5 per cent) the urea nitrogen decreased (average urea nitrogen before the diet 23.4 mg. per 100 cc. of blood; after an average of one hundred and twelve days on the diet, 11.6 mg. per 100 cc.). The lowest blood urea nitrogen after the rice diet was 1.2 mg. per 100 cc. The average urinary urea nitrogen excretion of 30 patients who had followed the rice diet for two months or more was 1.1 Gm. per twenty-four hours.

Cholesterol

Of 82 patients whose serum cholesterol was determined before and after strict or modified rice diet, 9 patients (11 per cent) had an increase in the cholesterol concentration of 2-38 mg. per 100 cc. of serum (average concentration before the diet 173 mg. per 100 cc. of serum; after an average of ninety-one days on the diet, 190 mg. per 100 cc.). The remaining 73 patients (89 per cent) had a decrease in the serum cholesterol concentration of 5-430 mg. per 100 cc. (average concentration before the diet 266 mg. per 100 cc. of serum; after an average of ninety-one days of the diet, 183 mg. per 100 cc.).

Retinopathy

Of 33 patients with advanced vascular retinopathy (papilledema, hemorrhages, or exudates) who followed the diet for at least eight weeks, the retinopathy of 1 patient became worse. In 11 of the 33 patients the retinopathy came to a standstill and papilledema, hemorrhages, and exudates partially cleared up. In 21 of the 33 patients, the retinopathy improved greatly or even cleared up completely under the rice regime.

I am indebted to Dr. Frederic M. Hanes and to the members of the staff and house staff of the Department of Medicine who have given me constant support and helpful criticism.

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THE EDUCATION OF A CHILD HANDICAPPED BY LOSS OF HEARING

C. E. RANKIN, Ph.D.

NORTH CAROLINA SCHOOL FOR THE DEAF

MORGANTON

In recent years, we at the North Carolina School for the Deaf have been increasingly aware of the need for a better understanding of the precise function of the school by citizens of the state generally. It might almost be said that the only person who evinces genuine interest in our work is the person who has a child in the school; and even such a person often does not understand the function of the school. For instance, two years ago a woman came to my office, leading a little boy who had on only one garment, a long shirt reaching to his knees. She put him down on the floor; he stayed there, on his hands and knees during our entire conference. She told me that she had brought him to be admitted to the school. I clapped my hands and the boy turned his face toward me, indicating quite clearly that his hearing was normal. However, when I attempted to get him to do the simplest sort of thing, such as getting up and sitting on a chair, he could not follow instructions; he was an idiot. When I told the mother that this was not the sort of school for the child, she broke into tears, and plead piteously with me to take this little handicapped boy off her hands. She explained that she was a poor woman, and had come a long way to bring the boy, because someone had told her that there was a school at Morganton that might take him off her hands and care for him. This scene has been repeated many times in my office. So frequently does this sort of thing happen that a year ago the Board of Directors instructed me to seek an opportunity to appear before superintendents of public welfare, school superintendents, and the medical men of the state, in an effort to clarify our function.

Admission

Ordinarily children are admitted to the school through the departments of public welfare. When we hear of a deaf child of school age in a given county, we write to the superintendent of public welfare of that county, enclose an application blank, and ask that the family be visited and proper information secured. The superintendent of public welfare fills out the application, signs it, and returns it to us. We then seek to get in touch with the parents directly. We like for our contact with the parents to include a visit to the school with the child sometime during the year preceding admission. The parents visit the classrooms, dormitories, and shops; they learn how the child lives, and what happens in his educational experience. The child, too, comes to think of the school as "my school," often talking to the other children in the family about going to "my school" next fall.

In a good many cases, our first contact with deaf children comes through a physician. Sometimes a general practitioner who has discovered a deaf child in the community writes us, but more frequently, of course, our inquiries come from specialists in the field of eye, ear, nose and throat work. Some of these physicians know about the school because there are deaf people in their communities who are students there, or who have graduated from the school. In a very few cases, the physicians themselves have visited the school.

History of School

The North Carolina School for the Deaf was opened at Morganton in 1894 under the leadership of Dr. E. McK. Goodwin; for forty-three years he was its Superintendent, and as it stands today, it is his handiwork. For fifty years prior to the opening of the school at Morganton, education of the deaf had been conducted, along with the education of the blind, in Raleigh. In some states the education of the deaf and the blind is still combined in one institution. It is interesting to note, in passing, that this year marks the centenary of education for the deaf in North Carolina, and the fiftieth anniversary of the opening of the school at Morganton.

Character of the Student Body

The question which is probably uppermost in your minds is, "What kind of handicap do you deal with in this institution?"

The law provides that the institution is to be operated for the purpose of the education

Read before the Second General Session, Medical Society of the State of North Carolina, May 3, 1944. From the Section on Ophthalmology and Otolaryngology.

of those persons between the ages of 6 and 21, who are so handicapped by deafness that they cannot be benefited by training in a regular public school.

In normal times our enrollment runs about 400. It is somewhat less than this now, because of the unusual opportunities for employment of our older boys and girls.

Of course, as you can readily understand, deafness, like blindness, is a relative term. A person can be as "blind as a bat," or as "deaf as a post." Such a person, of course, has no possibility of receiving any stimulation whatever through his eye or ear. Should the auditory nerve in the ear, or the area in the brain which receives stimulations from the auditory nerve, be destroyed, such a person could be said to be totally deaf. Relatively few people are so handicapped. Many more of them have a certain residuum of hearing which in some cases can be utilized in communication. A person who has a considerable percentage of residual hearing can often, with an electric hearing aid, secure a correction to almost normal hearing. In fact, it is estimated that a person with a 20 per cent loss of hearing needs no correction of any sort. By being careful he can understand ordinary conversations. A person with a greater loss of hearing begins to have to make more than ordinary adjustments to life. With a loss of as much as 60 per cent, a person is so severely handicapped as to need special means of communication. It is with this class of persons—those severely handicapped by loss of hearing—that our school attempts to deal. We find it advisable in some instances to admit children who have a loss of hearing of less than 60 per cent, in order to give them an opportunity to learn to wear a hearing aid, and to learn lip reading. Some of these children, after remaining a year in our school, are able to return to public school and graduate there. Some of you may know of the case of Jimmy Shoemaker, a star football player of Charlotte. Jimmy came to us at the age of 12, learned lip reading, and carried along with his school work on the same level as his grade in public school. He was finally fitted with a hearing aid, and returned to the Charlotte Public Schools.

We are frequently asked what percentage of our students were born deaf, and what percentage have been deafened since birth. A study made some years ago, which attempted to cover the entire deaf population of the state, indicated that about 48 per cent were congenitally deaf, and about 52 per cent were adventitiously deaf. A study made last year by Mr. O. W. Underhill among the families of our students indicates that there has not been much change in these percentages in recent years. No study has been made in this locality concerning the character and extent of the loss of hearing in these two groups. It is generally conceded, however, that on the whole the congenitally deaf suffer from a greater loss of hearing. A factor which has to be considered, however, is the frequent total lack of speech in the home background of the congenitally deaf, and the use of sign language and finger spelling exclusively.

It might be of interest to the medical profession to know something of the causes of deafness. A recent survey made in the upper school, among 156 unselected students furnishing reliable information, shows that 59, or 37.8 per cent, lost their hearing in early childhood, 12 of them after the age of 6. Of this number, 24 owe their loss of hearing to spinal meningitis. In 22, or 14.1 per cent, the causes of deafness were other illnesses such as scarlet fever, typhoid fever, and ear infections, in later childhood. Seventy-five, or 48 per cent, of the 156 students were born deaf. Forty-one of these have one or more deaf sisters or brothers; 12 are children of deaf parents, and 18 are children of hearing parents having deaf relatives.

Physicians could render valuable service by ascertaining in early infancy whether or not deafness has been inherited by the offspring of deaf partners, or of hearing partners having deaf ancestors or relatives. We have had in school children of deaf parents who were themselves thought to be deaf, but were found to have normal hearing; they simply had had no chance to make use of it. On the other hand, many deaf children are considered normal until they reach the age of 2 or 3 years. Much good could be done by putting hearing children of deaf parents in such environments that they would not lose anything in the early training of hearing and of speech, and by preparing deaf children of hearing parents for school by means of lip-reading.

Curriculum

By keeping our school work on a par with that in the public schools we make it easier for children to come to us for a period, then return to more normal living and a closer contact with home. We have a curriculum running through twelve grades of work which is almost identical with that of the public schools in North Carolina. Most of our children, however, take longer to finish their schooling than do hearing children. Our school normally admits a child at 6 years of age, and the first three years of his time must be given to the acquisition of language, of lip reading, and the beginnings of speech. During this time, if he has good mentality, he may acquire a reading and writing vocabulary of as much as two thousand words; the child with normal hearing may have a vocabulary of this size at 6 years of age. This means that our deaf children are entering what we know as normal first grade work at the age of 9. If they go through twelve grades at the normal rate of speed, they will graduate at 21.

In addition to the academic curriculum we provide a broad general course in vocational education, beginning about the eighth grade with general shop and going through the twelfth grade with specialization in certain vocations. For boys we provide training in agriculture, cabinet making, metals work, clothing repair and upkeep (dry cleaning), and printing; for girls, training in agriculture, home economics (cookery), laundering, typing, handicrafts, and sewing.

This system of vocational education is supplemented by having each boy or girl who completes school enter an occupation under what is known as the Federal Rehabilitation Act. Under this arrangement, the child is placed in "on-the-job" training for a period of three to six months, or sometimes for a period of a year or more. Part or all of this phase of his educational expense is taken care of by federal grant.

The Problem of Partially Deaf Children

There are a great many children who are struggling to get through school in North Carolina with a loss of hearing so great as to create difficulty for them in their school work. This problem is being taken over by the State Department of Health, which is conducting a survey to locate all children with as much as 9 decibels loss of hearing. The plan is to work out corrective measures which will meet the needs of these children —in some cases moving them to the front of the room, in others providing an electrical hearing aid, and in still others, sending them to special institutions. It certainly is to be hoped that when this program is under way we can help many, many boys and girls who are now becoming discouraged and losing out in school because of this physical handicap. Particularly heartening is the possibility which is just now opening up for the use of the portable electric hearing aid, which can in many instances bring about a sufficient correction to enable the person to live normally among hearing people. In some instances, of course, the person's hearing loss is severe in the range of sound frequencies that cover ordinary human speech. In such instances, while the person may show a good percentage of hearing, he may find difficulty in securing the correction that will enable him to communicate with others.

Contributions Which Can Be Made by Physicians

May I take the liberty, in closing, of suggesting some practical ways in which you, as physicians in this commonwealth, can help in selecting and bringing into the school those children whose education we are prepared to handle.

First. We always want an otological examination. To the general practitioner, I want to say that it will be helpful to both you and the school, if you can refer every child suffering from a loss of hearing to an otologist for examination and recommendation.

Second. Be certain that the child is suffering from a *hearing loss*, and does not have aphasia, or some other handicap which has removed from him the capacity to speak. Our teachers are trained to teach the child suffering from severe or total loss of hearing, and *not* the hearing child who is suffering from a speech difficulty. Our staff are called upon at present, however, to deal with these cases, because there is no provision for handling such handicapped children in our state school system.

Third. Physicians often know the life of their communities much more intimately than do the school officials. Often they know about a child with severe loss of hearing, who cannot get along in school, and is kept at home. We hope physicians will re-

port such cases, and help us to get such children into school. This can be done, either by writing directly to the school, or by getting in touch with the county superintendent of public welfare. Often parents are emotionally conditioned toward the child with a handicap, and do not want to send him away to school. Sometimes a visit to the school, where they can see the opportunities to be offered their child, changes their attitude completely.

Fourth. We cannot, of course, enforce attendance as long as a child is allowed to go to a regular public school, sit in the back of the room, and be passed along from year to year by the teacher. The only way we can enforce the attendance law is to have such children shut out of regular schools.

Fifth. These children should be put into school as early as possible. If a child is of normal development and apparently normal intelligence, he should be admitted at 6 years of age. If a child is not well developed, however, and is apparently of slow mentality, we sometimes advise delaying his admission for one or two years. This advice is given only after a personal interview and careful examination of the child by members of our staff. We have no provision now for children under 6 years of age, although the trend in the education of the deaf indicates that children should perhaps be admitted at 3 or 4 years of age. It is to be hoped that something can be done about pre-school training of deaf children in our state.

Sixth. Physicians often ask, "Can a child put on a hearing aid and remain at home?" We say, "No." The individual hearing aid is expensive, the least expensive costing $40.00, and it is difficult to get a small child to use this delicate piece of equipment intelligently. A child under 12 years of age is rarely able to use an individual hearing aid to any advantage. Furthermore, a hearing loss seems to be most advantageously corrected by the combination of lip reading and electrical stimulation. Facility in this combination is difficult to acquire, and certainly requires the services of specially trained teachers. It seems, therefore, that in every case where the loss of hearing is severe enough to require electrical stimulation the child should be sent to our school for a varying period of special rehabilitation training.

THUMBNAIL SKETCHES OF EMINENT PHYSICIANS

JOSIAH C. TRENT, M.D., *Editor*

DURHAM

THE EVOLUTION OF THE ASEPTIC PRINCIPLE IN SURGERY

III

FRANCESCO REDI (1626-1697) AND THE THEORY OF SPONTANEOUS GENERATION

A popular conception or misconception of disease in the seventeenth century was a belief in its spontaneous origin. Because of the power of all living things to propagate indefinitely their ability to generate *"de novo"* was not doubted. Thus the early scientific study of disease was based largely on the theory of "spontaneous generation."

The first to advance sufficient experimental evidence to render the doctrine untenable was Francesco Redi, the Italian physician, naturalist and poet born in Arezzo, Tuscany, in 1626, the son of the physician to the Grand Duke. He grew up under the eye of Galileo, who lived nearby, and his later scientific life can be traced directly to the influence of this wonderful man[1]. In 1647, after receiving the combined degree of Doctor of Medicine and Philosophy from the University of Pisa, he spent five years in travel and study, returning to Florence at the age of 26 to take up the practice of medicine. In 1666, after his father's death, he was made court physician, a position he retained until his death in 1697. Although his medical work was not brilliant, it revealed a large measure of common sense. A glimpse of it can be seen in his advice to his patients that they had one thing more to be feared than the disease from which they suffered—namely, the medicines that were proffered to cure them. Redi also had the disease known as

1. For this and other more detailed information see Dr. Rufus Cole's article, Francesco Redi (1626-1697), Ann. Med. Hist. 8:347-359, 1926.

"bibliophilia"; he was a book collector. To his interest in this field we owe the preservation of the priceless manuscript of Benvenuto Cellini's autobiography. He also discovered and published the first reference to the use of spectacles. He found an old manuscript dated 1289 in which a monk had written: "I am so weighted with years that without the glasses called 'occhiali,' I could neither read nor write. These have lately been invented to the convenience of poor old people whose sight is enfeebled."

Redi's greatest work, however, lay in his faultless refutation of the age-old doctrine of spontaneous generation—at least in so far as it applied to flesh-eating flies. In his *Esperienze intorno alla generazione degli insetti* (Florence, 1668) he states that he "began to believe that all worms found in meat were derived from flies, and not from putrefaction. I was confirmed by observing that, before the meat became wormy, there hovered over it flies of that very kind that later bred in it. Belief unconfirmed by experiment is vain. Therefore I put a dead snake, some fish, and a slice of veal in four large, wide-mouthed flasks. These I closed and sealed. Then I filled the same number of flasks in the same way leaving them open. Flies were seen constantly entering and leaving the open flasks. The meat and the fish in them became wormy. In the closed flasks were no worms, though the contents were now putrid and stinking. Outside, on the covers of the closed flasks a few maggots eagerly sought some crevice of entry.

"Thus the flesh of dead animals cannot engender worms unless the eggs of the living be deposited therein.

"Since air had been excluded from the closed flasks, I made a new experiment to remove all doubt. I put meat and fish in a vase covered with gauze. For further protection against flies I placed it in a gauze covered frame. I never saw any worms in the meat, though there were many on the frame, and flies ever and anon lit on the outer gauze and deposited their worms there."[2]

In 1671 Redi extended his experiments, in a publication entitled *Experimenta circa generationen Insectorum* (fig. 1), to include bees, scorpions, spiders, and the worms popularly and erroneously believed to arise spontaneously in vegetables and decayed fruits, in wood and in trees. Oddly enough,

2. Singer, Charles: A Short History of Science, London, Oxford University Press, 1941, p. 245.



Fig. 1. Engraved and printed title pages of Redi's Experimenta circa generationen Insectorum (1671), in which he describes his experiments on the generation of insects. (Author's collection)

despite his previous admirable work with flies, he continued to believe in the spontaneous generation of certain plant gall insects.

Although Redi's incontestable experiments had dealt a severe blow to the doctrine of spontaneous generation as far as "visible" creatures were concerned, the question was raised a few years later by Leeuwenhoek in still another form with his "invisible" animalcules[3]. This problem remained unsettled until the nineteenth century.

J. C. T.

3. See previous "Thumbnail Sketch."

Two curious anachronisms . . . are the homeopathists and the osteopaths. The homeopathists have almost vanished now, but a few shy specimens can be found in the country lanes. They lasted a long time. And we must remember that their founder was a perfectly regular member of the medical fraternity with a classical eighteenth century education whose "system" was simply one of a series of medical systems which included those of van Helmont, Cullen and Baglivus. Indeed Rokitansky! And medicine might have taken the wrong turning, according to an eminent historian, and gone down the road of homeopathy if it hadn't been that an Austrian, Auenbrugger, and a Frenchman, Laennec, emphasized the importance, as my friend Dr. William Dock says, of the removal of the shirt. When medical men made the patient remove his shirt and looked at him instead of looking at the outside of the coat or the bodice and letting the patient tell the doctor what was the matter, homeopathy shrivelled up.—Logan Clendening: Resistance to Change as a Contribution to Medical Progress, Connecticut State M. J. 7:523 (August) 1943.

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MARCH, 1945

THE PROLONGED USE OF SULFONAMIDES

In the *Annals of Internal Medicine* for January, Siegel and Julianelle have a most important report on the prolonged use of the sulfonamides in an effort to control the incidence of upper respiratory infections[1]. Sulfadiazine was administered for fifteen weeks—from December, 1942, to March, 1943—to 30 subjects from an institution for feebleminded children. In the first half of the experiment 1 Gm. was given, in three doses; in the last half this was increased to 2 Gm. in four doses. A control group of equal number was made up by selecting alternate children in the order of admission.

The conclusion was reached that clinically "there were no significant differences in the frequency and severity of the infections of the respiratory tract observed in treated and control groups." From the laboratory standpoint the results were rather disconcerting. Although the gram-negative cocci rapidly disappeared from the throats of the children in the treated group, they returned "in their original frequency in spite of continued treatment," and as they reappeared they showed an increased tolerance for the drug. "Other organisms as staphylococci, Streptococcus alpha and gamma, diphtheroids, Sarcina, tetragenus and *H. influenzae* are not noticeably affected." "Continuous administration of sulfadiazine did not prevent either the dissemination of *C. diphtheriae* among exposed children or its repeated recovery from throat cultures."

The behavior of pneumococci was of especial interest. "1. Under prolonged sulfadiazine administration in physically normal children, pneumococcal types may acquire a high degree of resistance to the drug.

"2. With resistance, there is a striking shift in predominance of types due to elimination of strains not so readily becoming fast.

"3. Despite their fastness, the strains retain their virulence and specificity."

This report by Morris and Julianelle is a model of combined clinical and laboratory research, and should serve as a curb on the excessive enthusiasm in the use of the sulfonamides. Although the authors were fortunate in having had no significant toxic reactions as a result of giving 30 children daily doses of sulfadiazine for fifteen weeks, their findings emphasize a truth that is being appreciated more and more: that while the sulfonamide drugs are powerful weapons against disease, their indiscriminate use is to be condemned. When indicated they should be given unhesitatingly, and in adequate doses; but they should never be used unless they are really needed, and then no longer than is necessary.

THE BROTHERHOOD OF MEDICAL MEN

In striking contrast to the hundreds of atrocity stories which have come out of the war is an item carried by the United Press during the German break-through. Similar stories have grown out of almost every war within the memory of man, and to the credit of medical men everywhere, it is highly probable that they are all true.

The UP dispatch tells how an American medical unit, captured by the Germans, worked for two days side by side with German medical men. "The story began . . . when a force of German troops who had infiltrated American lines on the confused Hardt Mountain front overran Wingen, site of an American battalion headquarters . . . The Germans, who had only a few medical men and almost no equipment, separated the American aidmen from combat troops as soon as Wingen was in their hands. The Americans rescued some of their equipment from their battalion aid post . . . and both sides set up shop in a schoolhouse with a German doctor in command." The American medical unit included one doctor, Lt. Joseph W. Reynolds of California. As patients were brought in, they were treated "according to how badly they were wounded rather than by nationality . . . The Germans used Red Cross flags from American jeeps, and combined German-American litter bearer teams went out together in search of wounded."

This strange group practice was continued until the town was re-taken by the Americans. It furnishes another illustration of the brotherhood of medical men.

* * * *

MEDICINE, POLITICS, BASKETBALL, AND LABOR UNIONS

On February 17 Lincoln's birthday was celebrated five days late by a dinner at the Robert E. Lee Hotel in Winston-Salem, which "was attended by between 500 and 600 Republicans from throughout North Carolina."

This dinner was held shortly after it was announced that the annual meeting of the Medical Society of the State of North Carolina has been indefinitely postponed—for the first time since the Civil War. The attendance on this meeting would probably have

The annual meeting of the Tri-State Medical Society, which is usually held in February, has for the second time in its history been canceled this year; yet on February 23 and 24 the Southern Conference Basketball Tournament was held in Raleigh, and it is estimated that more than 3000 devotees of the sport were in attendance. The average registration at the Tri-State meetings is little more than a tenth of this number.

The 1945 meeting of the American Medical Association has also been canceled; yet John L. Lewis and his cohorts of the C.I.O. were allowed to foregather in Miami, and the A.F. of L. has recently held a convention in New Orleans.

It is true that no state medical society ever whooped up political issues for either party, that a medical meeting does not thrill thousands of spectators as does a basketball tournament, and that no medical Political Action Committee helped to re-instate our present administration. It is probable, however, that society derives more lasting benefit from the exchange of ideas in scientific meetings of medical men than from political gatherings, basketball games, and labor union meetings combined.

* * * *

NORTH CAROLINA'S 1944 MORTALITY

The State Board of Health has just released its vital statistics for 1944 (p. 180). For two successive years the general death rate for North Carolina has been the lowest in the state's history—8.1 per 1000 for 1943, 7.9 for 1944.

This continued decline in the mortality rate should help offset the unenviable showing of our state in the draft rejection figures. The numerous physical defects apparently harbored by North Carolinians do not seem to interfere with longevity.

Some years ago, in a bulletin on appendicitis, the statistician of the Metropolitan Life Insurance Company explained the low mortality from this disease in North and South Carolina by saying that our doctors were just too ignorant to recognize appendicitis when they saw it. Even the most bigoted Yankee, however, should give North Carolina doctors credit for having sufficient pro-

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

BOWMAN GRAY SCHOOL OF MEDICINE

Presentation of Case

First admission: This 20 year old white single shipyard worker entered the North Carolina Baptist Hospital on January 6, 1944, complaining of vomiting and weakness. All through high school he had had "spells with his stomach," with excessive weakness and nausea. One year before admission he experienced a sudden attack of abdominal pain, with fever, weakness, nausea and vomiting. He was operated upon and told that "the appendix was nearly ruptured"; the postoperative course was uneventful. The nausea, vomiting and abdominal pain soon returned. He noted that the sunburn which he received the past summer appeared to be deepening in color. In the six weeks before admission his weight decreased from 170 to 126 pounds.

There was nothing significant in the family history or past history.

The temperature was 98 F., the pulse 104, respiration 18. The blood pressure was 80 systolic, 56 diastolic. The positive findings were slight lethargy, a diffuse brownish pigmentation of the entire body, most marked on the face, neck and the folds of skin in the palms. Some pigmentation was noted on the under surface of the tongue and on the mucosa of the mouth and gums. The left submaxillary and left axillary lymph nodes were enlarged but freely movable. Slight mid-epigastric tenderness was elicited.

There were 16.6 Gm. of hemoglobin, 5,160,000 red blood cells, and 11,000 white blood cells, with 33.5 per cent polymorphonuclears, 49.5 per cent lymphocytes, 12.5 per cent monocytes, 4 per cent eosinophils, and 0.5 per cent basophils. The urine had a specific gravity of 1.011 and presented only occasional white blood cells on microscopic examination. The blood nonprotein nitrogen was 68 mg. per 100 cc.; serum proteins were 7.2 Gm. per 100 cc., with 4.5 Gm. of albumin and 2.7 Gm. of globulin; the carbon dioxide combining power was 22 milli-equivalents or 49 volumes per cent; blood chlorides were 92 milli-equivalents or 536 mg. per 100 cc. The results of an oral glucose tolerance test were as follows: fasting blood sugar 95 mg. per 100 cc.; at thirty minutes 160 mg. per 100 cc.; at one hour 80 mg. per 100 cc.; at three hours 63 mg. per 100 cc. (patient complained of weakness); at four hours 65 mg. per 100 cc.; at five hours 68 mg. per 100 cc.

An x-ray of the chest revealed no abnormalities. Sheep-cell agglutination was negative.

The patient was placed on a high carbohydrate, high protein diet and given intravenous glucose in saline, and salt and sodium bicarbonate tablets. He gained one and one-half pounds in ten days and appeared stronger; the blood pressure rose to 110 systolic, 80 diastolic. The nonprotein nitrogen fell to 43 mg. per 100 cc. of blood and the chlorides rose to 98.4 milli-equivalents or 576 mg. per 100 cc. The leukocyte and differential counts remained unchanged. He was discharged with instructions to continue the diet and saline therapy.

Second admission (March 3, 1944): The patient had progressed very well until shortly before readmission, when he noticed increasing morning weakness and a feeling of tiredness. No changes were found in the physical examination. The white blood cell count was 9,500; the differential was now normal. A Kahn test was negative. The other accessory clinical findings showed no change from the previous admission. He was discharged after two days, with an increased salt intake.

Third admission (August 15, 1944): The patient got along without difficulty for five months. For two weeks before this admission he was careless about salt medication and diet. He became nauseated and vomited all during the day before admission. Upon entering the hospital he was so weak that he had to be carried to bed. His systolic blood pressue was 50; the diastolic pressure could not be recorded. No lymph nodes were palpable. The blood chlorides were 86 milli-equivalents or 504 mg. per 100 cc.; the carbon dioxide combining power was 16.7 milli-equivalents or 37 volumes per cent. The hemoglobin was 11.8 Gm., there were 3,650,000 red blood cells and 4,850 white blood cells, with 57 per cent lymphocytes, 6 per cent monocytes, 35 per cent polymorphonuclears, 2 per cent eosinophils. The urine had a specific gravity of 1.020 and showed a faint trace of albumin. The response following parenteral saline therapy and, for the first time, adrenal cortical hormone, was prompt.

Presented at the Watts Hospital Symposium, Durham, February 14, 1945.

After five days in the hospital the patient returned home on saline and desoxycorticosterone acetate therapy.

Fourth admission (December 14, 1944): The family physician was called to see the patient, who had had a headache for ten days and was stuporous. He had been taking the prescribed medication only sporadically and had had none for the past week. Upon admission to the hospital examination revealed the temperature to be 106 F., pulse 136, respiration 32, blood pressure 88 systolic and 64 diastolic. The patient responded only after painful stimulation. The specific gravity of the urine was 1.016; there was a trace of albumin, a 1 plus reaction for sugar, and an occasional leukocyte; the white blood cell count was 9,800. After intensive therapy, the blood chlorides were 122 milli-equivalents, and the nonprotein nitrogen was 34 mg. per 100 cc. The serum proteins were 4.8 Gm. per 100 cc.; the hematocrit was 42 volumes per cent. A blood culture was negative. The sedimentation rate was 14 mm. in an hour. An x-ray of the chest showed a diffuse generalized increase in pulmonary markings with no localized consolidation. Slight stiffness of the neck was noted on the second day following readmission. A lumbar puncture showed the fluid to have a 4 plus Pandy reaction, with 30 mononuclear cells; bacteria were not found in smears, and routine cultures were negative. The patient was given large amounts of saline, blood plasma and adrenal cortical hormone intravenously, with a resultant rise in the blood pressure and lowering of the temperature to 101 F., but he failed to recover consciousness. He received 2.5 Gm. of sodium sulfadiazine intravenously without improvement. His temperature rose terminally to 104 F. and his pulse rate to 160. Death occurred three days following the last admission.

Discussion

DR. GEORGE T. HARRELL: This young man had a chronic illness characterized by mild gastrointestinal symptoms "all through high school." The duration, though indefinite, could have been as long as six years. The history describes acute gastrointestinal symptoms for two years, but the patient was under observation for only one year. His complaints at the initial visit were weakness, nausea, vomiting, abdominal pain, deepening color of the skin, and a weight loss of 45 pounds. Subsequent visits revealed in addition morning weakness and tiredness. On the final admission new symptoms of coma, fever, and stiffness of the neck suggest the development of an acute illness which may or may not have been associated with the primary disease process. The patient died after three days.

On the first visit, the temperature was subnormal (98 F.), the pulse was rapid (104); respirations were normal, but hypotension was present, the blood pressure being 80 systolic, 56 diastolic. During the final acute illness, the temperature reached a height of 106 F. The tachycardia persisted, the pulse rate increasing to 160; and respirations were increased. The blood pressure was at hypotensive levels, though it rose with therapy. Only lethargy, skin pigmentation, and epigastric tenderness were found originally. It is difficult to tell whether the stupor noted on the final admission was a progression of lethargy. The history of preceding headache suggests the development of a new process.

The initial hemoglobin (16.6 Gm.) and red cell count (5,160,000) suggest some degree of dehydration, although these are at the upper limit of the normal range. The leukocyte count of 11,000 could hardly be accounted for by the same degree of dehydration. The differential count, with neutropenia and an absolute and relative lymphocytosis and monocytosis, is extremely interesting. The return to normal values and later recurrence of the lymphocytosis suggest a chronic disturbance with exacerbations and remissions.

The blood chemical findings confirm the presence of dehydration, which could have been a result of vomiting. Determinations of the blood hematocrit would have been helpful in estimating the extent of dehydration. The lowered blood chlorides, the essentially normal carbon dioxide combining power, and the elevated nonprotein nitrogen would be found after vomiting. The glucose tolerance test showed a profound disturbance of carbohydrate metabolism. The fasting level of the blood sugar was normal, as was the level at one-half hour after oral ingestion of glucose. Subsequent determinations revealed a rapid disappearance of carbohydrate from the blood and a failure to convert protein or to mobilize stores of glycogen either from the liver or from muscle. This failure resulted in a severe hypoglycemia which persisted from the third through the fifth hour. The drop in the nonprotein nitrogen level to 43 mg.

per 100 cc. indicated that the kidneys were able to excrete nitrogenous products when the fluid intake and the arterial glomerular filtration pressure were adequate.

The trace of albumin in the urine would be consistent with a moderate degree of dehydration. The 1 plus reaction for sugar would suggest a defect in reabsorption of glucose by the kidney tubules, since the blood sugar levels did not exceed the normal. The finding of an occasional white cell in the urine is not unusual. The lumbar puncture revealed a disturbance involving the meninges. The marked increase in proteins, as shown by the 4 plus Pandy reaction, would suggest an exudative rather than a transudative process. The presence of 30 mononuclear cells and the absence of polymorphonuclear cells suggest a deep inflammatory process which had not extended through into the subarachnoid space, and indicate that the cells were the result of irritation. A specific virus infection could produce this phenomenon in the subarachnoid space.

The course of the illness under therapy suggests that the hypoglycemia and disturbance of electrolytes were ameliorated by a high carbohydrate, high protein diet, with additional sodium in the form of sodium chloride and sodium bicarbonate.

In summary, this man showed evidence of a disturbance involving the skin and the gastrointestinal, neuromuscular, cardiovascular, and urogenital systems. *Anatomically*, the only factor which might explain the findings in all these systems would be a disturbance in the autonomic nervous system. The increased upper abdominal motility, evidenced by vomiting and abdominal pain, could be due to a disturbance in innervation. The weight loss could be attributed to inadequate food intake and loss of fluids by vomiting. That the central nervous system was involved is shown by the stupor, stiff neck, and the findings at lumbar puncture. The history of weakness indicates that the peripheral nervous system may have been involved. Anatomic imbalance of the cardiovascular system is exhibited by the tachycardia and hypotension. The increase in pigmentation is due to proliferation of chromaffin cells derived from the anlage of the autonomic nervous system.

Physiologically, this man suffered from a disturbance in permeability of cells, as is shown by the alterations in water and electrolyte balance. Evidence of a decrease in blood volume and of changes in the interstitial and intracellular fluid volumes is shown by the tachycardia and low blood pressure.

The fact that the majority of the water in the body can not readily be mobilized is usually overlooked. Approximately 50 per cent of the entire body weight is in intracellular fluid. About 15 per cent of the body weight is made up of fluid in the interstitial spaces, and only 5 per cent is accounted for by the circulating blood. Therefore, a very small loss of fluid from the blood stream may lead to profound changes in the circulation. Tachycardia, hypotension and prerenal azotemia may result. The loss of circulating fluid can be readily replaced from the interstitial fluid, but the relatively great volume of fluid remaining in the large reservoir of the intracellular spaces can be used with comparative difficulty.

The greater part of the sodium in the body (90 per cent) is found in the interstitial fluid. The sodium ion can readily pass back and forth through cell membranes or vessel walls to equalize changes in osmotic pressure or in water content. On the other hand, the majority of the potassium is found inside cells, and this ion does not tend to leave the cytoplasm unless a profound disturbance in fluid and electrolyte balance has occurred, or the cells have disintegrated. When there is any loss of sodium chloride and water, potassium moves from cells through the interstitial fluid to plasma. This redistribution of potassium may occur in hemorrhage, shock, or adrenal insufficiency, or after the intraperitoneal injection of glucose. Large concentrations of potassium are inhibitory to myoneural junctions and synapses; hence autonomic nervous tissue may be affected wherever it is found.

The physiological disturbance in this patient also involved the absorptive power of cells of the kidney tubules, as is shown by the initial low specific gravity and traces of glucose in the urine. If reabsorption of the sodium ion also were inhibited, the lowering of blood chloride could be due to excessive loss of the sodium salt through the kidney.

This defect in cell permeability may result from any lesion which decreases the secretion of the adrenal cortex. The improvement under replacement therapy with adrenal cortical extracts or desoxycorticosterone is further evidence of adrenal insufficiency.

The lesion may have been solely in the adrenal cortex, or in the master gland—the anterior pituitary—with a resultant lack of adequate stimulation by the adrenotropic pituitary hormone. The finding of cells in the spinal fluid might suggest that the pituitary was diseased. The absence of marked disturbances attributable to deficient secretion of other endocrine glands (such as a decrease in thyroid function, libido, or sexual activity) would favor a lesion in the adrenals alone. The adrenals have a wide margin of safety, so that 90 per cent or more of both glands must be destroyed before clinical symptoms of deficiency are pronounced. The cortical cells have considerable power of regeneration, and this ability must also be lost before deficiency of hormone production is noted.

What might cause adrenal insufficiency in this patient? Addison originally described this syndrome, which has subsequently been called by his name. In former years, 90 per cent of the cases of destruction of the adrenals coming to autopsy were due to tuberculosis, and 10 per cent to disappearance of cortical cells from various other causes. In more recent years, the incidence of tuberculous cases has decreased to 70 per cent and the incidence of cases due to atrophy following cellular destruction has risen.

In the cases due to tuberculosis, the disease is usually active and evidence of infection can be found also in other organs. No evidence of tuberculosis was found in this patient, unless the diffuse changes described in the x-ray of the lungs on the final admission were due to early hematogenous miliary spread. Central nervous system lesions, such as a subcortical tubercle or meningitis, are extremely rare in Addison's disease. Organisms were not found in the spinal fluid and no note is made of a guinea pig inoculation. The result of a tuberculin test done in the year before death would be extremely helpful. The demonstration of calcification—the end of the healing process in chronic tuberculosis—in the area of the adrenals above the kidney shadows on x-ray films of the abdomen would be circumstantial evidence of this infection.

The etiologic agent which leads to destruction of cortical cells, with failure of regeneration and subsequent atrophy and scarring, is unknown. The increase of this type of lesion in recent years, concomitant with greater use of organic chemical drugs, suggests that these may be a factor, though no experimental work has incriminated any particular group of drugs. It is interesting to conjecture as to whether the decreased incidence of tuberculosis in the population as a whole may explain the apparent increase in atrophy as the cause of adrenal insufficiency. If scarring or damage must precede exposure in order for secondary tuberculous infection of the adrenals to occur, as is the case with silicosis in the lungs, the general decrease in tuberculosis would allow more patients with adrenal lesions to come to autopsy showing only atrophy of the adrenal cortex. The duration of life is usually greater if the destruction of the cortex is due to degeneration and atrophy rather than to tuberculosis.

Destruction of the adrenals by a tumor would be unlikely with this duration of the disease. Destruction by hemorrhage usually is dramatic and results in acute collapse recognized as the Waterhouse-Friderichsen syndrome. The differential white blood cell counts suggest the possibility of leukemic infiltration, but no evidence of bleeding or persistent lymphadenopathy is found to support this. Chronic infectious mononucleosis could account for the variable leukocyte counts, but this disease is not known to affect the adrenal. It is possible that the single sheep cell agglutination test reported may have been performed too early in the course of the disease to prove this diagnosis. The blood sugar level at one-half hour was higher than that ordinarily seen in Addison's disease, and might suggest the possibility of hemochromatosis, or bronzed diabetes; the subsequent blood sugar curve, however, rules this out.

A crisis in adrenal cortical insufficiency is comparable to a similar crisis—coma—which occurs in diabetes. Either may be precipitated by (1) cessation of replacement endocrine therapy, (2) the discontinuance of a careful dietary regimen, or (3) intercurrent infection. A pyogenic infection in this patient is suggested by the high temperature in the terminal crisis; the negative blood culture indicates that it was not generalized. The accessory findings point only to the central nervous system as the site of the infection.

Considering all evidence, it seems unlikely that atrophy of the adrenals alone, or that a crisis itself would lead to the changes in the

spinal fluid. The spinal fluid findings are compatible with tuberculous meningitis; therefore, the most likely single etiologic agent would be the tubercle bacillus.

Dr. Harrell's Diagnoses

1. Chronic bilateral adrenal cortical destruction, tuberculous, resulting in chronic and acute adrenal cortical insufficiency (Addison's disease with crisis).

2. Terminal hematogenous spread of tuberculosis with a subcortical tubercle in the brain and an early meningeal reaction.

Pathological Discussion

DR. W. C. THOMAS: The significant findings at the postmortem examination involved the skin, endocrine glands, kidneys and lungs. The generalized pigmentation of the skin was caused by an increase in melanin, demonstrated by histo-chemical methods. Unusual lentigo or vitiligo as described in the original cases reported by Addison[1] did not occur in this case.

The adrenal glands presented features described in the literature as "atrophy" of the glands[2]. They were markedly reduced in size, and together weighed 1 Gm. Absence of the cortical cells was prominent in the microscopic picture. A few small nodules of regenerating cells represented the only areas of cortex found. Fibrous proliferation and lymphocytic infiltration were only minimal in the periphery of the glands. The medullary tissue showed no pathological alterations. The vasculature appeared normal in structure and no bacteria could be demonstrated.

The thyroid gland showed slight degenerative changes, and a moderate number of lymphoid follicles occurred throughout the tissue. Thymus and parathyroid glands were not found in the gross dissection. The basophilic cells of the hypophysis appeared to be decreased in number. The nuclei of the hypothalamus were uninvolved by the disease process. Active spermatogenesis was noted in the testicles.

The event which precipitated the terminal crisis probably had its origin in the kidneys, which showed the classical picture of acute pyelonephritis. Smears and cultures of the small abscesses in the cortical regions revealed the colon bacillus to be the causative agent. No pus was present in the pelves, and the postmortem blood culture was sterile. Histological examination of the lungs demonstrated an early minimal bronchopneumonia, but no bacteria were found. The findings of a 4 plus Pandy reaction and 30 mononuclear cells in the cerebrospinal fluid could not be explained by the capillary dilatation seen in the leptomeninges on microscopic examination. Wilson[3] states that such laboratory findings may be explained by the "benign serous meningitis" occurring in toxic and febrile states.

Anatomical Diagnoses

"Atrophy" of the adrenal glands; cause not demonstrated.

Increased pigmentation of the skin due to hypermelanosis.

Acute pyelonephritis, bilateral, due to Escherichia coli.

Acute bronchopneumonia, bilateral, early; causative agent not demonstrated.

Closing Discussion

DR. HARRELL:

The fact that atrophy rather than tuberculous destruction of the adrenals was found would indicate that the initial gastrointestinal symptoms were due to Addison's disease which had been present possibly as long as six years. The critical laboratory tests for the diagnosis of tuberculosis had not been performed.

The crisis was precipitated by an acute kidney infection. The history does not suggest urinary involvement, and no changes were found in the urine. Physical signs may have been obscured by the stupor.

If the cerebrospinal fluid changes were due to febrile or toxic "benign serous meningitis," one would expect the cells found to be polymorphonuclears instead of lymphocytes. Neutrophils are the most actively motile cells, and exhibit diapedesis; hence, they would be more likely to get through slightly damaged capillaries. I would like to suggest the possibility that the spinal fluid changes were due to chronic infectious mononucleosis with terminal meningitis[4]. An examination of lymph nodes and bone mar-

1. Addison, Thomas: On the Constitutional and Local Effects of Disease of the Suprarenal Capsules, Medical Classics 2:244-294, 1937-38.
2. (a) Wells, H. Gideon: Addison's Disease with Selective Destruction of the Suprarenal Cortex, Arch. Path. 10: 499-523 (Oct.) 1930.

row for anatomic changes might have confirmed this.

A discussion of the physiologic changes in Addison's disease and a description of safe tests for early diagnosis are found in a recent article by Kepler and Willson[5].

5. Kepler, E. J. and Willson, D. M.: Diseases of Adrenal Glands: Addison's Disease, Arch. Int. Med. 68:979-1009 (Nov.) 1941.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.
Raleigh

Dying Declarations: *In order for dying declarations to be admissible, it must be plainly apparent that the declarant had given up all hope of life, and believed that death was impending.*

Dying declarations are considered hearsay evidence, but because there is very little likelihood that a dying person would have any motive for making a false statement, such declarations are admitted as exceptions to the well known rule against "hearsay evidence." This type of testimony must relate to the cause of death, or to the circumstances attendant upon the transactions resulting in death, and is permitted only in homicide cases.

The following case illustrating this type of evidence is being submitted because of the fact that attending physicians and surgeons are frequently called upon to repeat the dying declarations of persons who have been assaulted and fatally injured. The facts in this instance are as follows:

A young girl 16 years of age who, judging from the evidence, had been keeping company with her first cousin, the defendant in this case, left her home early one evening and failed to return. Early the next morning she was found beside the road with a wound on the left side of her head, later found to have been caused by a pistol shot, which had passed through the brain. She was immediately carried to the house of her aunt, the mother of the defendant. When aroused from her stupor she talked in detached sentences, but knew her father and mother, and at such times appeared rational. attendance, being of the opinion that she would probably not recover, felt that he should try to induce her to tell something about the circumstances of her injury. He explained to her the prognosis in the case, and asked if she herself expected to get well. She replied, "No, but I hope to get well." She then informed the doctor and others that her assailant was her cousin, the defendant referred to above.

All the evidence submitted in Superior Court was sufficient to cause the jury to find the defendant guilty. His lawyers thereupon appealed the case to the Appellate Court, alleging among other errors that the declaration of the deceased should not have been allowed consideration.

When this case came on to be considered by the higher court, this tribunal was of the opinion that the evidence tended to show that when the declarant made her statement regarding the person responsible for the crime she still entertained some hope, though slight, of recovery. Since in all cases of this kind death, in the declarant's mind, must be certain and imminent, it was ruled that the declaration should not have been submitted to the jury. Therefore, it was ordered that the judgment of the court below be reversed, and a *venire de novo* issued. (Vol. 12, Atlantic Reporter, Page 701).

CORRESPONDENCE

February 15, 1945

Medical Society of the
State of North Carolina
Dr. Roscoe D. McMillan
Secretary
Red Springs, North Carolina

My dear Dr. McMillan:

The War Committee on Conventions sincerely appreciates the patriotic cooperative action taken by the Medical Society of the State of North Carolina, in canceling their Ninety-Second Annual Session, scheduled for April 30, May 1 and 2.

The Committee feels that this action is a distinct evidence of a spirit of cooperation on the part of your Society, and a very real contribution to the furtherance of the war effort.

Very truly yours,
R. H. Clare

TUBERCULOSIS ABSTRACTS

A Review for Physicians

ISSUED MONTHLY BY THE NATIONAL TUBERCULOSIS ASSOCIATION

VOL. XVIII MARCH, 1945 NO. 3

THE proper feeding of patients in tuberculosis hospitals is a difficult task at best. Supervising an adequate diet for patients treated at home calls for even greater ingenuity. With wartime shortages and increasing costs the problem in either case is further intensified. The importance of nutrition as an aid to therapy and a factor in maintaining patient morale must not be overlooked or underestimated.

DO WE FEED TB PATIENTS PROPERLY?

Has the pressure of the war changed our feeding of the tuberculous patient? Is a relaxation of our policy of "plenty of good food" of serious concern in the treatment of tuberculosis? What should be the goal of the dietitian in planning the wartime diet? These are questions in the minds of those interested in the care of tuberculous patients.

Personal observations have indicated that the standards of nutrition have been relaxed in some institutions, partly because of expense and, at times, because of scarcity. How general this lowering of standards has become is not known, but it is thought to be considerable.

In order to assess the significance of relaxing the policy of "plenty of good food" we must know the nutritive status of "well fed" tuberculous persons before the war. Nutritional surveys have shown that many tuberculous persons, even those on a good sanatorium diet were actually malnourished, especially in respect to ascorbic acid and vitamin A. Other food deficiencies were also found. These observations came as a surprise, for clinicians felt secure and were worried about malnutrition only where intestinal disease obviously interfered with assimilation of food.

How important are vitamins A and C in the resistance to tuberculosis? This cannot be answered as yet, but some evidence has been obtained in favor of increasing the intake of these two substances. The cod liver oil and tomato juice "cocktail" prescribed by some in the treatment of tuberculosis is rich in these vitamins. It has been found effective in preventing the development of extrapulmonary tuberculosis in those with the disease in the lungs.

Empirical use of cod liver oil and tomato juice, now has a scientific basis. We still do not know the effect of completely abolishing the deficiencies of vitamins A and C or the effect of abolishing all nutritional deficiencies.

During the last war, an experiment was unknowingly conducted on the effect of food on the resistance to tuberculosis. Before the allied blockade of Denmark was complete, much food was sold to Germany for high prices. The latter stimulated sales to such an extent that the Danes were depriving themselves of essential food, so much so that vitamin A deficiency was evident clinically and its ocular manifestation, called xerophthalmia, was found in hundreds of infants.

At this time the death rate from tuberculosis had risen to a wartime high. Later, as a result of the submarine blockade and food rationing, essential foods were left in the country. Tuberculosis began to recede as soon as exports stopped. This is now regarded as a classic observation on the effect of food, for other factors such as crowding, poor housing, fatigue and overwork were still present and unchanged. Xerophthalmia disappeared, too, when the food exports stopped.

The evidence, then, at present is that tuberculous persons are often not well nourished even when "well fed" and that malnutrition is a vital factor in the incidence and course of the disease. Such evidence makes any relaxation of our feeding standards in wartime seem hazardous.

We have learned, too, that it is not the energy content of food that is important. No doubt the Danes replaced the essential food

shipped off with food of an equal caloric content. The foods shipped were those high in protein, fat, vitamins and minerals. The substituted food was largely carbohydrate. This focuses our attention on the individual food constituents. What are the important food constituents for the tuberculous person?

Recent appraisal of the nutritional status of the tuberculous patient has brought out that these people are mainly in need of vitamin C, vitamin A, protein and minerals. The requirement of vitamins A and C is so great that it seems impractical to plan a diet with sufficient amounts of these materials to overcome the deficiencies. This then is a problem of therapeutics—the supplemental dose to be governed by the degree of the deficiency.

The diet for the tuberculous person should have an abundant amount of protein—70-100 grams per day. This is in excess of that recommended for healthy people, for the tuberculous person has to replace his depleted stores of protein, and, too, his daily needs are more.

All vitamins are probably needed in greater amounts by the tuberculous person, but we have scientific data only for a few of them. Vitamin D has been singled out for special attention because of its role in calcium assimilation and metabolism. Vitamin K deficiency has been found in tuberculous persons and is of especial concern because of its function in normal blood clotting. Those in need of vitamin K are subject to severe hemorrhages. Part of the inanition in tuberculous persons may be due to lack of the B vitamins. Minerals and calcium in particular are deemed important in the healing process. Phosphorus and iron are thought to be needed in greater amounts by the tuberculous person; phosphorus is utilized with the calcium; iron is necessary in the production of hemoglobin. Secondary anemia is always present in advanced tuberculosis.

The proper diet can be summarized as high in essential foods and low in carbohydrates. The total caloric intake is governed by the amount of carbohydrates given. When the person has gained to approximately his normal weight, the caloric intake should be reduced, leaving the intake of the prescribed essentials the same. The latter should be changed only because of food intolerances and then only after all means of substituting foods have been exhausted. The dietitian's problem is to get the prescribed amounts of the food constituents into meals that will be consumed and tolerated by the patient. It is no easy task.

The diet can be "low cost" and yet provide the essentials. The author and his associates have recommended for persons taking treatment at home a list of reasonably priced items: "Food for Tuberculous Patients." (Prepared by the Division of Nutrition, Pennsylvania Department of Health. Reprints are available from the N. C. Tuberculosis Association at 50c per hundred.)

An analysis of such a food list recently concluded by the Henry Phipps Institute, Philadelphia, Penna., showed the total cost to be $4.69 per person per week. It is obvious that this removes cost as an objection to maintaining the quality of the diet. We are more anxious than ever before to get the tuberculous person well because of the wartime necessity for conserving manpower. Therefore, it is imperative that we continue to improve the diet of the tuberculous person rather than relax our standards.

Do We Feed TB Patients Properly? Horace R. Getz, M.D., The NTA Bulletin, September, 1944.

BULLETIN BOARD

PRESIDENT'S MESSAGE

The following is submitted in an effort to bring the members of the Society up to date on legislative matters of interest to organized medicine.

Osteopathic Legislation

A bill was introduced by Mr. J. C. B. Ehringhaus in behalf of the osteopaths of North Carolina. This bill would in effect give the osteopaths the right to practice medicine. At the hearing before the Health Committee of the House, Chairman Haywood of the Legislative Committee, Secretary Procter of the Board of Medical Examiners, Dean Davison of Duke University, Mr. Willis Smith, attorney for the Medical Society, the President of the Medical Society, and others spoke against the bill. The representatives of organized medicine were ably supported in their efforts against the bill by Dr. J. A. Smith of Lexington, who is a member of the House of Representatives. All other physician members of the House aided in opposing the bill. Dr. McMillan, Secretary of the Society, obtained from the American Medi-

cal Association certain information useful in opposing the legislation. The bill was killed in committee.

Cancer Legislation

A cancer bill drawn by Chairman Griffith and members of the Cancer Committee of the Medical Society, and approved by the Legislative Committee of the Society*, was introduced by Dr. J. A. Smith and was defeated before the joint Health Committee of the House and Senate. A bill introduced by the State Board of Health asking for funds for cancer control work was also reported unfavorably by the Health Committee of the House and Senate. The Cancer Committee, the Legislative Committee, and the State Board of Health are now in process of drawing a compromise bill acceptable to all, which they believe has a reasonable chance of being enacted into law. I am informed that this bill would provide a cancer commission consisting of one physician from each district which would act in an advisory capacity. The State Board of Health would direct the expenditure of funds and determine the policies. As there were 2400 deaths from cancer last year, and as it ranked as the second cause of death in North Carolina last year, it seems highly important to get a cancer control measure by the Legislature at this session.

The North Carolina Nursing Association introduced their bill, which was opposed by the Executive and Legislative Committees of the Medical Society†, and also by the North Carolina Hospital Association. The chief objection to this bill was the fact that it would give the nursing profession control of the Standardization Board. It also proposed to do away with medical representation on the Board of Nurse Examiners, and provided for a yearly registration of practical as well as registered nurses. The Executive and Legislative Committees offered to meet with representatives of the Nurses Association to discuss differences of opinion relative to the measure. The Nurses Association did not avail themselves of this offer.

At the direction of the Executive Committee, a committee consisting of Drs. Fred Hubbard and Newsom Battle was appointed to aid the Legislative Committee in representing the Medical Society in this matter. This bill has been referred to a sub-com-

Hospital and Medical Care Bill

The important and widely discussed medical and hospital care bill was finally introduced on February 26, and is now before the joint Appropriations and Health Committee of the House and Senate. It is a most disappointing and emasculated measure. Members and representatives of the Poe Commission have held numerous conferences with Governor Cherry and his advisers, and the bill now before the Appropriations Committee is the final result of these conferences and indicates the extent that the present administration is willing to accept the recommendations of the Poe Commission. Numerous meetings of our Executive Committee, our Legislative Committee and our Committee appointed to work with the Poe Commission have been held to discuss and pass upon the proposals worked out by representatives of the Commission with the Governor and his advisers. Each one brought back to us for consideration was more disappointing and emasculated. It was the final opinion of the Executive and Legislative Committees that we approve any measure that would establish the principles of the plan recommended by the Commission*. Chairman Poe feels that the bill now before the Appropriations Committee does establish the principles of the recommendations of his Commission.

I believe it was a healthy thing that the great majority of our county medical societies went on record as approving the whole program. The people of the state know that we approved and worked for this worthy measure, and this is to the credit of organized medicine. Whether or not the present measure is enacted into law depends upon the legislature. It is a hollow shell compared to the original and comprehensive measure framed with the aid of the representatives of organized medicine. The responsibility for the present measure rests with the administration. Unless it takes further steps to bring into being a more comprehensive program, it will, in my opinion, have failed to serve the best interests of the people of the state and will have left North Carolina wide open for federal regulation of medical practice.

PAUL F. WHITAKER, M.D.

A statement on the medical and hospital care bill made to the Appropriations Committee by Dr.

Minutes of Meeting of Cancer Committee and Legislative Committee of the Medical Society of the State of North Carolina

A meeting of the Committee on Cancer and the Legislative Committee of the Medical Society of the State of North Carolina was held on Sunday, February 4, 1945, in the Sir Walter Hotel, Raleigh, at 11:30 a.m.

The following were present:
Paul F. Whitaker, M.D., Kinston, President
Roscoe D. McMillan, M.D., Red Springs, Sec.-Treas.

Members of Committee on Cancer:
F. Webb Griffith, M.D., Asheville, Chairman
L. W. Oehlbeck, M.D., Morganton
Ivan M. Procter, M.D., Raleigh
W. D. James, Sr., M.D., Hamlet
O. B. Bonner, M.D., High Point
E. McG. Hedgpeth, M.D., Chapel Hill

Members of Legislative Committee:
Hubert B. Haywood, M.D., Raleigh, Chairman
P. P. McCain, M.D., Sanatorium
W. M. Coppridge, M.D., Durham
Donnell B. Cobb, M.D., Goldsboro

President Whitaker stated that the joint meeting of the two committees was called to consider measures to be recommended to the General Assembly for the control of cancer in North Carolina and asked Dr. Griffith to make a statement for the Cancer Committee.

Chairman Griffith reported that he had made a study of the laws relating to the control of cancer in all the states and had found that there are two general methods of handling this problem: (1) by a cancer commission and (2) under the state board of health. Dr. Griffith then read the following bill, which he had prepared for submission to the legislature, if approved by the committees.

"An Act to establish a State Cancer Commission and appropriate money therefor.

"It is hereby enacted by the General Assembly of the State of North Carolina:

"Section 1. There is hereby created a commission to be known and designated as the State Cancer Commission, which shall be composed of the governor, the chairman of the cancer committee of the North Carolina State Medical Society, and three other citizens of the State to be appointed by the governor. Two of the appointive members shall be members of the North Carolina State Medical Society and shall be appointed from a list of at least twice the number to be appointed, submitted to the Governor by the North Carolina State Medical Society. The third member of the commission shall serve for a term of four years or until his successor is appointed and has qualified, except that when this Act shall first take effect one of the members from the North Carolina State Medical Society shall be appointed on or before July 1, 1945, to serve until February 1, 1946, and two other appointive members shall be appointed on or before July 1, 1945, to serve until February 1, 1949, or in any case until a successor has been appointed and has qualified.

"Section 2. The commission shall elect one of their number to serve as chairman and one to serve as secretary. The members of the commission, except the secretary shall serve without compensation as such members, but shall be reimbursed for necessary expenses incurred in the clerical assistants as they may deem necessary.

"Section 3. The commission shall establish, organize, and conduct cancer clinics in such parts of the State as they may deem most advantageous for the public health.

"Section 4. The commission shall from time to time make such studies of the cancer situation in North Carolina as they deem advisable and report their recommendations to the legislature and to the North Carolina State Medical Society.

"Section 5. Out of the moneys available under this Act, the commission may furnish clinical care for indigent patients suffering from cancer and in need thereof. The commission may grant State aid for the care in any place in the State of persons not wholly indigent who are suffering from cancer and are without means of providing for themselves adequate care as required by their condition, provided that the aid so granted in any individual case shall not exceed in amount the sums also expended for that case by a town or other municipality. Notwithstanding any provisions of law to the contrary the names of persons receiving aid under this section shall not be printed in any public report.

"Section 6. The commission is authorized to receive voluntary contributions for the purposes of this Act or any of them from any source other than the State Treasury and any sums allotted to and received by the State or the commission from the Federal Government for such purposes or any of them and to administer and expend the same for the purposes specified. If any such contribution shall be made on condition that the principal shall be invested and the income only used, such gifts shall be deposited with the State treasurer and by him invested and reinvested and the income placed by him to the credit of the commission. The commission may in its discretion make, amend, suspend, and repeal such rules and regulations, submit such plans and reports, comply with such provisions necessary to secure the correctness and verification of such reports, and do such other acts as may be proper for carrying out the provisions of this act and necessary to qualify for the allotment of funds from the Federal Government.

"Section 7. There are hereby appropriated for the purposes of this act the sum of 25 thousand dollars for the fiscal year ending ....., 1946, and the sum of 25 thousand dollars for the fiscal year ending ....., 1947, or so much thereof as may be necessary, together with all sums received by the commission or the State under the provisions of the last preceding section."

Responding to an inquiry by Dr. Cobb, Dr. Griffith stated that approximately ten states have cancer commissions, the cancer work in the other states being under their state boards of health.

Further questions and discussion followed. President Whitaker stated that during Dr. James W. Vernon's term as president of the State Medical Society the Executive Committee had referred this matter to the Cancer Committee and the Legislative Committee.

Dr. Ivan M. Procter, being called upon by Chairman Griffith to give his views, reported the results of his study and personal investigation of the operation of the Georgia cancer-control law and stated that in his opinion the work should be under the State Board of Health but controlled by the State

of opinion, and a full discussion followed.

Dr. Griffith moved the adoption of the following resolution:

"Resolved that the proposed bill as presented by the Cancer Committee be accepted, with the amendment that the State Cancer Commission shall consist of the five members enumerated in the proposed bill with the addition of the Secretary of the State Board of Health or someone in his department appointed by him as a sixth member; and

"Resolved, further, that the proposed bill as amended be referred to the Legislative Committee for action through the proper channels."

On motion of Dr. McCain Section 1 of the proposed bill was amended to provide that the Medical Society shall recommend to the governor for appointment only the number of physicians actually to be appointed.

Dr. Griffith moved that Dr. Haywood, Chairman of the Legislative Committee, and Dr. Procter be appointed as a committee to present this matter to the Honorable R. Gregg Cherry, Governor of North Carolina. This motion was seconded by Dr. Coppridge and was adopted.

President Whitaker invited the members of the Cancer Committee to attend the meeting of the Executive and Legislative Committees of the Society to be held in the Sir Walter Hotel Sunday afternoon.

No further business appearing, the meeting then adjourned.

Meeting of Executive and Legislative Committees of the Medical Society of the State of North Carolina with the State Board of Medical Examiners

The Executive Committee and the Legislative Committee of the Medical Society of the State of North Carolina held a joint meeting on Sunday, February 4, 1945, in the Sir Walter Hotel, Raleigh, at 2 p.m.

The following were present:

Members of Executive Committee:

Paul F. Whitaker, M.D., Kinston, President
Zack D. Owens, M.D., Elizabeth City, First Vice-President
Roscoe D. McMillan, M.D., Red Springs, Sec'y-Treas.
John Cotten Tayloe, M.D., Washington, Councilor Second District
Newsom P. Battle, M.D., Rocky Mount, Councilor Fourth District
M. D. Hill, M.D., Raleigh, Councilor Sixth District
Joseph A. Elliott, M.D., Charlotte, Councilor Seventh District
Fred M. Patterson, M.D., Greensboro, Councilor Eighth District
I. E. Shafer, M.D., Salisbury, Councilor Ninth District
C. C. Orr, M.D., Asheville, Councilor Tenth District

Members of Legislative Committee:

Hubert B. Haywood, M.D., Raleigh, Chairman
P. P. McCain, M.D., Sanatorium
W. M. Coppridge, M.D., Durham
Donnell B. Cobb, M.D., Goldsboro

Members of Board of Medical Examiners:

C. W. Armstrong, M.D., Salisbury
T. Leslie Lee, M.D., Kinston
Rex B. McKnight, M.D., Charlotte

Member of North Carolina Hospital and Medical Care Commission:

Clarence Poe, Sc.D., Raleigh, Chairman

Members of Cancer Committee:

F. Webb Griffith, M.D., Asheville, Chairman
Ivan M. Procter, M.D., Raleigh*
W. D. James, Sr., M.D., Hamlet
O. B. Bonner, M.D., High Point
E. McG. Hedgpeth, M.D., Chapel Hill

Others:

Willis Smith, Esq., Raleigh, Attorney for State Medical Society
George L. Carrington, M.D., Burlington
V. M. Hicks, M.D., Raleigh
Mr. Sample B. Forbus, Watts Hospital, Durham, Sec'y-Treas., North Carolina Hospital Association
Mr. Claude F. Gaddy, Rex Hospital, Raleigh, Chairman, Council on Governmental Relations, North Carolina Hospital Association
Mrs. Hazel C. Williams, Rex Hospital, Raleigh, President North Carolina State Nurses Association
Mrs. Marie B. Noell, Raleigh, Executive Secretary State Nurses Association
Miss Bessie M. Chapman, Raleigh, Secretary State Board of Nurse Examiners
Mrs. Nora P. Mims, Raleigh. Chairman Legislative Committee State Nurses Association

President Whitaker stated that the purpose of the meeting was to discuss and act upon a number of matters which had come up. He said that at the request of Dr. Haywood, Chairman of the Legislative Committee, representatives from the State Nurses Association were present, and that Dr. Clarence Poe, Chairman of the North Carolina Hospital and Medical Care Commission, was also present to report on further developments in the Commission's program. He then called upon Dr. Poe for his report.

Dr. Poe outlined the program of the Commission as originally proposed and the curtailed program as presented to and accepted by the State Medical Society's Executive and Legislative Committees at a meeting on January 28, 1945†. He stated that the matter had been taken up with the Honorable R. Gregg Cherry, Governor of North Carolina, with members of the Commission, and with other interested parties and that the part of the program to be requested of the General Assembly was now as follows:

Setting up of the Hospital and Medical Care Commission as a duly authorized agency of the state, with funds to be appropriated for its administrative expenses.

Appropriation of $500,000 by the state for aid to the indigent sick, and of $75,000 to $100,000 for a loan fund for aid to hospitals.

The opinion was expressed by Dr. Poe that the above is as much of the program as it will be possible to secure now, in view of the short period the Commission has had for preparation and for educational work. He stated that Governor Cherry had promised the support of the Administration during his four-year term toward the fulfillment of the Commission's entire program, which includes the expansion of the University Medical School to a four-year school, the establishment of a central hospital at Chapel Hill and other hospitals throughout the state, a loan fund for medical students, and other features.

On motion of Dr. Shafer, seconded by Dr. Patterson, the following resolution was adopted:

"Resolved that the Executive Committee of the Medical Society of the State of North Carolina approves the revised program of the North Carolina Hospital and Medical Care Commission as agreed upon with Governor Cherry and presented today by its Chairman, with the understanding that Governor Cherry has pledged himself to work for the attainment of the full program."

The nurses present were introduced by Dr. Haywood. Miss Chapman gave a synopsis of the bill proposed by the State Nurses Association, which provides, among other things, for the licensing of graduate registered nurses, the registration of nursing attendants, annual re-registration of nurses and attendants, reduction of reciprocity fee from $25 to $10, changing the membership of the Nurses Examining Board to consist of nurses only, and changing the qualifications of the Standardization Board members elected from the State Medical Society and the State Hospital Association. The bill was further explained by Mrs. Noell.

Following discussion, both with the nurses and after they had left the room, Dr. Elliott moved the adoption of the following resolution:

"Resolved that the State Medical Society oppose, in its present form, the legislation proposed by the North Carolina State Nurses Association; and

"Be it resolved, further, that the officials of the North Carolina State Nurses Association be advised of this action and that they be requested to appoint a committee from their Association to meet with committees from the State Medical Society and the North Carolina Hospital Association to try to formulate a bill satisfactory to all concerned."

This motion was seconded by Dr. Orr and after some further discussion was adopted.

Dr. Haywood, Chairman of the Legislative Committee, then discussed the need for a basic-science law in order to meet the recurring demand for licensing practitioners belonging to the various cults. The proposed law was further discussed by Mr. Smith and others.

Dr. Orr then moved the adoption of the following resolution:

"Resolved, that decision of the question as to the advisability of presenting a basic-science bill to the present General Assembly for adoption be left to the Chairman of the Legislative Committee, the Secretary of the Board of Medical Examiners, and the Attorney for the State Medical Society."

The motion was seconded by Dr. Shafer and was carried.

Secretary McMillan brought up the question of whether the Society should or should not hold its annual meeting. He stated that he had made application for the meeting to be held but so far had had no reply.

Dr. Elliott moved the adoption of the following resolution:

"Resolved that the annual meeting of the Medical Society of the State of North Carolina be postponed as long as the Office of Defense Transportation's restrictions against holding conventions are in effect and that if the restrictions are lifted, the Executive Committee take up the question of the possibility of holding the meeting."

The motion was seconded by Dr. Patterson and was carried.

No further business appearing, the meeting then adjourned.

News Notes from the State Board of Health

North Carolina's general death rate during 1944, the third calendar year of American participation in the war as an active belligerent, was the lowest in the state's history, having been only 7.9, as compared with 8.1 the previous year. The 1943 rate was an all-time low up to that time, but this was scaled down by two-tenths of a point in 1944, which now holds the record.

North Carolina set two other health records during 1944, when its infant mortality rate dropped to 44.7 for an all-time low, and its maternal death rate fell to 2.9, also the lowest ever recorded in this state.

Last year's birth rate was 24.7, the highest since 1929, with but one exception. The 1943 rate was 25.7, when 95,251 babies were born in this state and an all-time numerical high was recorded, although the rate has been higher in former years when the population was much smaller than it is now.

The total number of deaths reported in North Carolina last year, as shown by official vital statistics reports, was 29,560, as compared with 30,072 in 1943, while births numbered 92,412, against 95,251 the previous year.

There was a continued decline in the number of pulmonary tuberculosis deaths in this state last year, the total having been only 1,271, against 1,332 in 1943, and the rate having fallen from 36 to 33.9. From other forms of tuberculosis, there were 97 deaths last year, with a rate of 2.6, as compared with 113 deaths in 1943, with a rate of 3.1.

Cancer deaths in North Carolina in 1944 totaled 2,298, as compared with 2,317 in 1943, the rate dropping from 62.6 to 61.4.

During the year, the pneumonias resulted in 1,555 deaths, with a rate of 41.5, as compared with 1,692 deaths in 1943, when the rate was 45.7.

For the second year in succession, there was one death from smallpox in 1944. Suicides totaled 219, compared with 253 in 1943, while the number of homicides reported increased from 258 to 290. There were only 37 deaths from diphtheria in 1944, compared with 56 in 1943.

A continuing decline was reported in typhoid fever deaths, which numbered just 12 in 1944, as compared with 19 the previous year and 839 in 1914. Influenza deaths totaled 543, against 440 in 1943.

* * * *

Fewer persons died of pellagra in North Carolina in 1944 than during any year for which the records are available. For the entire year, only 64 such deaths were reported to the State Board of Health and an all-time low rate of 1.7 was recorded.

It would be a fair deduction to assume that much of the reduction of pellagra that has occurred in North Carolina has been the result of nutrition education which, among other things, has led to the enrichment of certain foods—especially bread and flour—from which nutrients formerly were taken through processes of refinement. Enrichment plays an important part in any nutrition program, but we also must keep before us the importance of eating some of all the "Basic Seven" foods not simply at intervals, but every day.

BULLETIN BOARD CONTINUED ON PAGE 188

AUXILIARY

DOCTOR'S DAY

The Auxiliary to the Medical Society of the State of North Carolina on March 30 will pay tribute to all physicians of the state, both in the armed forces and on the home front.

This is the "D-Day" of the Auxiliary, and it is very important that each auxiliary observe it in some way. We are paying tribute not only to our own doctors, but also to Dr. Crawford W. Long, who on that date, first used ether anesthesia in surgery.

We are living in a war-torn, chaotic world, and in the uncertain days ahead "we need faith, the will to help, the courage to do, a determination to serve the medical profession" and to show our appreciation of what has been done, and is being done by our excellent doctors.

Here are a few suggestions for observing Doctor's Day:

Publish a tribute to the doctors in your local paper.

Broadcast a Doctor's Day program.

Send notes to each doctor expressing best wishes.

Send flowers to doctors' offices, clinics, and hospitals.

Send a boutonniere to each doctor.

Place flowers on the graves of deceased doctors in your local cemetery.

Visit sick and retired physicians.

Plan dinners, luncheons or picnics.

Plant trees in the doctors' honor; buy war stamps and bonds for them.

Above all, send newsy, cheerful letters to those serving in the armed forces.

Finally, devote the day of March 30 to your doctor and our doctors.

MRS. R. S. MCGEACHY,
Doctor's Day Chairman



BOOK REVIEWS

Diseases of the Digestive System. Edited by Sidney A. Portis, M.D., Associate Professor of Medicine, University of Illinois Medical School. Ed. 2. 932 pages, with 182 illustrations. Price, $11.00. Philadelphia: Lea and Febiger, 1944.

The second edition of this well known book brings up to date the material presented in its predecessor. A few changes have been made. In view of the experiences gained in the present war, psychosomatic aspects of gastrointestinal symptoms are emphasized. New clinical and experimental data are introduced where our understanding of digestive diseases is affected by these changes. A consideration of the normal physiology of the anatomical portion under consideration precedes the discussion of the diseases of the part.

The contributors to this volume are recognized as outstanding contributors to our knowledge in that branch of the subject for which they accept responsibility in this book. The material is handled as briefly as is compatible with complete coverage. Fairness in presenting views differing from those of the author is shown in most of the material. Illustrations are well selected. References to the pertinent literature of the past fifteen years are given at the end of each chapter.

Dr. Portis has done a very fine job in the arrangement and presentation of the subject matter of the book. In addition to the usual anatomical division of the text material, there are many helpful chapters on the inter-relationships of the digestive tract and the cardio-vascular, renal and endocrine systems. Allergic, neurogenic, and psychosomatic influences are described in some detail and with the greatest possible clarity.

Diseases of the Digestive System may be recommended as an authoritative, concisely written aid to all physicians desirous of information in this field.

Malaria: Its Diagnosis, Treatment and Prophylaxis. By William N. Bispham, Colonel, U. S. Army, Retired. 197 pages. Price, $3.50. Baltimore: The Williams & Wilkins Co., 1944.

A short, inexpensive monograph to summarize up-to-date knowledge in all phases of malaria has long been needed. Malaria has been the most important military disease of the present war and may very well be the number one post-war medical problem, because of the large number of infected military personnel serving as a reservoir and the introduction of new strains into areas where the disease is already endemic. The author has discussed the disease from the standpoint of man as a reservoir and as a clinical problem, from the standpoint of the mosquito, and from that of the parasite. He has avoided much of the confusing jargon of the malariologist without sacrificing clarity or explicitness. The discussion of immunity in malaria is one which is frequently not sufficiently emphasized. A detailed discussion of therapy is given. Historical references as well as the most recent ones are included.

It is unfortunate that the times have made it necessary to use such a poor grade of paper. The illustrations, though small in size, are in color and are reproduced well.

This book is highly recommended.

Patients Have Families. By Henry B. Richardson, M.D., Associate Professor of Clinical Medicine, Cornell University Medical College. 408 pages. Price, $3.00. New York: The Commonwealth Fund, 1945.

This book describes the experiences of a large metropolitan hospital in the detailed study of a few selected families. The study was an experiment to determine the inter-relationship of medical and social problems in families. This is psychosomatic medicine applied to the family unit. The methods used are illustrated by typical case reports. The contrast between a history taken from this point of view and the stereotyped medical history is illuminating. The roles of the physician responsible for medical care, of the psychiatrist, of social and welfare agencies, and of public health services are described. The description of the old general practitioner as a family physician is a classic. The tremendous influence which a physician's interest in a patient as an individual can exert on the course of his illness and on the illnesses of the entire family is well shown. This book should be read not only by physicians, but by medical directors of hospitals and of public health services, and by laymen in social and welfare agencies.

The Psychiatric Novels of Oliver Wendell Holmes. By Clarence P. Oberndorf, M.D. 268 pages. Price, $3.00. New York: Columbia University Press, 1943.

Dr. Oberndorf, by his careful analysis and generous annotations, has uncovered the hidden significance of the novels of Dr. Holmes so that they may be appreciated not only by students of psychiatry, but by the lay public as well. This contribution to psychiatric literature is highly recommended to physicians and medical students.

Approved Laboratory Technic. By John A. Kolmer, M.D. and Fred Boerner, V.M.D. 1088 pages. Price, $10.00. New York: D. Appleton-Century Company, 1945.

This book attempts to cover in a medium sized volume the techniques for laboratory procedures which might be done in a general hospital laboratory. The approach is satisfactory for the use of technicians. For medical students and practitioners, it may prove inadequate. No attempt is made to interpret the results of determinations; this is covered in a separate volume. The lack of interpretation might cause undue emphasis to be placed on such tests as the Takata-Ara reaction on blood serum; tropical diseases as well as sarcoid and lymphogranuloma give positive reactions without liver damage because of the increase in globulin. There are no words of warning as to the dangers entailed in such procedures as the inoculation of animals in tularemia, brucellosis, and psittacosis. The alternative methods or reagents which may be used in the performance of many tests are not enumerated. The sputum concentration methods, which are accepted as the best time-saver in the diagnosis of tuberculosis, are not given; the concentration of fasting gastric contents is not mentioned. The auramine stain for acid-fast organisms is highly recommended, although this stain has not given good results in many hands. The illustrations are relatively

Interns Handbook. By Members of the Faculty of the College of Medicine, Syracuse University, under the direction of M. S. Dooley, M.D. and Maynard E. Holmes, M.D. 579 pages. Price, $3.00. Philadelphia: J. B. Lippincott Co., 1944.

This pocket-size volume is an attempt to present in condensed form knowledge which a new house officer or a physician in general practice would find useful in the handling of emergencies or in the work-up of patients in a hospital. It is necessarily sketchy in many respects because of limitations of length. A very considerable portion of the book is allotted to a description of drugs, including their dosage and clinical use. The sections devoted to therapy are undoubtedly the best in the book.

Simplified Diabetic Management. By J. T. Beardwood, Jr., M.D., and H. T. Kelly, M.D. Ed. 4. 172 pages. Price, $1.50. Philadelphia: J. B. Lippincott Co., 1944.

This brief guide has been well planned for patients whose dietary instruction has been under the "unit measurement system" of substitution. The necessity for cooperation of patient, dietitian, and physician is stressed. Dietary instruction is given in some detail. The measurement of food and the importance of vitamins and minerals are stressed. An extensive group of charts, sample menus and recipes are included. Instructions for administration of insulin and performance of urine tests are accompanied by adequate illustrations. The care of the feet, exercises, and the symptoms of complications are covered. This volume may be too concise for the patient to use as his sole source of information. It is too meager in content for the physician, but will serve a useful purpose as an adjunct in instruction.

Technique of the Standard Kahn Test and of Special Kahn Procedures. By Reuben L. Kahn, Chief of Clinical Laboratories, University of Michigan Hospital, Ann Arbor, Michigan. 52 pages. Price, 25¢. Ann Arbor: University of Michigan Press, 1944.

This pamphlet is absolutely essential for the library of laboratories doing the Kahn test for serologic diagnosis of syphilis. The preparation of reagents, standardization, and the performance of the test are detailed in clear language. Errors and methods of avoiding them are discussed. The type is large and can be conveniently read while the book is lying on a desk .

Plasma and Tissue Proteins Appear Interchangeable

Plasma and tissue proteins should no longer be considered as distinct entities. Evidence cited editorially in the Winter, 1945, issue of The Journal of Parenteral Therapy strongly suggests that there is a continuous and rapid interchange—or traffic—between them. Under conditions of inadequate or restricted protein intake, 1 Gm. of plasma protein (albumin) is lost for every 25 to 30 Gm. of tissue protein. The same ratio holds true when the attempt is made to replace plasma protein and tissue protein by restoring an adequate protein intake. In pa-

BULLETIN BOARD

(CONTINUED FROM PAGE 180)

News Notes from the North Carolina Tuberculosis Association

The National Tuberculosis Association has cancelled its 1945 annual meeting, scheduled to be held in Buffalo, N. Y., June 13-15.

* * * *

The present legislature has appropriated money for the employment of occupational therapists in two of the state sanatoria with the possibility that there will be such an appropriation for the other sanatorium.

* * * *

According to Miss Ruth Harris, Executive Secretary of the Mecklenburg County Tuberculosis and Health Association, three Negro professional men have recently been added as new members to her Board of Directors. They are Dr. J. E. Alexander; Mr. Paris McCorkle, principal of a county school; Mr. C. T. Perkins, Executive Secretary of the Negro Y.M.C.A.

* * * *

It is felt by many that North Carolina has one of the most wholesome plans in the country for the handling of tuberculous veterans. The service man with tuberculosis is sent to the Veteran's Facility for the Treatment of Tuberculosis at Oteen, N. C., where his admission is reported to the N. C. State Board of Health. The State Board of Health in turn reports the admission to the patient's local health department. When the patient is discharged the same reporting procedure is done. In case of AWOL discharges the reporting is made not only to the patient's local health department but to the place or places it is thought the patient will go. Dr. Paul P. McCain, Superintendent of the North Carolina Sanatoria, is also furnished a list of the veterans entering and leaving Oteen. In the case of AWOL discharges, Dr. McCain writes a personal letter to the veteran urging him to continue treatment for the disease, pointing out the dangers of any relaxation in the treatment procedure.

News Notes from the University of North Carolina

Dr. W. deB. MacNider attended the meeting of the Club for Research on Ageing held in New York on February 9 and 10.

* * * *

The Fifth Annual Forum lecture, at the Seventh Annual Forum on Allergy in Pittsburgh, was delivered January 21, 1945, by Dr. Milton J. Rosenau, Dean of the School of Public Health of the University of North Carolina at Chapel Hill and Charles Wilder Professor of Preventive Medicine and Hygiene emeritus, Harvard Medical School, Boston. His subject was "Serendipity in Terms of Mental Allergy." The Forum presented its fifth gold medal for outstanding contributions in allergy to Dr. Rosenau on this occasion.

* * * *

Dr. Nathan Sinai, Professor of Public Health of the School of Public Health, University of Michigan, gave a series of lectures on the pertinent problems of public health economics and medical care during January and February at Chapel Hill.

News Notes from the Bowman Gray School of Medicine

Dr. C. C. Carpenter addressed the Federation of

The extensive lantern slide collection of the late Dr. Charles Hartwell Cocke of Asheville has been presented to the Bowman Gray School of Medicine. This has been added to the teaching collection of the school.

* * * *

Dr. Robert W. Lackey, Professor of Physiology at Southwestern Medical School, will serve as Visiting Professor of Physiology for the trimester beginning March 28, 1945.

* * * *

Bids for the new $250,000 out-patient department building will be opened on March 20, 1945. Construction will begin immediately.

Edgecombe-Nash Counties Society

The February meeting of the Edgecombe-Nash Counties Society was held in Rocky Mount on February 14. Captain Henry Rigdon of Fort Bragg talked on the recent advances in the treatment of shock, and a moving picture entitled "Modern Nutrition" was shown.

Forsyth County Medical Society

Dr. Julian Moore of Asheville was guest speaker at a dinner meeting of the Forsyth County Medical Society, held on February 13. Dr. Moore's subject was the "Surgical Treatment of Tuberculosis."

Ophthalmological Seminar Postponed

On advice from the War Committee on Conventions, Emory University has postponed the Ophthalmological Seminar scheduled to be held in Atlanta in April.

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PHYSICIANS CASUALTY ASSOCIATION
PHYSICIANS HEALTH ASSOCIATION

News Notes

Dr. W. T. Rainey of Fayetteville was honored by the Rotarians at a dinner meeting for his work in connection with the Cumberland County Tuberculosis Sanatorium. Dr. Roscoe McMillan presented a portrait of Dr. Rainey to Dr. M. T. Foster of the county health department. The picture is to be placed in the foyer of the sanatorium.

* * * *

Dr. Allan McLean, a member of the staff of the State Hospital at Morganton, died at his home in Morganton on February 22 after an extended illness.

* * * *

Dr. Horace Mitchell Baker, administrative head and surgeon-in-chief of the Baker Sanatorium since it was founded in 1920, died at the sanatorium on February 28.

* * * *

Dr. R. H. Holmes of Lumberton and Dr. Frank Kimzey Justice of Davidson have recently been promoted from the rank of major to that of lieutenant colonel. Dr. Samuel E. Way of Rocky Mount has been promoted to the rank of major.

* * * *

Second Lieutenant Evelyn B. Whitlow, of Leasburg, N. C., was among the army nurses rescued from Japanese imprisonment on Luzon recently.

North Carolina League for Crippled Children

The North Carolina League for Crippled Children will hold its annual Easter Campaign from March 19 to April 1. The receipts from this once a year appeal will be used to provide medical care, educational needs, and social and recreational opportunities for crippled children living within the borders of the state.

Western Reserve University

Dr. Joseph Treloar Wearn, professor of medicine at Western Reserve University, has been appointed dean of the University's School of Medicine.

Born in Charlotte, N. C., on Febuary 15, 1893, Dr. Wearn was graduated from the Charlotte University School and in 1913 was awarded the degree of Bachelor of Science from Davidson College. He received his degree of Doctor of Medicine from Harvard in 1917. Davidson College also granted him an honorary degree of doctor of science in 1943.

Sufficient penicillin was produced in this country last year to treat 3,200,000 sufferers from such serious diseases as septicemia or pneumonia, according to Doctors Theodore G. Klumpp, president, and Justus B. Rice, director of medical research, Winthrop Chemical Company, Inc., New York and Rensaeler, New York.

Expansion of penicillin production in 1944 to close to sixteen hundred billion (1,600,000,000,000) Oxford units, 8,000 per cent of the total production of all previous years, and new developments in antibiotics, chemotherapy, blood plasma, anesthetics, antiparasitics, and insecticides were reviewed in a scientific paper prepared by the two doctors for publication in the current issue of Chemical and Engineering News.

In concluding their review of the year, Doctors Klumpp and Rice stated that the "small gains in technical skill, forced draft production, and immediately useful skill stimulated by war are more than overshadowed by the interruption of long range research programs and the diversion of untold numbers of capable investigators to routine tasks.

"Progress in pharmaceuticals and medicinals in 1944 has been made on borrowed time."

INDEX TO ADVERTISERS

American Meat Institute XXXV
Banner Elk Rest Home XXV
Bilhuber-Knoll XL
Borden Co. XVIII
Broadoaks Sanatorium XXXIX
Burroughs Wellcome & Co. ..... VIII - XXXI
Camp, S. H. Co. XXVII
Charlotte Eye, Ear, and Throat Hospital XXXVII
Cheplin Laboratories XX
Coca-Cola VII
Cook County Graduate School of Medicine XXXVI
Eli Lilly and Company ..... Insert and XXII
General Electric XIV
Glenwood Park Sanitarium XXXVIII
Charles C. Haskell and Company V
Crumpton, J. L. XV
Holland-Rantos Co., Inc. XXX
Hynson, Westcott and Dunning XXXVI
Inter-Ocean Casualty Co. XXXVI
M & R Laboratories XLI
Mead Johnson & Company XLIV
Parke, Davis and Company ..... XLII - XLIII
Perske, William XXXIV
Petrogalar II
Philip Morris & Co., Ltd., Inc. XII
Physicians Casualty Association
Physicians Health Association 183
Pinebluff Sanitarium III
Powers and Anderson, Inc. VII
R. J. Reynolds Tobacco Co. IX
Saint Albans Sanatorium XXXIV
Schering Corp. XI
Schieffelin & Co. XL
S. M. A. Corp ..... XIX - XXVI
Julius Schmid, Inc. XI
Searle, G. T. & Co. XXIII
Spencer Corsets XXXIII
Stuart Circle Hospital XXXIX
Thompson Homestead School XXV
Tucker Hospital XXXVIII
United Drug Corp. XXVIII
Upjohn Co. VI
U. S. Government XXXII
Wachtel's, Inc. XXV
Wander Co. XXIX
Westbrook Sanatorium XXXVII
Winchester Surgical Supply Co.
Winchester-Ritch Surgical Co. III
Winthrop Chemical Co., Inc. XIII
White Laboratory XVIII
World Insurance Co. XXV
Wyeth, John ..... Insert and XXI

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CASE REPORTS BROADEN A TUMOR CLINIC'S USEFULNESS

(By Critical Analyses of the Trends in Diagnosis and Treatment of Cancer)

FRANK R. LOCK, M.D.
and
MARTHA DUKES YOW, M.D.
WINSTON-SALEM

The increasing incidence of cancer in the general population is reflected by the cancer mortality rate in North Carolina[1].

Year	*Deaths from Cancer*	*Rate per 100,000 pop.*
1934	1,774	53.7
1935	1,780	52.1
1936	1,785	52.6
1937	1,912	54.8
1938	1,907	53.8
1939	1,993	56.4
1940	2,034	56.8
1941	2,056	56.8
1942	2,219	60.6
1943	2,372	63.8
1944	2,298	61.6

Cancer remains second among the causes of death in the United States. The death rate from cancer per 100,000 population in the United States registration area increased from 82.1 in 1916 to 111.0 in 1936[2]. Statisticians have shown that these figures represent a true increase, and are not due to improved diagnosis or to greater life expectancy. We have made little progress in our search for the cause of malignancy. Therefore, our efforts at present must be directed toward early recognition and correct treatment of the condition.

At the beginning of this century, the United States was widely criticized for its high maternal mortality rate. A general educational campaign was instituted, with tangible early results. Many state and county medical societies organized maternal mortality committees which played a noteworthy part in this program. They found that the pathological conditions which contribute to maternal mortality occur infrequently in the experience of any one physician. In retrospect many deaths were seen to be avoidable.

The function of these committees was to investigate each maternal death which occurred in their locality, and to determine with the aid of the attending physician whether or not the death was inevitable. The committee made an unprejudiced analysis of the cause of death. In each case of an avoidable death the cause was attributed either to ignorance or negligence on the part of the patient, or to errors in judgment by the attendant. In every area benefiting from the work of a committee on maternal mortality the decrease in the maternal death rate, in comparison to that in areas without such a program, has been striking. In Rhode Island[3], for example, the committee began their survey in 1932. The maternal mortality rate the first year was 5.7 per 1000 live births; by 1942 it was 1.9 per 1000—a drop of 66⅔ per cent. The only credit claimed by the committee for this gratifying reduction was its share in stimulating interest in obstetrical hazards and their proper management.

From the Tumor Clinic of the North Carolina Baptist Hospital and the Department of Obstetrics and Gynecology of the Bowman Gray School of Medicine of Wake Forest College.

Patients with cancer usually come first to their family physician or surgeon. However, individual experience is even more limited in the highly specialized field of neoplasms than in obstetrical complications which so often cause maternal deaths. The factors influencing the mortality rates of these completely unrelated conditions are identical. The tumor clinics throughout the nation can serve much the same function as do the maternal mortality committees[1]. This would depend upon the impartial review of each case by the clinic and an active criticism of its management, made with an attitude of *generosity rather than of censure.* In each instance names should be so closely guarded that no direct blame can possibly be directed at any person conscientiously working in the interests of medical progress and of the affected patient.

The tumor clinic idea was launched by the American College of Surgeons in 1930, and by 1943 there were 380 clinics which met minimum standards. Approximately 80,000 patients are seen in these clinics annually. The minimum requirements of a tumor clinic include regular attendance of a pathologist, radiologist, surgeon, and internist[4]. Representatives of other medical and surgical specialties usually attend also. A tumor clinic was organized at the North Carolina Baptist Hospital in April, 1944. Three hundred and eighty patients with malignant tumors have since been registered. A complete history is obtained from each patient, physical and laboratory examinations are made, and biopsies are performed for positive diagnosis. The patient is then presented for group discussion. No professional charge is made for any service.

The advantages which a tumor clinic offers to the practicing physician are as follows:

1. An opportunity for free group consultation for the diagnosis of difficult or obscure lesions.
2. An opportunity to profit by observing the problems of many physicians.
3. An opportunity to keep abreast of modern methods of therapy, and to judge the results obtained.
4. An opportunity to refer to a group for study a patient who otherwise might be lost by direct referral to an individual.

The tumor clinics are open to all physicians[5], many of whom accompany their own patients and contribute to the discussion of all patients presented.

Our experience has shown us how limited is our knowledge as individuals. It has proven the educational value of analysis of each case. A broad conception of the cancer problem results from the observation of large numbers of otherwise unavailable patients. The exchange of ideas in the group brings to light many obscure interrelationships in all cases of cancer.

Ideally, a malignancy should be diagnosed at the time when simple complete surgical excision is possible. This ideal is seldom a reality. Some of the factors which tend to delay diagnosis and treatment are:

1. Ignorance and pessimism of the lay public.
2. Limited diagnostic facilities and experience, and an *attitude of defeatism* on the part of the profession.
3. Wartime pressure on physicians.
4. The asymptomatic character of many early neoplasms.
5. The usual expense of elaborate diagnostic procedures.

Fortunately the ignorance of the public is being eradicated by the monumental efforts of the Field Army of the American Cancer Society[6]. Little progress has been made in eliminating the attitude of defeatism in the doctor, who is being constantly discouraged by observation of patients in terminal phases of this disease. In the majority of these treatment can be only palliative at best, because of the extent to which the lesion had progressed when the need for treatment was recognized. However, it is encouraging to all of us that the last ten years have brought reports of increasing percentages of five-year cures. The difficulty presented by the relatively asymptomatic character of early neoplasms can be overcome only by exhaustive investigation of even slightly suggestive complaints. The expansion of diagnostic facilities, making them easily available, can banish the existing economic factors.

Each week it is more evident that in some patients late diagnosis is unavoidable. In many cases credit or blame is warranted. For each patient a probable prognosis can usually be determined. Favorable prognoses

4. (a) Crowell, Bowman C.: The Role of the Cancer Clinic

5. The Tumor Clinic of the North Carolina Baptist Hospital

may be credited to the intelligence of the patient, to adequate examination by the physician, or occasionally to the sheer good fortune of an incidental diagnosis. Unfavorable prognoses can frequently be blamed upon ignorance and delay by the patient, or upon poor judgment or inadequate examination by the physician.

The accumulated knowledge has been of great interest to the members of the clinic. The stories given by various patients are not only of statistical significance, but are also individually interesting and informative records. Because the distribution of physicians in rural areas and war restrictions on time and travel have limited the number who can attend the meetings, the Tumor Clinic of the North Carolina Baptist Hospital proposes to publish a critique of cases in the JOURNAL each month.

CASE 1

Miss B., a 57 year old unmarried trained nurse, first consulted her physician on December 8, 1943. She had reached the menopause when she was 50 years of age in an entirely uneventful manner, with a gradual decrease in bleeding and final abrupt cessation of menstruation. The only abnormality of menstruation she had ever exhibited was dysmenorrhea during her early menstrual life.

After reaching the menopause, the patient had no bleeding or discharge whatsoever until two or three months before consulting her physician. She then began to notice a slight, clear vaginal discharge which gradually increased in amount and became yellow. Occasional blood stains were noted in this secretion, but no active vaginal bleeding had occurred. The patient had had no associated symptoms, and no complaints suggestive of constitutional disease were revealed by a review of systems. Her weight had been constant. She had had no pain, and no local irritation associated with the discharge.

General physical examination revealed no abnormalities. Pelvic examination revealed sparse pubic hair of normal texture and distribution. Atrophic changes were present in the external genitalia, represented by flattening of the labia majora, almost complete loss of labia minora, and loss of elasticity of the skin of the vulva. The introitus was nulliparous, with good support of the perineum and bladder. Bartholin's and Skene's glands were negative. The vaginal mucosa throughout was smooth, glistening, and red in appearance. On palpation, the cervix, 1½ cm. in diameter, was found to be soft and regular in outline. The uterus was atrophic; it measured 5 cm. in length, was in third degree retroversion, and was movable. There were no palpable thickenings of the parametrium or palpable masses in the adnexa on vaginal or rectal examination.

Speculum examination of the cervix revealed a small ulceration, approximately ½-1 cm. in diameter, adjacent to the external os of the cervix. This tissue was soft, and slight bleeding occurred when it was sponged. A biopsy specimen was taken.

The patient's red blood cell count was 4,460,000, the white blood cell count 11,000, the hemoglobin 12.5 Gm. No chemical or microscopic abnormalities of the urine were noted.

Tumor Clinic Discussion

PATHOLOGIST: The microscopic sections show the cervical tissue to be massively infiltrated with extremely active hyperchromatic squamous epithelial cells which present numerous mitotic figures, and form lakes and cords of tumor cells. Many areas of the tumor show massive infiltrations of leukocytes. No epithelial pearl formation is present and in many instances the epithelial cells are approaching a spindle cell appearance. Diagnosis: Squamous cell carcinoma of cervix, grade between three and four.

RADIOLOGIST: The use of irradiation alone for the treatment of squamous cell carcinoma of the cervix has been the accepted treatment in practically all clinics during the last two decades. The decision which must be made concerns the irradiation dosage which is applicable for the patient, rather than a choice of the method of treatment. Almost without exception in this type of case, x-ray irradiation is indicated as the first step in treatment. This therapy is followed by the necessary amount of radium.

There are two reasons for this arrangement and timing of the irradiation therapy: the first is that the use of radium is contraindicated by the presence of infection, which almost invariably accompanies any ulcerative lesion; the second is that with any extensive lesion on the vaginal wall and particularly in the recto-vaginal and vesico-vaginal septum, the abrupt sloughing following an application of radium may result in fistula formation.

In this patient, the very limited extent of the lesion and the absence of inflammatory reaction, other than that secondary to the tumor itself, raise the question of the advisability of using radium primarily for immediate destruction of this limited lesion. The moderate obesity, with a rather thick abdominal panniculus, and the fact that the patient is quite blond may appreciably limit the dosage of x-ray and its effectiveness.

GYNECOLOGIST: The diagnosis of a League of Nations clinical stage one carcinoma of the cervix is exceptional in our experience and in that of all of the gynecological services the country over. Great credit is due the patient for promptly seeking attention for symptoms which would be considered insignificant by many patients. Her physician is to be highly commended for the immediate biopsy of this small, soft, and apparently superficial lesion, which lacks many of the characteristics of the usual cervical carcinoma.

The gynecological group in the profession has abandoned the use of radical operation, with few exceptions, in an attempt to cure even these very early lesions. The rich lymphatic anastomosis in the cervix means that extension of the lesion to the adjacent pelvic lymphatic glands has, for practical purposes, invariably occurred. We can offer this patient an 85-90 per cent chance of five-year cure with irradiation. The gross mortality due to this treatment, even in the presence of extensive infected lesions, is 1 per cent in the better clinics. Treatment of a limited lesion of this type should have a negligible mortality.

The trend to combine operative procedures with irradiation is evident in the literature. Dr. Fred Taussig[7] has recently reported favorable results from the use of regional lymphadenectomy in combination with irradiation in the clinical stage two carcinomas of the cervix. A procedure of this type may be worth considering at a later date for this patient.

Tumor Clinic Opinion

Treatment of choice: Irradiation. Radium application to precede deep x-ray therapy to the pelvis, for the reasons listed.

Prognosis: Excellent.

Credits: (1) Intelligence of the patient (a nurse).

(2) Biopsy of a small, atypical cervical lesion by the physician.

(3) Early treatment.

Follow-Up Note

Radium was placed in the cervix on December 27, 1943, and a total radium dose of 4800 mg. hours was given without reaction. This treatment was begun less than three weeks after the patient's first visit to a physician. In the following weeks deep pelvic roentgen therapy was given to the tolerance limit of the patient's skin; the total amount given was 4,032 roentgen units.

The patient returned regularly for observation at the Tumor Clinic. She was last seen on February 8, 1945, when pelvic examination revealed a smoothly healed vaginal mucosa without evidence of a gross lesion, and rectal and vaginal examinations revealed the uterus to be freely movable, with no palpable tissue present in the parametrium.

The patient has no complaints, and she has had no vaginal discharge or bleeding. She has resumed her full activities, and her general condition is excellent fifteen months after the initial diagnosis.

CASE 2

Two years ago this 53 year old carpenter began to have "bleeding hemorrhoids" and his stools began to diminish progressively in diameter. About the same time, he had two attacks of "stomach trouble," characterized by nausea, vomiting, and tarry stools. He did not seek the advice of a physician at this time. Six months ago, when he consulted a doctor, he was told that he had hemorrhoids, and a hemorrhoidectomy was performed. "Barium x-ray studies" were made, and he says that his stomach and rectum were reported to be normal. Gastric analysis is said to have revealed hyperacidity.

Six weeks after operation he had a recurrence of rectal bleeding and began to have symptoms of low intestinal obstruction. When he was seen here as an outpatient in January, 1945, he had an anal stricture which would not admit an examining finger. The patient was advised to come into the hospital for sigmoidoscopic examination. He delayed entering the hospital for some two months, and during the interim was treated with "shots" to stop the rectal bleeding. Hospitalization for study was again advised.

Two months after his initial visit to the outpatient department, he entered the hos-

7. Taussig, F. J.: Present Status in Treatment of Cervix Cancer, J. Mt. Sinai Hosp. 10:172-175 (May-June) 1943.

pital. Examination under spinal anesthesia revealed not only an anal stricture but also a large fungating mass on the left antero-lateral wall of the rectum, approximately 6 cm. above the anal orifice. A portion of the mass extended onto the posterior wall of the rectum. It measured about 8 by 8 cm. and was firmly fixed. It was difficult to tell whether or not there was bladder involvement. Several biopsy specimens were taken from this mass at different points.

An x-ray film of the pelvis revealed no evidence of metastasis. Cystoscopic examination was done, and the diagnosis was prostatic median bar enlargement; no gross pathology was noted in the bladder mucosa.

This man's general condition seems excellent. He has had no weight loss and no complaints referable to any system other than the gastro-intestinal tract. The red blood cell count is 5,200,000, the white blood cell count 12,300, the hemoglobin 11.1 Gm. Urinalysis showed 5-8 white blood cells and 3-5 red blood cells per high power field, but no other abnormality.

Tumor Clinic Discussion

PATHOLOGIST: This is a perfect biopsy specimen from a pathological point of view. It consists of fragments of tissue identified as rectal mucous membrane, or at least large bowel mucous membrane, in which one sees a definite transition from normal large bowel mucous membrane to adenocarcinomatous tissue. The transition is abrupt and is characteristic of cancer found in the rectum or recto-sigmoid. The tissue is moderately well differentiated; the cells show anaplasia and hyperchromatism, with a moderate number of mitotic figures. The pathological diagnosis is adenocarcinoma, arising in the large bowel, about grade two.

FIRST SURGEON: We plan to attempt an abdominoperineal resection upon this man. He is at present being prepared with sodium sulfathalidine. We hope to be able to remove this tumor as a *palliative measure,* if not as as a curative measure. These patients always do better with removal of the primary growth, rather than a simple palliative colostomy. The extent of the lesion is such that I doubt if we can do more than relieve the obstruction.

I feel that this tumor was present at the time of the hemorrhoidectomy, and that it emphasizes the necessity for *a careful sigmoidoscopic examination during any rectal operation.* We all admit that in many cases a satisfactory examination cannot be done unless the patient is under anesthesia.

PATHOLOGIST: What about the procedure of fulguration of the tumor if it is not resectable?

SECOND SURGEON: This procedure has been recommended by a group of workers in Oregon in a report of a large series of patients treated by abdominoperineal resection. Fulguration was carried out with an electrosurgical unit in elderly patients, and in cases where there was a contraindication to extensive surgery, or where the tumor mass was not resectable. They obtained very satisfactory palliative results for as long as three years in most of the patients. Of course, the procedure has certain dangers, particularly that of perforation, with associated pelvic peritonitis.

THIRD SURGEON: How about the procedure of rhizotomy simply for relief of pain or the instillation of ammonium sulfate into the intrathecal space as has been recommended recently in cases of inoperable pelvic carcinomas? I believe that this should be kept in mind if the other procedures fail.

FIRST SURGEON: We are faced with the combined problem of internal obstruction and rectal malignancy. Operation of some type must be done, and our decision will of necessity be made at the time of operation. I believe we are agreed that the procedure must almost inevitably be simply palliative.

RADIOLOGIST: We can offer only palliative therapy for carcinoma of the rectum. Many patients are relieved of most of their local complaints for long periods of time by irradiation. The recent reports indicate that the best results are obtained with supervoltage roentgen therapy.

Although the bony pelvis shows no x-ray evidence of metastasis, this does not mean that the periosteum and the sacrum are not already involved. Bone changes demonstrable by x-ray are the result of bone destruction, and imply a gross lesion.

In view of the obstruction, x-ray therapy offers little or nothing to this man.

Tumor Clinic Opinion

The recommendation of the clinic is an exploratory operation, with an abdominoperineal resection if this is at all possible, regardless of whether the lesion is believed to be curable by operation.

Prognosis: Very poor.

Blame: 1. Delay by patient.
2. Inadequate examination by first examining physician.

Follow-Up Note

This patient was operated upon one week after his presentation at the Tumor Clinic. The surgeon's report was as follows: "An abdominoperineal resection was carried out. At operation the tumor was found to have infiltrated the rectal wall and adjacent tissues so that it was densely adherent to the bladder. It was necessary to open the base of the bladder in order to carry out the resection. There were no glands involved along the aorta or either iliac artery. There were no metastases in the liver or other abdominal organs. It was felt that the prognosis was very poor in spite of the fact that most of the tumor mass was removed and that no wide extension was found."

PRINCIPLES FREQUENTLY NEGLECTED IN THE TREATMENT OF POLLINOSIS

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The prophylactic injection of specific pollen extracts affords more relief to the sufferer from pollen disease than does any other form of treatment. Some have been more successful with this method than have others, and considering the amount of detail involved in its correct application, it would be strange if this had not been so. The degree of success attained by those who use this method of treatment will depend upon the extent to which the two cardinal principles of *specific* and *adequate* treatment are recognized.

If the treatment is to be specific, the injections must contain extracts of *all* the antigenically different pollens to which the patient is sensitive and which seasonally permeate the atmosphere of the patient's environment. If the treatment is to be adequate, the amount of extract administered must be sufficient to render the patient insensitive to the amounts of pollen to which

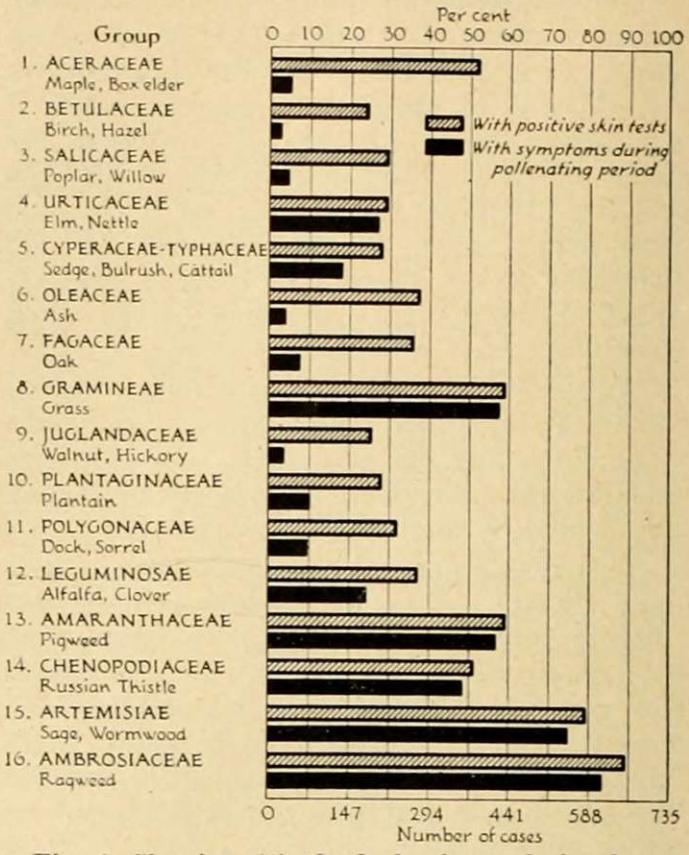

Fig. 1. Showing (1) the lack of correlation between skin sensitivity and clinical sensitivity, and (2) the relative clinical importance of various pollen groups. (From Ellis, R. V.[3])

The Principle of Specificity

Skin testing

The first principle depends upon the etiologic diagnosis. The skin test, which is the technique most commonly used in the etiologic diagnosis of hay fever and related conditions, is based upon the fact that the skin is *usually* sensitive to the allergenic substance of the pollen grains, even when skin manifestations are not a part of the clinical picture. That patients often exhibit positive skin reactions to pollens which do not give rise to symptoms in the respiratory mucous membranes is a fact concerning which many physicians appear to be uninformed. Although this lack of correlation between skin sensitivity and clinical sensitivity has long been known, it has not received the emphasis which it deserves. Notwithstanding the great value of skin testing, its limitations must be recognized, or the etiological diagnosis will be erroneous as often as it is correct. In fact, a positive pollen test, in itself, no more establishes an etiological diagnosis than a positive Mantoux test indicates an

the respiratory mucosa (fig. 1). Although rare, the converse also occurs—that is, mucous membrane sensitivity may exist without demonstrable skin sensitivity. Errors due to this latter factor alone will be few when patients giving negative reactions to the scratch test are retested by the method of intradermal injection.

I do not mean to imply that skin testing is of no value in the diagnosis of hay fever. Nothing could be further from the truth. The results of skin testing are of great value, but only when correlated with other important data.

The atmospheric pollens

If a positive skin test to any particular species of pollen is to have diagnostic significance, it must be shown that this species of pollen is a pollutant of the atmosphere of the region in which the patient resides, and also that the period of pollination coincides with the patient's illness. The gross neglect of this extremely important principle indicates that the profession in general is not sufficiently well informed concerning the periodicity of pollination in the various species of plants. The pollination period of each species varies but little from year to year, and the variation is in fact almost negligible except for the species flowering early in the spring. The duration of the pollination period varies considerably in different species, some flowering for a few days only (as in the case of the trees), others for several weeks—for example, the pigweed and ragweed.

Concerning the pollens which cause human illness throughout the length and breadth of our country, knowledge is by no means complete. Blackley's work, which so conclusively established the etiological role of pollens in hay fever, included only the pollen of certain grasses. Evidence quickly accumulated that the pollen of other plants was also involved. The erroneous presumption arose, and unfortunately still prevails to an unwarranted extent, that any flowering plant is potentially a cause of hay fever. It was not until 1917, when Scheppegrell[1] pointed out that only those species which pollinate through the agency of wind pollute the air in sufficient amounts to cause allergic manifestations, that any real progress was made in determining the causes of hay fever. Numerous botanical surveys were made, listing the wind pollinated species occurring in the area surveyed, and giving the approximate periods of bloom upon the basis of field observations. These surveys indicated which plants were potential pollutants of the atmosphere, but failed to demonstrate actual pollution or to give any information as to the amount of pollution.

There is available a method, however, which will furnish positive information concerning the plants responsible for atmospheric pollution. It consists in exposing microscopic slides coated with a sticky substance to catch pollen grains settling out of the atmosphere. By microscopy the various pollens are then identified and counted. These data give accurate information concerning the kinds of pollen which pollute the air, and are a reasonably accurate index to the amount of each which is present. This kind of information eliminates guesswork and leads to accurate determination of the causes of hay fever. Only through extensive application of this method over the entire country can the treatment of pollinosis become exact. The chief obstacle to a more extensive use of the slide or pollen count method lies in the dearth of competent technicians. The only means of overcoming this is to train more individuals to do this work. Very little information of this kind is available for North Carolina. Todd in 1934[2] published some valuable data, but this study is very incomplete. This society should seek ways and means to accumulate more accurate data on the causes of hay fever by supporting investigations in various representative areas throughout the state.

The group principle

The botanical surveys which have been published for the United States list more than one thousand species of wind pollinated plants. With the aid of information contributed by the pollen count method many have been eliminated as causes of hay fever, since it can be shown that many do not cause atmospheric pollution and that for others it is insignificant. Another important discovery has been that even the trained morphologist is unable to differentiate the pollens of some closely related species as he encounters them on the slide. This fortunately seems unimportant, for the pollens of closely related species appear to contain essentially one common excitant. A person sensitive to

1. Scheppegrell, W.: Classification of Hay Fever Pollens, Boston M. & S. J. 177:42 (July 12) 1917.

2. Todd, L. C.: Hay Fever Pollen Content of Air in Charlotte in 1933, South. Med. and Surg. 96:343-346 (July) 1934.

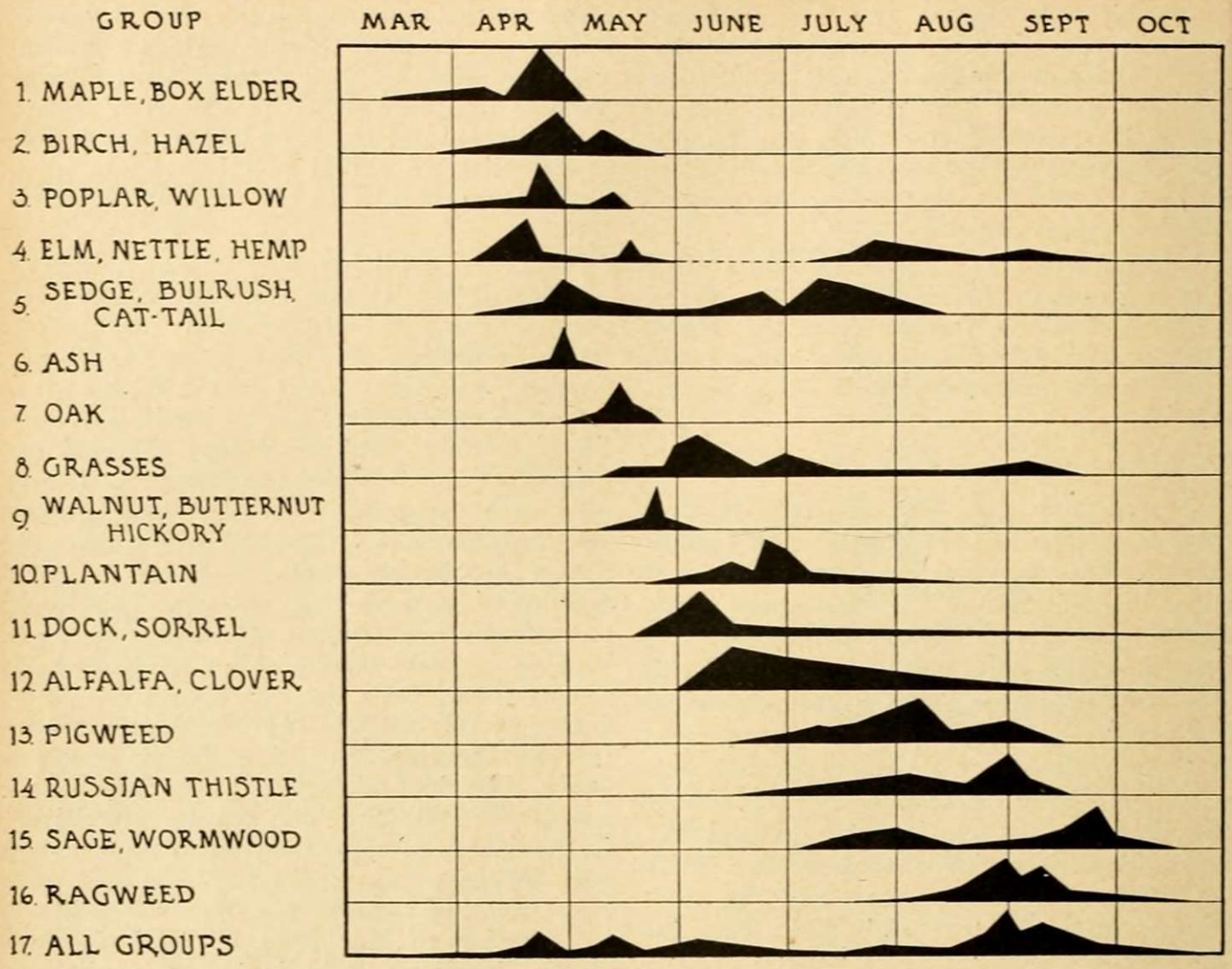

Fig. 2. Duration of pollination, together with the time of greatest pollen production of each group. (From Ellis, R. V.[3])

one species of oak, for example, is sensitive to all species of oaks. The same statement applies to various other family groups, such as the Ambrosiaceae, Gramineae, Amaranthaceae, and Chenopodiaceae. The simplification resulting from this principle is tremendous. Hundreds of species become grouped as a few antigenic groups. (Fig. 2)

Multiple sensitivity

Another fact which has not received sufficient consideration is that a majority of individuals suffering from pollen disease are susceptible to more than one cause, even when these causes have been reduced to group antigens. In a series of 700 hay fever patients[3], 43 per cent suffered during the fall period. Only 3.5 per cent were susceptible to ragweed alone, 39.5 per cent being allergic to other pollens in addition to that of ragweed (table 1).

The Principle of Adequacy

Adequacy of treatment is both qualitative and quantitative. If each pollen is viewed as a separate and specific cause of hay fever, the problem of compounding an extract for treatment is extremely complex. When the principle of group antigens is employed, the problem is greatly simplified. If a patient is sensitive to more than one antigenic group, two factors must receive consideration in the treatment: (1) the relative sensitivity of the patient to each component, and (2) the relative amounts of each component encountered by the patient. No formula has as yet been devised to place this on a strictly mathematical basis.

To be quantitatively adequate the amount of extract administered must be sufficient to render the patient insensitive to the amounts of pollen antigen which he ordinarily en-

Table 1

Apr.	May	June	July	Aug.	Sept.	Oct.	Number	Per cent	Causes
···	———	···					7	1.	) Trees
	——						7	1.	)
		····	———	····			28	4.	Grass
			····	———	·····		48	7.	Weeds* (Not inc. ragweed)
				··	———	·····	25	3.5	Ragweed
								16.5	Total
				····	———	···	276	39.5	Ragweed and weeds*
			·····	———	———	···	161	23.	Grass and weeds
		·····	———	———	———	···	141	20.	Trees, grass and weeds
	·····	———			———	·····	7	1.	Trees, weeds
							700	100.0	

*Amaranth, Chenopod, Dock and Plantain Groups.

ized with reasonable accuracy, patients cannot be. There is at present no means by which we can determine in advance the amount of pollen extract needed to prevent the occurrence of symptoms in an individual patient. This same difficulty, however, has been encountered in certain immunization procedures with which we have succeeded admirably. It is a well established fact that some people may be immunized to diphtheria with as little as .1 cc. of Ramon's toxoid; yet more than 50 per cent of individuals require at least 2 cc., and occasional individuals as much as 5 cc. to accomplish the same purpose. The accepted procedure for immunizations in general is to administer more than is needed for the average person.

Pollen extracts are standardized in terms of units. It is unfortunate that there are in use several different kinds of units. Although these are not interchangeable, any one seems to serve equally well when used consistently. We have found that a total of 200,000 to 300,000 pollen units* will need to be administered to the average hay fever sufferer during a period just preceding the date at which symptoms are expected. For the sake of safety and comfort the administration of this dose should be distributed over a period of not less than twelve weeks, and preferably longer.

As a general rule, pollen extract treatment sets commercially available contain too little of the antigenic material to be of much value. Many manufacturers have pushed the sale of sets containing fifteen doses, each in a separate ampule. These may be attractive to the patient but could have little more than a psychological effect in relieving symptoms, for the total amount of antigen in such sets ranges from 10,000 to 20,000 units—less than 10 per cent of the amount usually required for a successful pre-seasonal treatment. Such packages also unnecessarily increase the cost of treatment. From 1 Gm. of pollen, the average cost of which does not exceed 25 cents, the manufacturer obtains a million pollen units. There can be little excuse, therefore, for marketing treatment sets containing less than an adequate supply of antigen. It would make no appreciable difference in the manufacturer's cost whether a treatment set contained 50,000 or 500,000 units, as the cost of the crude pollen in either case would not exceed 5 cents. The manufacturers of pollen biologicals, for the most part, have not kept faith with our profession, and have not made treatment sets with adequate amounts of antigen easily available.

*1 unit equals .00001 mg. of pollen nitrogen.

Summary

1. In order to be successful, the treatment of pollinosis by the prophylactic injection of pollen extracts must be *specific* and *adequate*.

2. The etiologic diagnosis of pollinosis must be based on a correlation of the results of skin testing with other important data.

3. A more complete knowledge of the antigenic pollens native to North Carolina should be obtained by investigations employing the pollen count technique.

4. The use of the group antigen principle will greatly simplify the problems of diagnosis and treatment.

5. The commercially available pollen extract treatment sets do not, as a rule, contain adequate amounts of antigen.

THE SIGNIFICANCE OF PLEURISY WITH AND WITHOUT EFFUSION

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It is the purpose of this paper to attempt to show that the tubercle bacillus is the direct exciting etiological factor in an overwhelming majority of all cases of pleurisy, either with or without effusion.

Christian, in his recent revision of Osler's *Principles and Practice of Medicine*[1], said: "The early diagnosis of pulmonary tuberculosis may be said to mean the recognition of lesions which do not give positive signs. Suspicion is an important factor in the early diagnosis with the determination to leave nothing undone to decide whether or not tuberculosis is present in the patient."

In the year 420 B.C. Hippocrates left to posterity this wise aphorism: "If disease and treatment start together, the disease will not win the race." Certainly this is particularly applicable to the handling of all cases of pleurisy with and without effusion.

Historical Conditions

Prior to the time of Hippocrates, the term pleuritis was employed in connection with almost any condition accompanied by pain in the chest. Curiously enough, Hippocrates (460-370 B. C.) omitted entirely the symptoms of pleurisy in his otherwise accurate tabulation of the cardinal symptoms of pulmonary tuberculosis. Aurelianus in the year 450 A.D. added pleurisy to the list.

Among the many who wrote on the subject of pleurisy through successive centuries, the name of Laennec stands out above all others[2]. Through the invention of the stethoscope and the publication of his classical book, "Traite de l'auscultation mediate," he unquestionably established the foundation for our present knowledge of intrathoracic disease. Few diagnostic physical signs of importance in any form of pleurisy have been added to the ones described by him. As advances in pathology and bacteriology were made, the relationship between diseases of the lung and pleura was gradually established.

Definition of Pleurisy

Pleurisy is an inflammation of the serous coverings of the lungs and may involve the visceral, parietal, interlobar, and diaphragmatic layers[2]. It may be acute or chronic, sharply localized or diffuse, dry or accompanied by a serous, serofibrinous, purulent, or hemorrhagic effusion, small and encapsulated or filling most of the complemental space.

Classification

The types of pleurisy may be classified under four main headings, as follows:

I. Acute fibrinous or plastic pleurisy[2].
   A. Primary, caused by injury to the chest wall.
   B. Secondary, originating (1) from extension of an inflammatory process involving the lungs, pericardium, mediastinum or occasionally the liver; or (2) from the blood stream in cases of septicemia.

II. Acute serofibrinous pleurisy, or pleurisy with effusion. This type constitutes a large percentage of all cases of pleurisy.

III. Purulent pleurisy or empyema. This type is usually secondary to infection in the lung.

IV. Special forms of pleurisy:
   A. Encapsulated pleurisy.
   B. Hemorrhagic pleurisy.
   C. Diaphragmatic pleurisy.
   D. Encysted pleurisy.
   E. Interlobar pleurisy.
   F. Chylothorax.

For all clinical purposes we may divide pleurisy into two main etiological groups:

1. Tuberculous, comprising about 70 per cent of all cases.
2. Non-tuberculous.

Etiological Factors

It is now generally believed that pleurisy is always secondary to disease elsewhere in the body, particularly pulmonary disease. Inasmuch as tuberculosis is by far the most frequently encountered pulmonary infection,

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From the Western North Carolina Sanatorium, Black Mountain.

1. Christian, Henry A.: Osler's Principles and Practice of Medicine, ed. 14, New York, D. Appleton-Century Co., 1942, p. 254.

2. Miller, and Mohr., in Cyclopedia of Medicine, Surgery, and Specialties, Philadelphia, F. A. Davis Co., 1936, vol. 11, pp. 773-774.

this disease overshadows all others as an exciting cause of pleurisy with and without effusion; however, we may see pleurisy as a sequel of lobar pneumonia, bronchopneumonia and pneumonitis, hemorrhagic infarction and embolus, pulmonary abscess and gangrene, mycotic infection, bronchiectasis, malignancy, and typhoid fever. Pleurisy may also result from septicemia, endocarditis, tonsillitis, osteomyelitis, pelvic and prostatic infections, or intra-abdominal infections.

The bacteria most commonly seen in cases of pleurisy are tubercle bacilli, pneumococci, staphylococci, and streptococci, in the order named. A positive tuberculin test is present in the overwhelming majority of these cases.

Although exposure to cold, *per se*, is no longer considered a cause of pleurisy[2], undue exposure, especially with fatigue, seems to initiate respiratory infections which may lead to pleurisy. Occupational and environmental factors which predispose to pulmonary tuberculosis and other respiratory diseases also influence the occurrence of pleurisy. Pleurisy reaches its highest peak coincident with the annual rise in pulmonary disease during the winter months. Pleurisy is most common in young adults, and males are affected more often than females.

Statistics on the relation of pleurisy to tuberculosis

For at least fifty years many clinical and statistical studies have been made to establish the percentage of cases of pleurisy with effusion associated with or followed by pulmonary tuberculosis. The reported percentages of patients developing tuberculosis within seven years after an attack of pleurisy have varied from 35 to 70 per cent[2,3]. If more cases could be followed for a longer period of time, it is very likely that the percentage would be raised to approximately 80 per cent. Graham[4] says that more than 80 per cent of the cases of pleurisy with effusion are tuberculous in origin. A *very* high percentage of guinea pigs inoculated with the exudate develop tuberculosis, even when exhaustive microscopic examinations of the fluid have failed to reveal the tubercle bacilli.

Other writers have attempted to establish the relationship of tuberculosis to pleural effusion by analyzing a large series of cases of pulmonary tuberculosis to determine the incidence of patients with a preceding history of pleurisy with effusion[5]. Records of the Phipps Institute show that out of 5,896 patients with tuberculosis, 23.8 per cent gave an antecedent history of pleurisy[5b]. Hastings, reviewing the histories of 1,182 patients with pulmonary tuberculosis, noted the occurrence of fibrinous pleurisy and pleurisy with effusion in 55.7 per cent[5c].

Clinical Picture

Onset

The onset of pleurisy with and without effusion may be abrupt or insidious. In the former case the patient may complain of a stitch in the side, or a sudden, sharp, lancinating pain in the chest, accentuated by respiration. If the onset is insidious, there is soreness in the chest, general malaise, cough, headache, nausea, fever, anorexia, loss of weight, and increasing fatigability. Pleurisy which begins abruptly is more likely to be of non-tuberculous origin; that which has an insidious onset, tuberculous. Pain is more severe in the former group.

Physical signs

1. The patient is usually lying on the affected side, except in the case of diaphragmatic pleurisy, when the patient is more likely to lie on the uninvolved side.
2. Motion of the affected side is restricted.
3. Friction fremitus is often felt.
4. There is impairment of percussion only when fluid has formed.
5. As a rule there is a friction sound on auscultation. This varies from fine, superficial crepitant rales, not easily distinguished from pulmonary rales, to a loud, grating, leathery sound. The friction sound becomes less audible or disappears entirely under the following conditions:
   a. Absorption of the inflammatory exudate
   b. Formation of an effusion
   c. Formation of adhesions
   d. Immobility of the affected side.

The transition from fine crepitant rales to friction rub to disappearance of diagnostic signs because of fluid formation is often so rapid that the diagnosis may be completely

3. (a) Hamman, L., cited by Christian(1), p. 857.
   (b) Hedges, C. E.: The Aetiology, Immediate and Remote Prognosis of Primary Pleurisy with Serous Effusion, St. Barth. Hosp. Rep. 36:75-145, 1901.
4. Graham, E. A.: Surgical Diseases of the Chest, Philadelphia, Lea and Febiger, 1937, p. 119.
5. (a) Burrell, L.S.T.: Pleural Effusion, Brit. M. J. 1:619-621 (April 11) 1931.
   (b) Norris, G. W. and Landis, H. R. M.: Diseases of the Chest and the Principles of Physical Diagnosis, ed. 5, Philadelphia, W. B. Saunders Co., 1933, p. 673.
   (c) Pierce, E. A.: Pleurisy and Tuberculosis, Northwest Med. 9:114-115 (March) 1917.
   (d) Hastings, D. R.: Pleurisy; Its Significance and Treatment, Minnesota Med. 9:114-115 (March) 1926.

missed if one does not listen to the chest frequently enough.

X-Ray Diagnosis of Hydrothorax

Early

The early formation of pleural effusions is not easily detected in the usual posterior-anterior roentgenogram because the fluid gravitates to the posterior costophrenic sinus, this being the most dependent part of the pleural space. It has been estimated that amounts up to 400 cc. cannot be visualized by the usual methods[2]. Frequently, in the posterior-anterior film, a fuzzy roughening of the lateral costophrenic sinus can be made out. In a posterior-anterior roentgenogram made in the lateral decubitus position, a linear shadow can often be seen parallel to the long axis of the chest. This is due to fluid that has gravitated to the inferior central gutter.

Intermediate

Fluid of any consequence casts a shadow of much the same density as those of the heart, diaphragm, and sub-diaphragmatic organs. It is difficult at times to distinguish it from these shadows and from shadows produced by tumors, consolidation of the lung, and marked pleural thickening. As the amount of fluid increases, the obliteration of the costophrenic sinus is increasingly noticeable. The shadow becomes larger and the upper surface becomes concave, curving upward and outward from the hilum to the midaxillary line. This persistent curved upper border is due to the fact that the outer margin of the lung is lighter and more compressible than the inner portion.

Late

As the fluid increases, it extends upward towards the apex but maintains the diagnostic concave surface. The concave surface disappears at the apex in cases of massive hydrothorax with marked mediastinal displacement.

Differential Diagnosis

Although the clinical picture of pleurisy with and without effusion is almost pathognomonic, typical cases may be confused with other conditions, such as intercostal neuralgia, herpes zoster, myalgia, Pott's disease, neuralgia should be made with great hesitation, for it is probably very rare. The other conditions named present additional symptoms and signs other than pain. A sudden pain in the chest producing an indefinite friction rub with elevation of temperature, cough, and partial immobilization of the affected side is always pleuritic in nature.

Although diaphragmatic pleurisy alone is rare, it does occur; the referred pain often follows the phrenic nerve and causes pain in the shoulder region posteriorly. Just as frequently the pain is conveyed through the tenth, eleventh, and twelfth thoracic nerves and is referred to their areas of distribution in the lower abdomen. I am familiar with a case in which the pain was referred to the lower right quadrant of the abdomen, and an appendectomy was done. The pain persisted following convalescence, and an x-ray film of the chest revealed right basal pulmonary tuberculosis with cavitation.

Etiologic Diagnosis

When the diagnosis of pleurisy with or without effusion is established, the procedures listed below should be followed:

1. Have a tuberculin test done.
2. Have an x-ray film made of the chest.
3. Aspirate a sufficient amount of the effusion for laboratory examination.
4. Over a period of years make frequent fluoroscopic or x-ray examinations of the patient.

Curiously enough, it is the classical case of pleurisy with or without effusion in which etiologic studies are entirely and repeatedly neglected. A patient comes to his doctor with the history of a "stitch in his side," and with dyspnea, pain in his lower chest with almost every breath, a slight fever, and an apprehensive expression. Examination reveals crackling rales and a suspicious friction rub over the point of maximum pain and tenderness. A diagnosis of simple pleurisy is made. Treatment usually consists in relief of the pain by medication and immobilization of the chest by strapping. The patient is sent home with the assurance that he has just a little pleurisy and that he will be all right in a few days. When he is seen again in a few days his pain has almost disappeared, his temperature is almost normal, and the patient is feeling much improved.

will soon disappear entirely. A week later all physical signs have disappeared and he is allowed to return to normal activity. In so lightly diagnosing the condition as simple pleurisy, we forget that pleurisy is a symptom and not a disease entity; we forget that this pleurisy may be the beginning of tuberculosis; we forget that approximately 60 to 70 per cent of all pleurisies are due to the tubercle bacillus; we forget to give the patient a tuberculin test; we forget to do the one essential thing in *all* cases of pleurisy—to have an x-ray film made of the chest and read by one who is competent to interpret it.

A Survey of Pleurisy with and without Effusion at the Western North Carolina Sanatorium

Relation of pleurisy to tuberculosis

In a recent survey of 284 tuberculous patients at the Western North Carolina Sanatorium, 181 or 63.5 per cent were found to have a history of pleurisy with or without effusion. In 133 or 46.6 per cent the attack was classified as severe, and in 53 or 18.6 per cent as mild, usually extended dull aching. Thirty-six or 20.9 per cent of the 181 patients developed a demonstrable effusion. It is quite likely that many more had small effusions which could easily have been demonstrated on an x-ray film and just as easily overlooked on physical examination. Aspiration was done in 16 cases; in 4 this was repeated. In 8 cases the fluid was examined for tubercle bacilli and found negative. No patients remembered any reference to guinea pig inoculation of the fluid aspirated from their chests.

It is significant to note the number of days, months, and years that elapsed before the diagnosis of pulmonary tuberculosis was established (table 1). Ninety-seven of the 181 patients had pleurisy with or without effusion one to twenty-five years (average five and a half years) before the diagnosis of pulmonary tuberculosis was made. Eight of these had x-ray films of their chests made at the time of the primary pleuritis. Seventy-four patients had pleurisy with or without effusion one to nine months (average three and two-tenths months) before a diagnosis of pulmonary tuberculosis was made. In 11 of these x-ray films of the chest were made at the time of the primary pleuritis. In 10 patients the diagnosis of tuberculosis was made an average of ten days after the attack of pleurisy. It is significant that all ten of these had x-ray films made of their chests at the time of the primary pleuritis. It is further significant to note that in 163 or 90 per cent of the 181 patients who gave a history of pleurisy, the pulmonary tuberculosis subsequently developed on the same side of the chest.

Table 1

Time Interval Between the Primary Attack of Pleurisy and the Diagnosis of Pulmonary Tuberculosis

IN TERMS OF YEARS

No. Years	*No. Cases*	*No. Years*	*No. Cases*
1	27	12	5
2	16	13	1
3	7	14	1
4	9	15	5
5	4	16	1
6	5	17	0
7	3	18	1
8	2	19	0
9	2	20 - 25	3
10	5	—	—
11	0	**Average 5.5**	**Total 97**

IN TERMS OF MONTHS

No. Months	*No. Cases*	*No. Months*	*No. Cases*
1	15	7	3
2	18	8	2
3	15	9	1
4	8	10	0
5	1	—	—
6	10	**Average 3.2**	**Total 74**

IN TERMS OF DAYS

No. Days (average)	*No. Cases*
10	10

Location of pain

The pain of the initial pleurisy occurred in the following areas:

Location	*No. Cases*	*Percentage*
Apex	12	6.6%
Midscapular line	19	10.4%
Midaxillary line	26	14.3%
Anterior axillary line	58	32.0%
Midclavicular line	44	24.3%
Base	22	11.6%
Abdomen	1	0.05%

It is immediately noted that pain occurred more frequently in the front of the chest than in the back; in 70.7 per cent of the cases it was felt between the midaxillary line and the sternum and between the clavicle and the base ventrally. This observation confirms the findings of Behan[7] that pain of pleural lesions is most often felt in or near the anterior axillary line, which corresponds roughly to the points of emergence or areas of greatest tenderness of the intercostal nerves. Gordon's recent clinico-pathological study of 35 cases of tuberculous pleural ef-

7. Behan, R. J.: Pain, New York, D. Appleton and Co., 1920, p. 791.

fusion[8] revealed that the tubercles located in the anterior part of the lung show a decided tendency to rupture, probably because of the greater respiratory movement in the anterior chest.

Duration of pain

Information obtained from the 181 patients revealed that from the time of the original "stitch in the side," the duration of the pain was as follows:

Duration	*No. Cases*	*Percentage*
1 - 12 hours	33	18.2%
1 - 3 days	43	23.7%
4 - 7 days	44	24.3%
2 - 4 weeks	37	20.4%
5 - 12 weeks	13	7.18%
4 months and over	11	6.0%

(One patient had continuous pain for 10 years.)

It is evident that in the majority of these patients the pain was of comparatively short duration—less than one week in 66.3 per cent. The phase of intense, lancinating pain usually lasts a few hours, decreasing in intensity thereafter over a period of days as fluid is interposed between the visceral and parietal pleurae or as the pleuritis subsides. During this period the etiological diagnosis should be made.

Associated conditions

One hundred and forty-one, or 77.3 per cent, of the 181 patients were suffering from respiratory diseases prior to the development of pleurisy. Ninety-eight of these had severe colds, 34 had influenza, and 9 pneumonia. Eleven patients had noticed general symptoms of malaise, fatigue, and nervousness; 18 had had gastro-intestinal symptoms; 1 was pregnant. Ten patients developed pain in the chest without any prodromal symptoms or prior illnesses.

Treatment

This survey reveals that 153 of the 181 patients, or 84.5 per cent, consulted their local doctors at the time of the initial attack of pleurisy. In 28, or 18.3 per cent, an x-ray or fluoroscopic examination of the chest was made and no demonstrable disease was found. The subsequent treatment was palliative. Yet 164 of the 181 patients were found to have pulmonary tuberculosis within ten years after the attack of pleurisy, and in 84 the diagnosis was made within ten months.

It is even more significant that 59.6 per cent of the 181 patients gave a history of pulmonary tuberculosis in their family. Neglect of proper guidance and advice by the physician is obvious.

Conclusion

Early tuberculosis should always be suspected in cases of pleurisy, with and without effusion. Cases of pleurisy with effusion should be regarded as tuberculous until proven otherwise. Remember that pleurisy is a symptom and not a disease, and that many years of the patient's life may depend on a correct diagnosis and proper treatment.

USEFULNESS OF REPEATED OPHTHALMOSCOPIC EXAMINATIONS DURING THE TREATMENT OF HYPERTENSION

FREDERICK W. STOCKER, M.D.

DURHAM

During the last ten years considerable work has been done in evaluating the significance of ocular symptoms in general vascular hypertension[1]. Although there is not yet complete agreement about every detail of the problem, certain principles seem now to be established. It is not my intention to review today all the different theories about hypertension and its manifestations in the eye. I shall concentrate on reporting my own experience in examining the fundi of hypertensive patients under treatment, and the conclusions which can be drawn from the changes observed during treatment.

In 1937 I reported experiences with more than 50 cases[2], and in 1939, together with Dr. C. Meili, published a report on more than 100 cases[3]. Since then I have made many more similar observations. A survey of the literature, however, shows that although much attention is paid to the changes in the fundi of patients with hypertension, little is said about the response of these

Read before the Section on Ophthalmology and Otolaryngology, Medical Society of the State of North Carolina, Pinehurst, May 2, 1944.

1. (a) Keith, N. M.: Cardiovascular Diseases in Relation to the Retina, Ann. Otol., Rhin., and Laryng. 42:95-111 (March) 1933.
(b) Wagener, H. P.: The Nature and Significance of the Retinal Lesions Associated with Hypertensive Disease, Tr. Am. Acad. Ophth. 44:54-74, 1939.
(c) Koch, F. L. P.: Retina in Systemic Vascular Hypertension, Arch. Ophth. 26:565-584 (Oct.) 1941.
2. Stocker, F.: Ueber systematische Kontrollen des Augenhintergrunds bei Hypertonikern, Schweiz. med. Wchnschr. 68:388, 1938.

changes to treatment. For that reason I feel that it is appropriate to stress once more the importance of repeated ophthalmoscopic examinations during the treatment of hypertension.

There are three approaches to the study of the changes in the eye associated with hypertension:

1. Measurement of the caliber of the retinal blood vessels.
2. Measurement of the blood pressure in the retinal vessel (ophthalmodynamometry).
3. Ophthalmoscopic examination.

Although the first and second methods have their value, the general ophthalmoscopic examination still seems to be of greater clinical importance[1c]. The type of observation I am discussing today has to rely exclusively on ophthalmoscopic examinations. One great disadvantage of this method is that there is no way of recording observations accurately. Fundus photography usually is not good enough to show the slight differences which we have to take into consideration. This makes it necessary that the repeated examinations be done by the same observer.

Etiology and Mechanism of Hypertension

Hypertension is not an etiologic entity. The following etiologic classification of hypertension may be suitable for practical purposes:

1. Primary or essential hypertension.
2. Arteriosclerotic hypertension.
3. Toxic hypertension.

Although in our series we included cases belonging to all these groups, we were chiefly interested in patients with primary hypertension. It is now generally recognized that hypertension is brought about primarily by a reduction in the caliber of the small arteries or arterioles. The blood pressure rises as the heart has to force the blood through the narrowed vessels. Thus, the symptom of elevated blood pressure would have to be considered as a compensatory mechanism.

Volhard's original idea[4] was that there was a general angiospasm reducing the caliber of the arterioles, and some people still hold to this theory. However, Pal[5] gave an explanation which seems to be more universally adaptable to the different forms and stages of hypertension. The presence of a permanent spasm of the vascular muscles is not in agreement with the laws of physiology, for any muscle spasm, however long it may last, is always followed by a period of relaxation. Smooth muscle fibers consist of two different parts—the fibrils and the sarcoplasm. Pal demonstrated that there also exist two different types of function. There is a kinetic function, which involves the fibrils, and a tonic function, which concerns the sarcoplasm. He found that papaverine, for instance, may paralyze the fibrils without affecting tonicity, whereas the nitrites may reduce the tonus without paralyzing the fibrils.

Thus hypertension of long standing would be brought about by a condition of increased tonicity. Often a real spasm of the muscle fibrils is combined with this increased tonicity for a certain period of time, as in the so-called vascular crisis.

The Importance of Ophthalmoscopic Examinations

In beginning hypertension all these disturbances seem to be purely functional. They change in intensity and may regress to a certain extent at times. After an indefinite length of time, the condition may become fixed, presumably as a result of anatomical changes. It is obviously very important to determine which stage of hypertension is present in a specific case. By observing the fundus of the eye at regular intervals while a patient is under treatment we can obtain important information as to this question.

The effectiveness of any treatment for hypertension is usually judged by the reduction in blood pressure and the improvement in general symptoms achieved. Since sedation alone may sometimes accomplish these results, however, it is more important to know whether the changes in the peripheral vascular system have also improved. There are only two ways of observing directly the smallest blood vessels in the body: capillary microscopy and ophthalmoscopic examination. The ophthalmoscopic examination is not only the less complicated of the two methods, but is also preferable for other reasons.

The most important changes in the retinal vessels found in general hypertension are:

4. Volhard, F., in von Bergmann, G. and Staehelin, R.: Handbuch der inneren Medizin, ed. 2, Berlin, Springer, 1931, vol. 6.
5. Pal, Jacob: Die Tonuskrankheiten des Herzens und der Gefaesse, Berlin, Springer, 1934; and previous publications.

Prognosis of Hypertension According to Response of Fundus Changes to Treatment

Group	*Fundus before treatment*	*After treatment*	*Prognosis*
1	Slight hypertensive changes of retinal vessels and/or slight reduction of vision.	Fundus back to normal. Vision improved.	Good
2	Marked hypertensive changes of retinal vessels.	Considerable regression of changes of retinal vessels.	Fair
3	Marked hypertensive changes of retinal vessels.	No change.	Poor
4	Retinitis or neuroretinitis.	Improved.	Relatively good if kidneys function normally.
5	Retinitis or neuroretinitis.	Unimproved.	Poor, even if kidneys function normally; very poor if impaired.

1. Gunn's arteriovenous compression phenomenon.
2. Local constrictions of arterioles.
3. General constrictions of arterioles.
4. Corkscrew-like, tortuous venules.

In addition to these primary changes, and in consequence of them, secondary changes, such as hemorrhages, retinitis and neuroretinitis— or retinopathy and neuroretinopathy, if you prefer these terms—may occur. Time will not permit me to discuss in detail the nature and significance of each of these changes.

Experimental Evaluation of the Prognosis in Hypertension on the Basis of Eyeground Changes

Basing our experiments on Pal's conception, we chose a combination of drugs which might be able to act on the different parts of the vascular system as well as on the central nervous system, which controls to a large extent the action of the vascular muscles. The medicament[6] contained:

1. Papaverine nitrite.
2. Chloral hydrate.
3. Bromural.

Papaverine was expected to paralyze the fibrils of the smooth vascular muscles, and the nitrite to act on the capillaries and to reduce the tonicity of the sarcoplasm of the muscle fibers. Chloral hydrate is known as a sedative, antispasmodic and peripheral vasodilator. The action of bromural is purely sedative. It reduces the nervous irritability from which many patients with hypertension suffer. It may thus prevent the emotional disturbances which often cause angiospasm and consequently increase the blood pressure.

Experimental studies on animals by Rothschild and Meili[7] had preceded the clinical use of the drug.

The following procedure was adopted:

Before any treatment was instituted a general physical examination, including a blood pressure reading, was given, and a study of the blood and urine chemistry was made. At the same time the ophthalmoscopic findings were recorded. Then a certain amount of the combination of drugs described above was given regularly over a period of several weeks. Usually an ophthalmoscopic examination was made again after one week of treatment, and was repeated at regular intervals, first of several weeks, later of several months. The patient's general condition was also carefully watched.

Most patients showed a greater or less reduction in blood pressure and a certain improvement in subjective symptoms. The response of the retinal vessels was not uniform. In some cases in which the vision had been slightly reduced, without any visible damage to the retina, it returned to normal. General or local constrictions of the arterioles and tortuosities of the venules improved or disappeared completely. In some cases even the arteriovenous compression phenomenon became less marked or entirely unnoticeable. In other cases the fundus remained completely unchanged in spite of subjective improvement and some reduction in blood pressure.

The subsequent courses of these two groups of patients were very different. The patients who showed regression of the hypertensive changes in the retinal vessels continued to feel comparatively well. While they observed the general rules of hygiene

6. Later manufactured by Hommel A. G. Zurich, Switzerland, under the name of Tonospasmin.

7. Rothschild, F. and Meili, C.: Experimenteller Beitrag zur Behandlung der Hypertonie, Helvet. Med. Acta. 6:255-263 (May) 1939.

indicated in hypertension, including dietary restrictions, and used the drug intermittently for certain periods they did not develop any severe complications during the period of observation, which varied from several months to several years.

In contrast to this group, the subsequent course of the patients who did not show any improvement in the fundus while taking the drug regularly was less favorable. The slight reduction in blood pressure and improvement in subjective symptoms noted at first were not of long duration. As soon as the drug was discontinued, and sometimes while it was still being taken, the blood pressure would rise again, and eventually the various complications of progressive hypertension developed.

It would seem, therefore, that in an early stage of hypertension, when the increased tonicity of the arterioles is still purely functional and is reversible, the use of antispasmodic drugs would be of value. When the increased tonicity has existed for a considerable time, anatomical changes must take place in the walls of the vessels, making it impossible for them to relax. We may call this the fixed stage of hypertension. Patients in this stage do not respond to medication, and before long will develop serious complications.

So far the discussion has applied only to the cases of hypertension with vascular changes in the retina but without secondary changes causing albuminuric or hypertensive retinitis and neuroretinitis. In cases with these secondary changes the etiology of the hypertension is of great importance in the prognosis.

Some cases based on transitory endocrine disturbance improve remarkably. I observed a case of well developed neuroretinitis in a patient with climacteric hypertension which cleared up completely. The patient recovered and was still feeling well ten years after the first observation.

In the cases of neuroretinitis from essential, hereditary hypertension all depends on whether the normal function of the kidneys can be maintained. If the urine and blood chemistry are normal the retinitis may clear up and the patient's general condition improve for a number of years. If the retinitis is combined with deficient function of the kidneys and retention of nitrogen, a toxic factor is added to the primary hypertension and the prognosis is bad.

In neuroretinitis resulting from toxic hypertension, as in infectious glomerulonephritis and pregnancy, the course depends entirely on the extent to which the toxic factor can be eliminated.

Summary

In patients with arterial hypertension the ophthalmoscopic examination, repeated at regular intervals while the patient is under treatment, gives important information as to the stage of hypertension present. By demonstrating whether the increased tonicity of the arterioles is reversible or fixed, the examination of the fundus furnishes invaluable hints as to the prognosis.

When retinitis or neuroretinitis is present, the prognosis depends largely on the etiology of the hypertension and on the function of the kidneys.

THE NEED FOR WIDESPREAD WHOOPING COUGH IMMUNIZATION

ROBERT B. LAWSON, M.D.

WINSTON-SALEM

During the past few years tremendous strides have been made in the control of the contagious diseases of childhood. Smallpox has nearly been wiped out through almost universal vaccination. Diarrhea and enteritis persist, but the cases are few in comparison to the number a generation ago. The results of diphtheria control are evidenced by the falling mortality rates. At the present time, however, a program of whooping cough control is not well established and should be considered a prime objective by everyone interested in public health and infant care. Whooping cough is now a leading cause of death in infancy and early childhood. Although the incidence of the disease is highest in the preschool years, the case fatality rate is highest in infancy. Approximately 95 per cent of all deaths from whooping cough occur in children under 2 years of age. In those infants who survive the prolonged illness and debility characteristic of whooping cough there may be permanent cerebral damage and bronchial damage leading to bronchiectasis.

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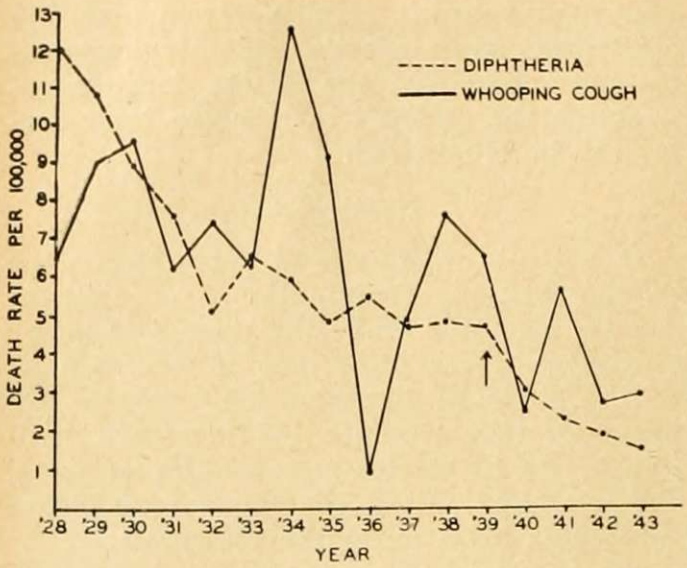


Fig. 1

Figure 1 shows the comparative mortality rates from whooping cough and diphtheria in North Carolina for the past sixteen years. We can see that in 1935 the falling diphtheria rate reached a relative plateau, where it remained until 1939. At that time the state legislature passed a law requiring immunization of all children against diphtheria before the age of 1 year*. I believe there is no doubt that this law and the increased effort on the part of health officers which was stimulated at that time have caused the very satisfactory decline in the death rate, which should continue to an even lower figure.

It is difficult to compare whooping cough with diphtheria, for there are wide yearly fluctuations in the morbidity rates which, of course, are reflected in the mortality rate. In this disease also there has been a trend toward lower death rates in recent years, but I believe that we may expect a jump in the morbidity and mortality rates in the next year or two, since there are a large number of infants and small children who are not immune. In order to prevent such peaks in the incidence of the disease we must now reexamine whooping cough control in the light of present knowledge.

The obvious ways to cut down the mortality rate are: (1) Improved treatment of the infected patient, (2) prevention of contact infection, (3) widespread immunization of susceptible children. Since this paper is primarily concerned with the last method, the first two will be mentioned only superficially.

The therapy of whooping cough has been improved to a great extent by the proper use of the sulfonamides in the treatment of the complicating pneumonia. Although Hemophilus pertussis is not affected by the sulfonamides, the secondary invaders usually are. Specific treatment of pertussis may be carried out with hyperimmune human serum[1] from the Philadelphia Serum Exchange or hyperimmune rabbit serum. The use of pertussis vaccines or antigens has not been proven to have significant effect on the disease once it has been acquired. One important aim of treatment is to maintain adequate nutrition. This implies an adequate diet fortified with extra amounts of ascorbic acid and the B complex vitamins.

Attempts to prevent contact between patients with whooping cough and susceptible children must be continually carried out. Particular care must be taken to isolate infected children from small infants in the same household. Unfortunately, many practical obstacles interfere with this method of prevention, the most important of which is that the cases are not usually diagnosed until the whoop appears. Thus, for a period of one to three weeks, the infected child may spread the organism around. Once the child begins to whoop, the incidence of positive cultures rapidly declines, and it is seldom that a positive culture can be picked up even by the best methods (nasopharyngeal swab) after the sixth week of the disease[2].

It is apparent that the only satisfactory method of decreasing the mortality and morbidity from whooping cough is to increase the general immunity of preschool children by the method of widespread immunization which has been so successful with diphtheria. The value of immunization has been clearly demonstrated. The early studies on whooping cough immunization were not well controlled or dealt with too small a series to be significant. However, there are now enough good papers on this subject to show that immunization with 85 to 100 billion freshly isolated, killed pertussis organisms, given in divided doses, will protect 80 to 85

* The 1945 legislature passed a law making immunization against whooping cough compulsory for children under 1 year of age.

1. McGuinness, Aims C., Armstrong, Janet G., and Felton, Harriet M.: Hyperimmune Whooping Cough Serum, J. Pediat. 24:249-258 (March) 1944.
2. Miller, J. J., Jr., Leach, C. W., Salto, T. M., and Humber, J. B.: Comparison of the Nasopharyngeal Swab and the Cough Plate in the Diagnosis of Whooping Cough and Hemophilus Pertussis Carriers, Am. J. Pub. Health 33: 839-843 (July) 1943.

per cent of exposed children, whereas only 10 to 15 per cent of non-vaccinated children will escape[3]. It should be made clear that it takes about two months for immunity to develop, and therefore vaccination will not be effective after exposure has already taken place. In such an event, hyperimmune human or rabbit serums are the only proven prophylactic agents.

Although the value of whooping cough immunization is generally accepted, there is some difference of opinion regarding such details as the type of material, the total dose, the time interval between injections, and the age at which immunization should be done. The consensus of opinion is that the method of culture and preparation of the vaccine makes little difference if it is prepared from several phase I strains. The value of toxoids prepared from pertussis toxin has not been established. However, laboratory studies and clinical trials being carried out now indicate that whooping cough immunization may be carried out concurrently with diphtheria and tetanus immunization by the use of a mixture of pertussis vaccine with alum or aluminum hydroxide precipitated diphtheria and tetanus toxoids[4]. The details of such a mixed immunization, which has much to recommend it, are not fully worked out at the present time.

Dosages totaling as much as 120 billion organisms have been used, but apparently 85 billion organisms are sufficient for the primary course of immunization. Although earlier schedules called for weekly doses, it is apparent that a two to four week interval between doses provides more lasting immunity.

The difference of opinion regarding the age at which immunization should be started arose from the recognition of the fact that immunization before 6 months of age does not give as lasting an immunity as does later immunization. On the other hand, the fact that the highest fatality rate is in infants younger than 6 months suggests the desirability of earlier immunization. It will help to clarify our thinking on this subject if we recognize that we can protect an infant from whooping cough in two ways: first by having him immunized, and second by reducing the incidence of whooping cough in possible contacts—that is, in the rest of the neighboring child population—so that his chances of exposure are reduced. Although an infant may be protected to some extent by early immunization, his best protection would be the absence of whooping cough in his older contacts. A public health program which stresses early immunization in order to cut down the mortality rate in infants under 1 year of age may result in a continued high incidence of whooping cough in preschool and school children, because of the shorter period of immunity. Although the fatality rate is not high in children of this age, whooping cough brought home by these older children will endanger the infants who have not been immunized. I believe, therefore, that from the public health point of view it is more rational to immunize after 6 months of age and to rely on the lowered incidence of whooping cough in the child population to protect the infants under 6 months.

We do, however, suggest a different program for the private physician who is responsible for an individual infant rather than the general population. In private practice I believe that earlier immunization is justified if the infant's immunity is re-stimulated by a booster dose of vaccine at 1 year and possibly another at 2 years of age to maintain his immunity. With these points in mind, we suggest the following schedules of immunization:

Schedules for Whooping Cough Immunization

Phase I Vaccine (10, 15, or 20 Billion Organisms per Cubic Centimeter)

Dose	*10 Billion/cc.*	*15 Billion/cc.*	*20 Billion/cc.*
First	10 billion (1 cc.)	15 billion (1 cc.)	10 billion (0.5 cc.)
Second	20 billion (2 cc.)	30 billion (2 cc.)	20 billion (1.0 cc.)
Third	25 billion (2.5 cc.)	45 billion (3 cc.)	25 billion (1.25 cc.)
Fourth	30 billion (3 cc.)		30 billion (1.5 cc.)
Total	85 billion	90 billion	85 billion

Interval between injections: 2 - 4 weeks

Age at institution of immunization:

For general use when follow-up is uncertain, 6-8 months

For private patients with good follow-up, 4 months, with "booster" doses of 10 billion organisms at 1 and 2 years of age.

3. (a) Singer-Brooks, C. H.: Controlled Study of Pertussis Prophylaxis: Comparison of Phase I, H. Pertussis Vaccine with Undenatured Bacterial Antigen, J. Pediat. 14:25-38 (Jan.) 1939.
   (b) Rambar, A. C., and others: Studies in Immunity to Pertussis; An Evaluation of Pertussis Vaccination by Clinical Means and by the Opsonocytophagic Test, J.A.M.A. 117:79-85 (July 12) 1941.
   (c) Coppolino, John F.: Pertussis Prophylaxis, J. Pediat. 21:348-352 (Sept.) 1942.
4. Miller, John J., Jr., Humber, J. B., and Dowrie, James O.: Immunization with Combined Diphtheria and Tetanus Toxoids (Aluminum Hydroxide Adsorbed) Containing Hemophilus Pertussis Vaccine, J. Pediat. 24:281-289 (March) 1944.

Summary

1. Whooping cough is a major cause of death in infancy.
2. Immunization against whooping cough is practicable and produces complete protection against the disease in 85 per cent of exposed children, and partial protection in most of the remaining 15 per cent.
3. Public health officials and private physicians are urged to promote universal immunization against whooping cough[5].

5. Lapin, Joseph H.: Whooping Cough Control, J. Pediat. 24:331-334 (March) 1944.

Abstract of Discussion

Dr. G. M. Cooper (Raleigh): The State Board of Health has been supplying free diphtheria toxoid for the last eight years. I think that the legislature should make a provision for our laboratories to furnish all of these vaccines free of charge. So far, they have not done it.

Dr. H. C. Whims (Newton): How can we best fit in whooping cough immunization with our present typhoid clinic? I don't see how we can give the doses two or three weeks apart.

Dr. Lawson: I believe it is more practicable to carry out the whooping cough immunization in connection with the well-baby clinics, where they are established. (Parenthetically, I think that such clinics should be established in connection with every public health unit.) Children seen in typhoid clinics are beyond the age when whooping cough immunizations are of most value. However, it is better to give immunizations a week apart than to give no immunization.

THUMBNAIL SKETCHES OF EMINENT PHYSICIANS

JOSIAH C. TRENT, M.D., *Editor*

DURHAM

THE EVOLUTION OF THE ASEPTIC PRINCIPLE

IV

SIR JOHN PRINGLE (1707-1782)

Pioneer in Antiseptics

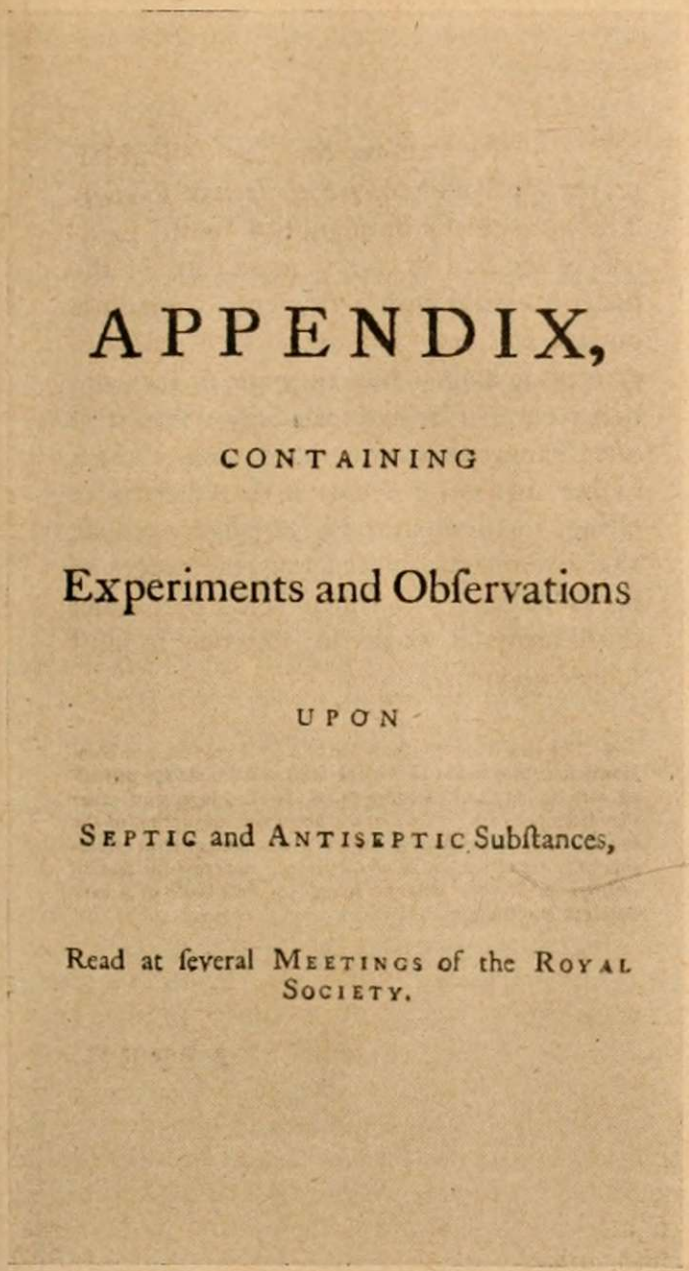
Before Pasteur numerous investigators attempted to fathom the mysteries of infectious disease, wound suppuration, and putrefaction. Each one, although handicapped by his chronological place in history, contributed something to the knowledge of the subject which enabled the next man to go a step further. Thus far we have discussed the early therapy of wounds, the discovery of bacteria by Leeuwenhoek, and the refutation of the theory of spontaneous generation by Redi—all important links in the development of our modern aseptic ritual.

In the seventeenth century Francis Bacon called the inducing or accelerating of putrefaction "a subject of very universal inquiry," and said: "It is of excellent use to inquire into the means of preventing or staying putrefaction; which makes a great part of physic and surgery."[1] It was not until the middle of the eighteenth century, however, that the cause and effects of putrefaction again attracted the attention of scientific observers. The most distinguished of these observers was Sir John Pringle, a pioneer in the antiseptic idea.

Pringle, a Scotchman born in 1707, the youngest son of a nobleman, received his preliminary education at St. Andrews University and his medical education at Leyden, under Boerhaave and Albinus. After returning to Edinburgh he was made Professor of Pneumatics and Moral Philosophy at the University; nevertheless he continued to practice medicine until 1742, when he was appointed physician to the Earl of Stair, who then commanded the British Continental Army. Through the Earl he was made physician to the military hospital in Flanders, and from 1744 to 1758 served as physician-general of the army. He was made a Fellow of the Royal Society in 1745 and served as president of this famous society from 1772 to 1778. He died of apoplexy in 1782.

During his military service he made a careful study of the diseases prevalent in the army, and in 1752 he published his *Observations on the Diseases of the Army.* In this work, which revolutionized military medicine throughout Europe, he laid down the true principles of military sanitation, especially with regard to the ventilation of hospital wards. Pringle is also credited with

1. Quoted by Pringle.



APPENDIX,

CONTAINING

Experiments and Obſervations

UPON

SEPTIC and ANTISEPTIC Subſtances,

Read at ſeveral MEETINGS of the ROYAL SOCIETY.

Fig. 1. Pringle's complete work on antiseptics, "Experiments and Observations upon Septic and Antiseptic Substances," was published as an appendix to his Observations on Diseases of the Army, London, 1752. (Author's collection)

having originated the Red Cross idea. It was at his suggestion, about the time of the battle of Dettingen (1743), that "the Earl of Stair proposed to the Duke de Noailles that the hospitals on both sides should be considered as sanctuaries for the sick and mutually protected."[2] This idea was not pursued to its logical end until the International Red Cross was brought into being through the efforts of Henri Dunant a hundred years later.

After returning from his military post Pringle conducted a series of investigations on septic and antiseptic substances, the results of which he communicated to the Royal Society in 1750-1752. They were first printed in the "Transactions" of that society, but were later enlarged and published as an appendix to his *Diseases of the Army* under the title "Experiments and Observations upon Septic and Antiseptic Substances" (fig 1). He states that he was "led to make some experiments and remarks on this subject, from my having had an uncommon number of putrid distempers under my care in the hospitals of the army."[3] In some forty-eight experiments Pringle completely disproved the prevalent theory that alkaline salts promoted putrefaction. By adding various salt mixtures to bits of beef he was able to ascertain their relative preservative values. His results were summarized in the following table:[4]

Sea salt	1
Sal gemmae	1+
Tartar vitriolated	2
Spiritus Mindereri	2
Tartaris Solubilis	2
Sal Diureticus	2+
Crude Sal Ammoniacum	3
Saline mixture	3
Nitre	4+
Salt of Hartshorn	4+
Salt of Wormwood	4+
Borax	12+
Salt of Amber	20+
Alum	30+

He continued his experiments, using gums, resins, acids, wine, beer, bile and other substances to inhibit putrefaction in various materials such as human blood, bread, milk and crabs' eyes. For his highly original work he received the Copley Gold Medal.

Pringle's experiments were of such excellence that they warranted Pasteur's careful study one hundred years later[5]. Although it is obvious from a review of Pringle's papers that he had no true conception of the cause of the putrefactive process which he was studying, the original observations which he made perhaps helped to lay the foundation upon which such a magnificent superstructure was brought to completion a little more than a century later by the immortal Pasteur.

J. C. T.

2. Observations on Diseases of the Army, London, 1752, preface, p. viii.
3. Ibid, p. 367.
4. Ibid, p. 376.
5. Sigerist, Henry E.: An Autograph Note of Louis Pasteur, Bull. Inst. Hist. Med. 4:153-157 (Feb.) 1936.

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APRIL, 1945

GUEST EDITORIAL

THE PROBLEM OF CANCER

CARL V. REYNOLDS, M.D.

State Health Officer

From 1934 through 1944 cancer was the primary cause of 22,130 deaths in North Carolina, a number equal to half the population of a modern city of 44,000. During this period, cancer rose from eighth to fourth among the leading causes of death in this state, having passed tuberculosis in 1937.

The 1934 cancer death rate was 53.7 per 100,000 inhabitants, as compared with 63.8 in 1943. While the rate for 1944 dropped to 61.6, according to the provisional report, this cannot be taken as even an indication of a downward trend, as there have been frequent minor fluctuations but a sustained upward trend in recent years. Hence, the slight decline noted last year offers no reason for encouragement.

From 1934 through 1944, tuberculosis in all forms was responsible for 19,697 deaths in North Carolina. Not only was this total smaller than the total for cancer deaths, but the incidence of tuberculosis, as reflected in vital statistics reports, continued to decline, while the incidence of cancer continued to increase.

In 1934, when the cancer death rate in North Carolina was 53.7 per 100,000 inhabitants, the tuberculosis death rate was 64.8. By 1943, the cancer mortality rate had risen to 63.8, while the tuberculosis rate had dropped to 39.4. Last year it reached a new low of 36.5.

As late as 1916, tuberculosis was the leading cause of death in North Carolina. It now ranks eighth, with cancer fourth. Heart diseases now rank first among the causes of death in North Carolina, followed by cerebral hemorrhage and nephritis, in the order named—then cancer.

North Carolina has spent hundreds of thousands of dollars building, equipping and staffing sanatoria for the treatment of tuberculosis, and every dollar thus spent has been a wise investment. But what can we say about our efforts in behalf of cancer control? Admittedly, cancer presents a more difficult problem than tuberculosis, as cancer is controllable only in the early stages—hence the necessity for early diagnosis and treatment in any cancer control program. Of course, tuberculosis also should be diagnosed and treated in its early stages.

For cancer, there is no known method of prevention, no certainty as to its cause. There also was a time when tuberculosis appeared to be neither curable nor preventable, and the progress we have made in combatting this wasting disease rests upon early diagnosis and treatment and the expenditure of money and effort to provide proper treatment.

Our present method of attack on cancer includes search for the disease in its early stages, early diagnosis, and surgery.

The two present methods of approach to the problem of cancer control are: (1) through independent groups dedicated to control programs, but limited in scope and effectiveness; (2) through a recognized state agency, preferably the department of public health, which in North Carolina now serves

more than 95 per cent of the state's population and is staffed by qualified personnel who are in a position to locate early cases of cancer and refer them to the proper clinics already in operation. This approach would necessitate some financial appropriation, for it is through the medical profession that we desire to have patients examined and referred to physicians for medical and surgical care, under a plan similar to that now working so well along other lines.

The problem of cancer is a responsibility which, sooner or later, must be met.

* * * *

POLITICS AND MENTAL HYGIENE IN NORTH CAROLINA

Although the members of the 1945 legislature may not realize it, they have given the program of mental health in North Carolina such a setback that it will take years for it to recover—if it ever does. They have also given the doctors of North Carolina a grim warning of what may be expected if the practice of medicine is ever placed under political control. The story was told briefly by the Associated Press correspondent on March 20:

> The House . . . passed a bill providing for a new 15-member State hospitals board of control to be appointed for staggered terms by the Governor. The new board will be appointed from the State's 12 congressional districts with three members at large. The measure also provides that the hospitals board business manager be appointed for a six-year term instead of two.

The story behind this bill should be of interest to all doctors and taxpayers. It began with the melodramatic newspaper articles written by an ex-patient of the Morganton hospital, which prompted Governor Broughton to appoint a five-member board of inquiry to investigate conditions at this hospital and to offer recommendations for improving conditions in all our state hospitals for mental disease[1]. The report submitted by this board on August 6, 1942, recommended, among other things, "consolidation and coordination of the control of State Mental Hospitals in North Carolina under a unified central board, of which the Secretary of the State Board of Health shall be an ex-officio member; the Board to be comprised of fifteen members appointed by the Governor and representative of the Piedmont, the Eastern and the Western sections of the State—one woman and four men being chosen to represent each section; the term of appointment being for five years and staggered so that the term of one member from each of the divisions shall expire each year."

The provision for making the terms of appointment five years and staggering them so that only three would expire each year was inserted after mature deliberation, in order to keep this unified board, so far as was humanly possible, free from political domination. The members of the board of inquiry all recognized the grave dangers inherent in making this over-all board a political football, to be kicked about by every incoming governor at will.

The board of inquiry also recommended that the central board should select a general superintendent of mental hygiene, and that he should "hold office at the pleasure of the Hospitals Board of Control, or until a successor shall be appointed and qualify." The commission appointed during the Ehringhaus administration, and headed by Dr. Frederic M. Hanes[2], also recommended a general director of mental health for the state. Neither the Hanes commission nor the board of inquiry, however, recommended a general business manager. Both these groups felt that a business manager for each institution was enough.

Much of the good intention of the board of inquiry was nullified by the 1943 legislature, when it (1) specified, before the office was filled, that the general superintendent of mental hygiene should be employed for only two years "unless sooner removed . . . for incompetence or misconduct."

(2) Inserted the standard provision that the governor should have the power to remove any member of the board when he pleased, and should "not be required to give any reason for such removal."

(3) Provided for a general business manager, and set up a system of dual control, with authority divided between the business and the professional administrations.

The first and second provisions were discussed editorially in the January issue of the NORTH CAROLINA MEDICAL JOURNAL[3]. The third was a source of constant friction at the Morganton hospital. Any request from the superintendent to a non-professional

1. The Report of the State Hospital Investigation Board, Editorial, North Carolina M. J. 3:505-506 (Sept.) 1942.
2. The Morganton Investigation, Editorial, North Carolina M. J. 3:199 (April) 1942.
3. Mr. Oldham—Right and Wrong, Editorial, North Carolina M. J. 6:40 (Jan.) 1945.

employee, even for something so simple as the repair of a leaky faucet, was apt to be met with a surly refusal—in which the employee might be upheld by the business manager. The climax came when the business manager resigned and the executive committee—over the protest of the general business manager, who insisted that the appointment was his prerogative—elected a successor. This action of the executive committee was approved by the full board.

The next chapter in the story was the introduction of Senate Bill No. 170 by Senator O'Berry of Goldsboro. This bill provides for a new board of control, to be appointed by the governor. The very transparent subterfuge was used that every section of the state would have better representation by the selection of one member from each congressional district than by the present arrangement of dividing the appointments equally among the eastern, the central, and the western sections of the state. The real purpose of the bill, however, is contained in the section which provides that the term of the general business manager shall be increased from two to six years, and that he "shall have full supervision over the fiscal management, custodial operations, and . . . the physical properties and equipment of the institutions. All personnel or employees of said institutions engaged in any aspect of the business management . . . shall be responsible to the supervision and direction of said General Business Manager." In order to insure that the board of control shall not interfere with the general business manager's authority, further provision is made that the business manager at each of the institutions shall be appointed by the general business manager and shall function "under the direction and control of the General Business Manager. He may be removed by the General Business Manager for incompetence or misconduct."

The members of the legislature would have done well to read at least the summary and recommendations of the Hanes commission's report. On pages 358-361 are listed the minimum standards for state hospitals adopted by the American Psychiatric Association. The first three are as follows:

> 1. The chief executive officer must be a well-qualified physician and experienced psychiatrist **whose appointment and removal must not be controlled by partisan politics.**
>
> 2. All other persons employed at the institution **ought to be subordinate to him** and subject to removal by him if they fail to discharge their duties properly.
>
> 3. The positions and administration of the institution **must be free from control for the purposes of partisan politics.**

It took no prophet to foresee some of the results of the O'Berry bill. Already Dr. Owen and Dr. Saunders have resigned as superintendents of the state hospitals at Raleigh and Morganton, and many of the physicians on the already depleted staffs will also get out. Their places will be hard to fill, for psychiatrists are the most sought-after men in the medical profession. According to Dr. Lawrence S. Kubie, Special Consultant to the Army Air Surgeon, the present lack of trained psychiatrists is "the most critical manpower shortage in the country today."[4] Although there is a need for twenty thousand trained psychiatrists, only three thousand are available. The legislators should have been warned by the very fact that, while there were nine well qualified applicants for the business manager's place at Morganton, all efforts have failed to secure enough physicians to replace the members of the medical staff who have died within the past year.

It will be impossible to persuade a first-rate psychiatrist, unless he has in him the stuff of which martyrs are made, to accept the position of general superintendent of mental hygiene under the proposed arrangement. Last fall a prominent psychiatrist in another state who was asked to consider the position said, in a letter declining the offer:

> You will find that most medical people with sound administrative training will approach any relationship with a business manager very cautiously. I do not believe that a double-headed organization can operate hospitals. This is particularly true in mental hospitals because every financial move is directly related to the welfare of the patients and this applies to such gross expenditures as new construction as well as to such details as the repairing of hospital linen with the assistance of patients. I know that most physicians are poor business people and that they do not operate hospitals as economically as factories. The trouble is hospitals are not factories and also cannot be operated economically. Such a relationship will make a great many experienced people shy of your situation.

The first board of control was composed of men and women who served at real personal sacrifice, because they were interested in the welfare of the state's mentally sick people. This board had been in existence just long enough to begin to understand and appreciate the problems involved in the man-

4. The Psychiatric Bottleneck, Editorial, New York Med. 1: 4:9 (Feb. 20) 1945.

agement of our institutions and to take pride in the slow but sure progress made toward bettering the lot of the psychotic patient. The next few years should have greatly enhanced the usefulness of this board. With haste that borders on bad manners, however, the amended bill, as finally adopted, provides that the old board should go out of office on April 1. Is it too frivolous to apply to the situation the old rhyme,

> Since I was so soon done for,
> What was ever I begun for?

Doubtless most of the members of the legislature are honest men who tried sincerely to do their best for the welfare of the state. The passage of the Mitchell bill (for which Dr. Maurice H. Greenhill of Duke University deserves a large share of the credit), bringing up to date many of the laws regulating our institutions for mental patients, was a long step forward. It is a tragedy that the legislators were misled into taking a much longer step backward. The mentally afflicted of North Carolina will pay dearly for the action of "a little group of wilful men." This lesson should warn physicians and their patients alike what may be expected under medical practice controlled by politicians, whether state or federal.

* * * *

AUSTRALIA'S EXPERIENCE WITH GOVERNMENT MEDICINE

This journal recently[1] quoted the *South African Medical Journal* in refutation of a statement made by Miss Amy Porter in *Collier's* for January 27, to the effect that "The organized doctors of Great Britain strongly favor more, rather than less, compulsory insurance."

Another dissenting opinion, and a very able one, is found in the *Medical Journal of Australia* for January 6, in the address of David Roseby, retiring president of the Victorian Branch of the British Medical Association. The address is devoted largely to the efforts of Australian organized medicine to withstand the encroachments of the government on the practice of medicine.

> There is one theme which flowed throughout every event of the year as a Wagnerian **Leitmotif**—it was our struggle for freedom—freedom to carry out our daily tasks according to the traditions of practice which have existed for thousands of years. As a counter melody there has been our determination to see . . . that nothing but the very best in our power is good enough for the citizens of our country.
>
> We had been promised by the former government that while war was being fought we were not to have interference with the conditions of practice . . . A succeeding government claimed, however, that the promise of the former government did not hold good. "You see," they say, "an election has been held since that promise was given. There is a new government and a new minister." In vain we said that it was the same party in power, and the same persons were cabinet ministers . . . The result was the **Pharmaceutical Benefits Act** and all that followed it.

The Pharmaceutical Benefits Act set up a standard formulary which must be used by the doctor in prescribing for his panel patients. If any preparation outside the formulary is prescribed, or any ingredient added or increased in amount, the "so-called free bottle of medicine is to be charged at the cost of the whole of the ingredients." Those doctors who like to mix their prescriptions, as Whistler said he mixed his paints, "with brains," would have to follow the fancy of some government pharmacist instead. It is rather hard to visualize American doctors allowing Messrs. Wagner, Murray and Dingell to prescribe for them the medicines they may give their patients.

Dr. Roseby reminds his colleagues that "there are penalties in the act," and proves his point by quoting from "The New Despotism," a book by the late Lord Hewart, Lord Chief Justice of England:

> As an example of present despotic bureaucracy, consider the treatment of panel doctors under the National Insurance Acts which is "pure despotism". The doctors are liable, at the mere discretion of the official who acts for the Minister of Health, to be ruined professionally by being struck off the panel, or as a lesser punishment, to be fined to an arbitrary extent. In one instance, a fine of one thousand pounds was imposed on two doctors who carried on business in partnership. "Excessive prescribing", an offence wholly unknown to the law, which consists in prescribing for the patient medicines which are too expensive in quality or too liberal in quantity, is one of the things for which a doctor may be penalized. One might think that for a person who is bound by law to insure and pay contributions under the acts, the best medicine ought to be prescribed in illness . . . One might wonder whether, in this matter, the interests of patients are adequately taken into consideration.

In commenting on the advantages claimed by the politicians for doctors in government medical service, Roseby tartly says:

> I recently attended a meeting of government medical officers in this State, where salaries only were under consideration. My only comment, guarded, of course, is that I wish that any young medical graduate who contemplates a government job could have heard the remarks of those already in the service.

Could it be that Miss Porter was misinformed?

1. British Doctors and Compulsory Insurance, Editorial, North Carolina M. J. 6:101 (Feb.) 1945.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

BOWMAN GRAY SCHOOL OF MEDICINE
OF WAKE FOREST COLLEGE
WINSTON-SALEM

Presentation of Case

First admission

This 50 year old farmer entered the hospital for the first time on December 1, 1942, complaining of fever of three months' duration. Nineteen years prior to admission he had had migratory polyarthritis, with hot swollen joints, which had kept him in bed for ten weeks. He was told at that time that his "heart was in bad shape." Six years before admission he noted mild dyspnea on exertion. A year later he went "acutely insane" for ten months, but recovered completely. The onset of the present illness was marked by diarrhea, with about eight black foamy stools a day, and by fever without chills. The diarrhea lasted ten days and was accompanied by anorexia but not by vomiting or nausea. His family physician made blood smears and told him that he had malaria. He was given white tablets to take three times a day, but had noticed no improvement at the end of a week. He continued to have fever in the afternoon, sometimes as high as 103 F. He noted a tender erythematous eruption on the face, with a butterfly distribution.

The patient stated that in order to supplement his income, he had helped a butcher for several years. Some of the cattle had been condemned by the health department as having Bang's disease. He frequently boarded some of these "skinny animals" until they fattened up. A short time before the onset of the present illness he had butchered a sick female goat which "would not catch."

Physical examination showed the temperature to be 100.4 F., the pulse 100, respiration 20, blood pressure 120 systolic, 55 diastolic. There was an indurated erythematous butterfly-shaped eruption across the malar prominences and the nose. There were two abdominal masses. One was in the left upper quadrant and extended down to the level of the umbilicus; it was thought to be the spleen. The other was felt in the right upper quadrant and extended three fingers' breadth below the right costal margin; this was taken to be the liver.

Accessory clinical findings: Examination of the urine was negative. The blood showed 9.9 Gm. of hemoglobin, 4,180,000 red blood cells, 5,100 white blood cells, with 33 per cent polymorphonuclears, 61 per cent lymphocytes, and 5 per cent monocytes. The sedimentation rate was 18 mm. in one hour. A blood smear showed signet ring forms of malarial parasites. The Kahn test was negative. Blood cultures showed no growth. Examination of the spinal fluid yielded no pathological findings. Agglutination tests for brucellosis, typhoid, paratyphoid A and B, tularemia, and Shiga and Flexner types of dysentery were negative. A brucellergin skin test was negative. A biopsy of the left epitrochlear lymph node revealed only fatty tissue. Examinations of the stools were negative.

Course in hospital: The temperature curve was of an irregular spiking type, with peaks reaching 103 F. Forty-eight hours after the patient was put on quinine and plasmochin his temperature reached 99 F. and remained there for forty-eight hours, but began to spike again soon thereafter. The patient was discharged after two weeks. He was told to continue quinine sulfate and to return to the outpatient department in two weeks for further observation. He was seen on January 7, 1943, in the outpatient clinic and reported that he had continued to have fever. He had had several episodes of epistaxis.

Second admission

His second admission was on January 24, 1943. He had continued to have fever, and one week before admission experienced a severe chill which lasted several hours. Since the previous admission his upper teeth had been removed. An indurated erythematous rash had been present on his elbows and upper arms for two weeks. He had had a recurrence of diarrhea and fever.

On *physical examination* a circumscribed maculo-papular rash, which was angry red in color and blanched very easily, was seen distributed over the shoulders, back and lateral aspects of the arms. The heart was not enlarged. There was a fairly harsh, blowing systolic murmur at the aortic area, and a high pitched, blowing diastolic murmur was heard down the left sternal border when the patient was in the upright position. This was not present constantly. The remainder of

the findings were as described on the previous examination.

Accessory clinical findings: The hemoglobin was 7.5 Gm. and there were 3,000,000 red blood cells and 4,200 white blood cells with 36 per cent polymorphonuclears, 6 per cent eosinophils, and 58 per cent lymphocytes. Repeated blood cultures were negative.

Course in hospital: The patient was given a course of sulfadiazine; he developed a febrile response to the drug, however, and it was discontinued. Sternal biopsy revealed erythroblastic hyperplasia of slight degree. The diastolic aortic murmur could be heard only on a few occasions. X-ray examination of the chest revealed only slight cardiac enlargement. The patient continued to run an irregular spiking temperature curve, and was discharged unimproved after a hospital stay of forty-two days.

Third admission

The third admission was on May 24, 1943. The patient had continued to run fever and had had intermittent diarrhea and anorexia since discharge. He had also had four attacks of paroxysmal nocturnal dyspnea. The remainder of his teeth had been pulled. The physical findings were essentially the same as on previous admissions.

Accessory clinical findings: There were 6.7 Gm. of hemoglobin, 3,600,000 red blood cells and 5,850 white blood cells with 73 per cent polymorphonuclears, 19 per cent lymphocytes, and 7 per cent monocytes. Blood cultures made aerobically, anaerobically and under 10 per cent carbon dioxide tension were sterile. An x-ray of the chest showed increased cardiac enlargement of aortic configuration. There was generalized accentuation of the bronchial and vascular markings throughout both lung fields without specific characteristics. The electrocardiogram was normal.

Course in hospital: The temperature curve spiked up to 104 degrees F. On June 5, 1943, peritoneoscopy was performed and a section of the spleen was removed for biopsy. A few hours later the patient went into shock. He vomited several times. The abdomen was tender; muscle spasm was present and peristalsis was absent. The pulse rate went to 145 per minute, and the patient was cold, cyanotic, and sweating profusely. He died eighteen hours after operation.

Discussion

DR. ROBERT L. MCMILLAN: The terminal event in this patient's life seems to have been massive hemorrhage into the peritoneal cavity, with irreversible shock and death. The source of the hemorrhage was the site of the incision made in the spleen through the peritoneoscope. It is worthy of mention that bleeding from such incisions done in this manner is obviously very difficult to control.

Several features stand out in the history, physical findings and laboratory data. Undoubtedly one point of great significance is the aortic diastolic murmur. As was noted in the summary, this murmur was distinctly heard by numerous investigators on one day and was inaudible on the next. Nineteen years before admission, at the age of 31, the patient had what seems to have been typical rheumatic fever, and was told that he had heart disease. For the past six years the patient had had dyspnea on exertion. One may thus presume that he had rheumatic endocarditis.

Of further interest in connection with this heart murmur are the recurring fever and the butterfly-shaped eruption over the nose and face, which suggest the possibility of disseminated lupus erythematosus with verrucous endocarditis. One could hardly doubt the diagnosis of disseminated lupus erythematosus with such an adequate description of the typical butterfly lesion. However, it should be recalled that this patient presented no evidence of mitral stenosis, which is the typical valvular lesion in the rare cases of verrucous endocarditis. Involvement of the aortic valve alone by this process has not been described, and the 4 instances of aortic valve involvement in a total of 23 cases of verrucous endocarditis described by Gross[1] exhibited lesions of the aortic valve demonstrable only by microscopic means and hence not capable of producing the murmur of aortic insufficiency. Therefore, we may eliminate verrucous endocarditis as a cause of this patient's endocardial lesion.

Such a diastolic murmur arising as the result of a partially ruptured aorta or dissecting aneurysm of the aorta would almost certainly be associated with pain in the chest and hypertension, neither of which was present in this case. The facts that the illness was of nine months' duration, was febrile in

1. Gross, L.: Cardiac Lesions in Libman-Sacks Disease, with Consideration of Its Relationship to Acute Diffuse Lupus Erythematosus, Am. J. Path. 16:375-408 (July) 1940.

character, and was associated with enlargement of the spleen would further rule out these possibilities. Another lesion of kindred type which produces a diastolic murmur arising in the aortic valve is perforation of an aortic cusp. This, however, gives rise to an extremely loud diastolic murmur generally heard over the entire mid-precordium and most often of grade IV to grade VI intensity, according to Levine's classification of heart murmurs. This was not present in this case.

This patient presented the following evidences of subacute bacterial endocarditis: chills, fever, anemia, splenomegaly, diarrhea, epistaxis, a progressive unremitting illness, and an inconstant murmur typical of aortic insufficiency. In the great majority of cases of bacterial endocarditis the lesion occurs in one of the valves on the left side of the heart —that is, either the aortic or the mitral valve. Against the diagnosis of subacute bacterial endocarditis are the negative blood cultures, the leukopenia, and the clinical evidence of disseminated lupus erythematosus. The finding of negative blood cultures in subacute bacterial endocarditis is not unusual. If the disease is suspected clinically one should obtain blood cultures two or three times a day for four or five consecutive days. By this means, and by inoculating various culture media both aerobically and anaerobically it is more often possible to obtain positive blood cultures. Streptococcus viridans frequently cannot be cultured from blood taken when the patient's temperature is quite high, but may appear in cultures of blood taken when the temperature is normal or subnormal. In general the best time to obtain blood for cultures in suspected cases of bacterial endocarditis is just as the temperature begins to rise.

In light of the above reasoning, it seems that the greatest weight of evidence is in favor of this patient's having had subacute bacterial endocarditis. It is probable that these bacterial vegetations were superimposed on a rheumatic lesion of the aortic valve which resulted from the rheumatic fever nineteen years previously.

There are two other points in this case which demand clarification. The first concerns the type of organism involved in this endocarditis, and the second concerns the "disappearing aortic diastolic murmur." Statistically the organism most likely to be responsible for the endocarditis is the Streptococcus viridans. It is well known, however, that this organism is much easier to grow by culture than is the Brucella melitensis or Hemophilus influenzae. The last two bacteria also are frequently associated with leukopenia. In addition, the patient gave an excellent history of exposure to animals presumably infected with Bang's disease, and the lesion in this case might very well have been due to Brucella melitensis infection superimposed on rheumatic endocarditis of the aortic valve.

As regards the aortic murmur which frequently disappeared for varying lengths of time, I am reminded of a similar case which I observed in this hospital three or four years ago. At autopsy a turnip-shaped bacterial vegetation was found to be attached to one of the cusps of the pulmonic valve. During systole these vegetations, particularly if they are pedunculated, are frequently carried by the out-going blood flow through the valve ring, and a systolic murmur is thus produced. During diastole they may serve to make the valve competent by being set firmly in the valve ring. At other times, however, these vegetations may remain below the valve ring and lie within the chamber of the right or left ventricle (in the case under discussion tonight, in the left ventricle) and not flow out of this chamber during systole. When this occurs the diastolic murmur is present, whereas if the vegetations are carried up through the aortic valve ring and close the valve during diastole, the diastolic mumur is not present.

Dr. McMillan's Diagnoses

(1) Disseminated lupus erythematosus
(2) Chronic rheumatic heart disease with aortic insufficiency
(3) Subacute bacterial endocarditis due to (a) Brucella melitensis, or (b) Streptococcus viridans.

Pathological Discussion

DR. W. C. THOMAS: The basic alterations in structure in this case were encountered in the heart and in the reticulo-endothelial system of the body. The heart weighed 500 Gm. The lines of closure of the mitral valve were thickened and presented endothelial-lined, small, nodular masses. The wall of the left ventricle measured 2 cm. in thickness. Marked thickening and calcification of the free edges of the aortic valve were noted. The anterior leaflet presented a roughened

surface which showed perforation of the cusp below the free edge. This roughened area was fibrous in character and no definite fresh thrombi could be demonstrated. Microscopic sections of the heart showed perivascular scarring with occasional areas of monocytic infiltration. The mitral and aortic valves showed fibrosis at the free ends of the cusps. Calcification was prominent in the aortic leaflets. Polymorphonuclear neutrophils and lymphocytes occurred in scattered masses on the endothelial surface near the free edge of the valve and were the sole representatives of activity in the otherwise quiescent histological stage. Bacteria were not demonstrated after search in smears, sections, and bacteriological studies directed toward the isolation of unusual as well as of the usual organisms.

The spleen and liver were enlarged, weighing 1175 Gm. and 2440 Gm. respectively. The pre-aortic chain of lymph nodes were enlarged to twice the normal size. Microscopic sections showed marked reticuloendothelial cell activity in the lymphoid structures, with scattered foci of reactivity of the tissue varying from frank necrosis to epithelioid cell accumulations. Giant cells containing two to four nuclei were present in the sinusoids.

Aseptic infarcts of varying sizes and ages occurred in the spleen and kidneys. Fresh antemortem blood clots were attached to the site of biopsy, and the peritoneal cavity contained 1550 cc. of bright red bloody fluid.

Anatomical Diagnoses

1. Aortic and mitral valvulitis, probably due to old rheumatic fever
2. Aortic valvulitis, recent, with perforation of one leaflet; causative agent or agents not demonstrated
3. Hepato-splenomegaly
4. Infarcts, multiple, in kidneys and spleen
5. Midline abdominal incision, recent
6. Incision into spleen
7. Hemoperitoneum

The object of first importance to the physician is to cure or to relieve his patient but this object frequently is frustrated by the influence of adverse suggestion. In order to prevent these developments it is necessary to comfort the patient, to encourage him and to secure for him serenity of mind even though this may require the curtailment of the diagnostic study. Extensive study defeats its object when it produces doubt, confusion, frustration, apprehension and fear. — Paul P. Swett: Suggestion as a Cause of Disease, Connecticut State M. J. 8:687 (Oct.) 1944.

MEDICOLEGAL ABSTRACT

J. F. OWEN, M.D., LL.B.
RALEIGH

X-RAY NEGATIVES: *In the absence of an agreement to the contrary, x-ray negatives are the property of the physician or surgeon who made them.*

In this case a corporation was sued by a physician for payment for professional services rendered to an employee of the company following an injury sustained by the worker while about his usual and customary duties. According to the record, the physician cared for the patient for approximately three and a half months. The corporation, although admitting that they had engaged the doctor for the purpose mentioned above, sought to avoid payment for the services upon the following bases:

First, that the physician failed to send in frequent reports as to the progress of the patient during his treatment; second, that the doctor refused to deliver x-ray films to the company for the use of another doctor employed by the defendant to treat the patient; and third, that the case came under the jurisdiction of the Workmen's Compensation Act.

The verdict in Superior Court was rendered in favor of the physician, and the case was then brought up on appeal to the Supreme Court.

Among the exceptions offered by the defendant company the one of most interest perhaps to the medical profession concerned the refusal of the doctor to deliver his x-ray negatives to the corporation for use by another doctor, these negatives being the ones taken by the physician incident to his treatment of the injured employee. The appellate court was of the opinion that the doctor was fully justified in refusing to surrender the x-ray negatives for the reason that, in the absence of an agreement to the contrary, such negatives are the property of the physician or surgeon who has them made incident to treating a patient. The reasons advanced for the above opinion are as follows:

First, under ordinary circumstances, x-ray negatives are meaningless to the average layman; second, they constitute an important part of the doctor's clinical records; and third, in the event of a malpractice suit, the negatives may be introduced as evidence to

justify the doctor's treatment of the patient under his care.

The Supreme Court sustained the findings of the court below in favor of the plaintiff physician.

As a warning, it should perhaps be stated that while the question of the property rights of physicians in their x-ray negatives is well settled, courts of competent jurisdiction may, under certain circumstances, order x-ray negatives and other records produced, and subpoenas issued for this purpose must be obeyed accordingly. (262 N. W. 296, Fall Term, 1935.)

TUBERCULOSIS ABSTRACTS

A Review for Physicians

ISSUED MONTHLY BY THE NATIONAL TUBERCULOSIS ASSOCIATION

VOL. XVIII APRIL, 1945 No. 4

JOSEPH CONRAD once said, "A word carries far — very far — deals destruction through time as the bullets go flying through space." Medicine has a few such words. Too often these are used when a serious or potentially serious condition must be explained to an apprehensive patient. When words treacherously lull either the patient or the physician into a false sense of security, then words may ultimately maim or destroy as surely as if they were bullets.

A SPOT ON THE LUNG

It is futile to search in dictionaries or medical text-books for a definition of the term "a spot on the lung." But the term is being used with great frequency by physicians, nurses and laymen alike. If this term is subjected to scrutiny, it is found that it may mean anything and everything that produces either a shadow or an area of decreased density in a chest roentgenogram or anything and everything that causes abnormal physical signs over the lungs. If, then, this expression has no meaning that cannot be stated more precisely in other terms, it remains to be found out why it is being used. If this is one of the terms that does not express a definite meaning, does it possibly obscure a meaning?

Nobody who has searchingly studied the histories of patients with pulmonary disease can doubt that the real function of the phrase, "a spot on the lung," is to cloud the facts. It is a cloak for a great variety of pulmonary diseases, a protective screen for the inability or unwillingness of the physician to arrive at a diagnosis acceptable to himself, a disguise for a bitter truth that the physician hesitates to tell the patient, an escape for the patient who tries to elude further diagnostic work and necessary treatment. After all, one does not die of "a spot carcinoma and one might die of pulmonary tuberculosis. Along with much other evasive, medical double-talk, "a spot on the lung" is a verbal mechanism of escape from reality. In the same category belongs the term "a touch of tuberculosis" and, improperly applied, "nothing but a little thickened pleura."

No physician needs to be told that "a spot on the lung" is no diagnosis. He realizes that it is evidence, on the one hand, of healed disease which calls neither for treatment nor for alarming its bearer, or, on the other, of active disease in need of treatment. The physician sometimes uses the term in patients in whom he has failed to establish, with a certainty that carries conviction for himself, the difference between active disease and obsolete scar. "A spot on the lung" has a pleasantly innocent sound. It lulls into inertia and indifference whatever doubts or curiosity the patient, and, even in some cases, the doctor may have. But still it is, for the physician, a mental reservation. It seems to beckon as a safe place to stand if "a spot on the lung" later turns out to be carcinoma, tuberculosis or bronchiectasis.

Admittedly, this judgment may be harsh. But I dare say that it will be resented only by those who, with the instrumentality of this ambiguous term, neglect their obligation

has been accurately diagnosed. No person need be told that he has " a spot on the lung." If the condition is as clinically insignificant as the term suggests, the patient should be told that he has a scar from a previous tuberculous infection—one that needs an occasional check-up or one that needs no further observation. Or when the diagnosis is certain, the patient should be told that his lungs are normal. For, while "a spot on the lung" is often the obscured beginnings of destructive disease, it is, in other cases, the starting point for tuberculophobia and anxiety neuroses, conditions that are no less crippling and hardly more easily curable than tuberculosis itself.

But, though every reflecting physician knows that "a spot on the lung" is a meaningless and dangerous term, the utter convenience of the expression—and others like it—militates against their prompt extinction. Past experience justifies a pessimistic outlook. No amount and intensity of medical education are likely to eliminate entirely the term from medical parlance. Medical education however is being overtaken by the information that the public, including the prospective patient, is acquiring. People are learning to realize fully the confusing ambiguity of the term, they are beginning to refuse its acceptance just as an enlightened consumer protests against ambiguous and misleading labels on packaged goods. And the comparison is eminently proper: for all intents and purposes, "a spot on the lung" *is* ambiguous and misleading labeling. It may well be that through the protest of the consumer, by the refusal of every layman to be satisfied with the pseudo-diagnosis of "a spot on the lung" the term will eventually disappear.

It is high time for the medical and nursing professions and everyone engaged in tuberculosis work to bury a medical term that has quite literally buried so many patients.

A Spot on the Lung, Max Pinner, M.D., The NTA Bulletin, January, 1945.

The danger to others of communicable tuberculosis among elderly persons is great. Many of them are grandparents and it is not unusual to trace fatal tuberculosis in children and others to them. Casparis cited the case of several young Negro maids who had successively died while working in one home, or soon after. Investigation revealed the fact that an elderly white man in this home had communicable tuberculosis which was previously unsuspected. J. Arthur Myers, M.D., Modern Hospital, April, 1944.

BULLETIN BOARD

PRESIDENT'S MESSAGE

POST WAR PLANNING

The Committee on Post War Planning of the Medical Society of the State of North Carolina consists of W. C. Davison, Chairman, Hubert B. Haywood, C. C. Carpenter, W. R. Berryhill, W. M. Coppridge and J. W. Vernon. This committee is particularly interested in ways and means of giving every assistance possible to our membership in the armed forces who, we hope, will soon begin to return to civilian practice. The following letters are being sent to every member of the Society in the armed services. The committee realizes that there are many young North Carolina physicians serving in the various branches of the service who are not members of the Society. Any member of the Society who knows one of these men can get copies of these letters by writing Secretary McMillan. We hope that you will do this and will send the letters to these men.

Sincerely yours,
PAUL F. WHITAKER, M.D.

* * *

TO THE MEMBERS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA SERVING WITH THE ARMED FORCES

The Medical Society of the State of North Carolina, along with the rest of the country, recognizes to the fullest extent its indebtedness to its members who at great personal sacrifice have entered and served with the armed forces of the nation. With a profound sense of appreciation of the service that you have rendered, the sacrifices that you have made, and the frustrations that you have encountered, it is anxious to assist you in every way possible in your return to civilian practice, and the privileges and responsibilities of civilian life. The Society wants to know what you desire, and is anxious to obtain your views on any matters that you care to discuss, toward the end that it may offer you every possible assistance in whatever you wish to undertake.

The Committee on Post War Planning, under the chairmanship of Dr. Wilburt C. Davison, has been giving consideration to ways and means of assisting you in every manner possible, particularly in offering opportunity for further postgraduate training. Their letter to you is enclosed, and we hope that you will acquaint the committee with your views and desires, toward the end that your Society may be of the greatest service to each of you.

With every good wish of your colleagues at home, and trusting that it will not be too long before you are back with us again, we remain

Cordially and sincerely yours,
THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA
By Paul F. Whitaker, President

TO THE 650 NORTH CAROLINA PHYSICIANS IN THE ARMED SERVICES

The Medical Society of the State of North Carolina, in common with the rest of the nation, recognizes its debt to you who are serving in the armed forces, and through the postwar planning committee is anxious to assist you in obtaining the postgraduate medical training which you may desire on your return. The questionnaires which you have returned to the American Medical Association are being studied, but in addition, it would be apreciated if you would let us know the postwar training which you want and the institutions at which you prefer to have it. The medical schools of Duke and North Carolina Universities, the Bowman Gray School of Medicine of Wake Forest College, and the North Carolina hospitals are cooperating to provide the training which you want.

All veterans, regardless of the age at which they entered the service and whether or not they had been in practice, are eligible under the G. I. Bill of Rights for a retraining course of one year at any institution approved by the Veterans Administration, which will pay fees to the institution up to $500 per year and a subsistence allowance of $50 monthly to the veteran—$75 if he has a dependent.

On completion of this one-year course, veterans who entered the service under 25 years of age and those, regardless of age, who can show that their training was impeded or interrupted by their entrance into the service also are entitled to **additional** training of the same number of months they have been in the service. In other words, a medical officer who has been in the armed forces for thirty months and entered the service at age of 25 years **or**, regardless of age, had been an intern or resident but had not completed his resident training, is eligible for three and one-half years of postwar training—that is, one year plus thirty months.

Refresher or brush-up courses can be given at Duke and the Bowman Gray School of Medicine of Wake Forest College for the former practitioners by appointing additional instructors in medicine, pediatrics and obstetrics at each of the two schools. It is realized that refresher courses are the least satisfactory method of postgraduate education. However, many of the medical officers who have been in practice may wish to return to their homes as quickly as possible to start rebuilding their incomes, so these refresher courses may have to be arranged in repeated short doses, emphasizing the recent medical advances, to accommodate the physicians who can spare only a week or two at a time.

Hospital experience and tutoring for the former specialists can be easily arranged with the 245 North Carolina licentiates of the various specialty boards. The experience of working in a busy specialist's office should greatly help these returning officers to bring their knowledge up to date.

The ex-interns and ex-residents, as well as some of the former practitioners, may wish three to twenty-four months of hospital training in the specialties, and additional residencies will be provided. For example, the North Carolina teaching hospitals have six prewar approved pediatric residencies, but arrangements had been made with the pediatricians in the other hospitals for ten additional pediatric residents. Under this plan, the hospitals can appoint sixteen residents instead of the usual six, each of whom would spend three to six months at one or more of these hospitals under the supervision of a licentiate of the American Board of Pediatrics, thereby obtaining a broader training than would be possible in one institution. A similar program has been planned in the other specialties and combinations of specialties.

In addition, training will be provided at the three North Carolina medical schools in the basic medical sciences—anatomy, biochemistry, physiology, pharmacology, bacteriology and pathology—for at least three reasons: first, the requirements of the specialty boards must be satisfied; secondly, the practitioner needs this training to help him improve his practice of medicine; and finally, it is highly desirable to encourage some of the returning medical officers to become teachers in these subjects in which they are greatly needed if good teaching and high research levels are to be maintained after the war.

All of these plans are modifiable to allow for the wide range in the returning medical officers' prewar status, their variety of war experiences—field or hospital duty—and their rate of demobilization. This training can be started tomorrow morning or at any time a medical officer returns, and is flexible enough to fit the needs of those who want only a refresher course, as well as of those who desire one or more years of hospital experience in order to complete the requirements of the specialty boards.

Please let us know what you want and what you think of the above program, as well as any other suggestions, as all of us are anxious to assist you in every way to obtain the postwar training you desire.

With best wishes,

Yours sincerely,

Postwar Planning Committee of the Medical Society of the State of North Carolina

Hubert B. Haywood, M.D.
W. M. Coppridge, M.D.
W. R. Berryhill, M.D.
C. C. Carpenter, M.D.
James W. Vernon, M.D.
W. C. Davison, M.D.

STATEMENT TO THE APPROPRIATIONS COMMITTEE OF THE LEGISLATURE

PAUL F. WHITAKER, M.D.

Mr. Chairman, Gentlemen of the Appropriations Committee, Ladies and Gentlemen:

Last fall a number of physicians and distinguished members of the Poe Commission appeared before the Advisory Budget Commission and outlined the results of their intensive study of the problem of medical and hospital care in North Carolina. The Poe Commission, after ascertaining the needs of the state, recommended a comprehensive program, having for its ultimate purpose a more adequate and at the same time a more economical distribution of good medical care to all the people of North Carolina. By reason of my position as president of the Medical Society of the State of North Carolina, I was asked to summarize the needs in the field of medical care as determined by the Commission, and their recommendations for the solution of the problem that they found to exist. They were then, and are now outlined as follows:

North Carolina ranks **forty-fifth** among the states of the nation in the ratio of physicians to population. Only Alabama, South Carolina and Mississippi have a lower ratio than North Carolina. This is not a war condition. It was an actuality in 1940. The national average is 1 physician to every 800 people. One physician to every 1000 people is considered desirable for proper protection of the public health. In 1940 only four counties in our state had more

than 1 physician per 1000 people. Forty-three counties had less than 1 physician to every 2000 people, and some rural communities had less than 1 physician to every 5000 people. Dean Davison of the Duke University School of Medicine estimates that 1300 additional physicians are needed to provide the accepted ratio of 1 physician to every 1000 population. Most of these physicians are needed in the rural areas.

A similar situation exists relative to hospital beds. In 1940 North Carolina ranked **forty-second** among the states in the number of hospital beds. We have 8,475 general hospital beds approved by the American Medical Association, or 2.4 beds per 1000 population. The standard recommended by hospital authorities is 4 beds per 1000 population. Approximately 6000 additional beds are needed to bring North Carolina up to the accepted standard. I would like to emphasize the point that 41.6 per cent of the present beds are located in six large urban counties and that thirty-four of our counties have no hospital facilities of any sort. The need of the Negro population is particularly acute. They have only 1.7 beds per 1000 population.

The Duke Endowment has been a great blessing to our state. This great benevolence has been interested in the establishment of small hospitals in North and South Carolina, and it also contributes $1.00 per day toward the care of each indigent patient in every approved hospital in these states. Dr. W. S. Rankin, Secretary of the Duke Endowment, is probably our most competent hospital authority. I have corresponded with Dr. Rankin about these proposals and had a personal interview with him in Charlotte. He is thoroughly in accord with the rural hospital program presented by the Commission, and feels that a state program would greatly augment the program of the Duke Endowment. Both have the mutual objective of better health for our people. Dr. Rankin further points out the fact that Canada has had a similar program in operation for some time.

North Carolina has never supported complete medical education for its citizens, either as physicians or as allied medical workers. Except to the Health Department and the institutions for mental and tuberculous patients the state has never appropriated funds for the health of its citizens. By comparison the state of Virginia spends approximately $800,000 annually in maintaining hospitals and contributing to the support of two medical schools. Iowa spends, $1,000,000 per year for the general hospitalization of its indigent and low income groups, and almost $500,000 annually in support of its four year medical school. Louisiana, with a per capita wealth far below that of North Carolina, spends approximately $5,000,000 annually on its system of charity hospitals, and in addition maintains a large medical school. In comparison to these vast sums expended by other states, North Carolina spends less than $75,000 annually for the maintenance of medical education, medical research, and the training of medical workers. The state makes no contribution to general hospitalization, and in no way aids in making general hospital facilities available.

Medical care is not an ordinary commodity. It has to do with the happiness of our people and the security of our nation. Every citizen, however lowly, and regardless of his financial, racial or religious status is entitled to, and should receive the best medical care obtainable. The problem boils down to personnel of all types, more hospital beds, and better distribution of both hospitals and doctors. Communities must be encouraged to realize their responsibility to their indigent sick. There must be increased health education to teach the public to utilize facilities provided, and convenient and easy methods of payment of hospital and medical care bills through prepayment insurance plans must be increasingly utilized and expanded. All phases of the problem must be attacked simultaneously.

To meet the need for more doctors and other trained personnel, we need the expansion of the University Medical School to four years, with the erection of an adequate teaching hospital in connection with the medical school. It is well to call to your attention the fact that this institution would not only train personnel of all types, but would provide general hospital beds, and through the proposed loan fund assist worthy rural boys and girls to obtain a medical education, on the condition that they return to rural areas of the state to practice. The proposed teaching hospital would have a psychiatric unit, thus affording a facility to which the physicians of North Carolina could send patients with acute mental disturbances. Here these people could not only be used for teaching purposes, but by adequate examination and proper therapy many might be restored to a life of usefulness rather than becoming charges of the state by being committed to a mental institution. In this connection it is well to call your attention to the fact that many of the present patients in our mental institutions are victims of arteriosclerotic disease and vascular cerebral accidents, and would be better cared for in general hospitals. The consultative service of such an institution to small rural hospitals would be of inestimable value. For example, relatively few rural communities can afford the services of a trained x-ray specialist. Such an institution would train a number of x-ray specialists, and these men in the latter months of their training, after they have reached the desired competency, could pay weekly visits to the small rural hospitals. Here they could do the fluoroscopic and gastrointestinal studies on patients referred to the institution by local physicians, and would further assist them in the interpretation of accumulated x-ray films. Many arguments have been presented to you for the extension of the University Medical School to four years. It seems to me the soundest argument for the expansion of the present school is that in the light of modern teaching methods two-year schools cannot adequately perform their full function, and are experiencing increasing difficulty in placing their men after two years of training. The two-year medical schools are doomed to extinction, and if the present University School is allowed to pass out of the picture, we will not only have the humiliating experience of seeing our great University fail to perform its full educational function by providing medical education, but more important still, we will lose a rich source of supply of North Carolina doctors (to be exact 25 per cent of our present source of supply).

The necessity for more rural hospitals and health centers to meet the need for better distribution of medical care is manifest. Not only will they serve as centers for the dissemination of health education, but they are absolutely essential to the location of doctors. Factors that decide the location of young physicians are the pull of home ties, the assurance of a reasonable reward for their labors, and above all, the facilities for the practice of good modern

means providing good hospitals with good equipment. It is felt that the state should appropriate $5,000,000 to aid in the total cost of $15,000,000 for building new hospitals where they are needed and adding to present facilities. These hospitals should be locally controlled and operated to keep out political influence.

The proposed maintenance fund to aid the local hospitals to care for their indigent is badly needed to supplement the work of the Duke Endowment. The average **per diem** hospital cost in North Carolina ranges from $3.50 to $7.00 per day. With the state contributing $1.00 a day and the Duke Endowment $1.00 a day, it would be expected that the counties would make up the difference in caring for their indigent sick. Such assistance from the state will encourage the counties to realize and undertake this responsibility.

There is a definite need for methods of pre-paying the costs of medical care, which fall so heavily upon the honest, respectable citizen in the low income brackets who desires to pay his bills without government compulsion. For a modest premium the Blue Cross Plans enable the average citizen to provide for the payment of hospital bills and obstetrical and surgical fees. The Blue Cross Plans have made an admirable beginning, and they have accepted the challenge to provide complete medical service at the earliest possible time that sound actuarial experience warrants. Some members of this Commission sincerely believe that the state should underwrite insurance plans for low income groups. The majority feel that this should not be undertaken until voluntary methods have been given the opportunity to solve the problem. They feel that the state should fulfill its obligation in the field of medical education, aid in the construction of facilities and in the care of the indigent, and stop there, leaving to the medical and allied professions and interested groups the working out, certainly for the present, of prepayment plans.

After careful consideration by the Commission and the medical and allied professions, a bill was drawn to embody the recommendations of the Commission, with the high hope that it would be enacted into law at this session of the legislature, thereby bringing our great state up from near the bottom in the type of service in question, instituting a much needed program, and maintaining it adequately through the years. It seemed to the sponsors of this program and to the average citizen of the commonwealth that the state could well afford to fulfill its obligation in this field. Governor Cherry and the legislature have wisely made provision for the retirement of the general fund debt, and we are reliably informed that a fund is being set up which by 1950 will retire every highway bond outstanding. For all practical purposes the state stands like the village blacksmith, and looks the whole world in the face for it owes not any man. In addition to being for all practical purposes debt free, the state has on hand a fund of $20,000,000 set aside for postwar emergencies. Many members of the legislature confidently predict that many more millions of dollars will be added to the surplus in the next biennium.

Compare this situation to that existing in 1921. Almost a quarter of a century ago an Appropriations Committee sat as you are sitting and recommended to the legislature of that year an expenditure of fifty million dollars for roads, when the state was already in debt to the extent of seventeen million dollars. They saw a need and they acted to meet it. The inference to be drawn from this comparison is obvious, and the question might well be asked: Which is the more important—roads, or the health of our citizens and our duty to our unfortunate? There could be but one answer. Investment by the state in this program would be repaid a thousand-fold in happiness, opportunity, productivity and income of its citizens.

With all the financial resources available now, with the mentally unfortunate of the state crying to high heaven for relief, and with hospital and medical care facilities woefully lacking, it is most difficult for your average constituent to understand why you cannot proceed immediately and effectively to meet these needs by setting aside the funds to bring into being the recommended program.

However, Governor Cherry, with no doubt an intimate knowledge of the state's financial structure and the needs of its multiple services, does not feel at the present time that the whole program should be undertaken. In an address to the General Assembly this morning he has advocated the principle of the whole program, and in the bill now under consideration and drawn with his approval, indicated the extent to which he is willing to go at the present time. While some of us have different beliefs, no one questions the sincerity of the governor.

You gentlemen of the Appropriations Committee and the other members of the legislature have been here in Raleigh long enough at this session to be thoroughly familiar with some of the talk that has been going around. Some of our citizens, including members of the medical profession, are honestly and sincerely opposed to the whole program, and have openly stated their opposition. Others, for reasons satisfactory to themselves, have circuitously but nevertheless with some effect, attacked the proposals. Time will eventually tell who has placed self interest above the public interest, and who has played politics with human misery and human needs.

And so, somewhere along the uncertain pathway of politics, the original and comprehensive bill to effectuate a program to solve an urgent human need has been cast into the limbo, and we have in its place the emasculated substitute which you gentlemen are considering today. One of the members of the legislature has facetiously remarked that as this bill carried no appropriations, he would gladly support it. In view of the very limited appropriations that it does carry, we hope, believe and sincerely urge that you will report it favorably.

It is our understanding that the Chairman of the Hospital and Medical Care Commission, and the members of the legislature introducing this bill have accepted it reluctantly and with disappointment as the best that can be obtained now, and have accepted it only as a beginning toward the ultimate objective of the whole program which the Commission has recommended. This is certainly my feeling, and I believe it is the feeling of the vast majority of North Carolina doctors who have endorsed the whole program which they feel is so necessary to solve the problem existing in our state. I believe it is the feeling of the North Carolina Hospital Association, the North Carolina Nurses Association and the North Carolina Pharmaceutical Association, who have endorsed the whole program. It is the feeling of the public health officials of the state, and it is the feeling of many men and women throughout the nation who have watched with high hope the developments of the North Carolina proposals and patterned their own plans upon it. More important, it will be the feeling of our own people from the mountains to the sea, on the farms and in the factories, in the stores and in the offices, in the schools and in the churches, in the kitchens and at the firesides, and at the bedsides of the newborn and the sick. It will be the feeling of our soldier kinsmen on the far flung battle fields, in the dangerous skies, on and

beneath the surface of the seven seas—all fighting to preserve our way of life and make it more rich and abundant. Some one has aptly remarked that this program has more of God in it than any measure ever proposed in North Carolina.

All these people cannot but experience disappointment and frustration and waning hope that means to effectuate the whole program have not been provided by this administration. But perhaps all this work and effort will not have been in vain. "Hope springs eternal in the human breast." If you pass this measure, it is a beginning. However small, it is a beginning. It is a first step, and we earnestly urge that you take it. An ancient Chinese proverb states that "A thousand mile journey begins with the first step." Let us hope that this is so, and that this truth will in the end apply to this great and comprehensive program.

And now finally, gentlemen, we urge and hope that you will report this bill favorably and send it to the House and Senate, where the elected representatives of the people in the democratic manner can give it their rightful and proper consideration. Here the whole program can be debated with complete frankness, and the decision made as to whether the torch of progress in human needs will be lighted and allowed to burn and glow to its full fruition, or allowed to flicker and die in an atmosphere of timidity, reaction and stagnation. The issue is clearly drawn.

And now, may we say in conclusion that the Commission, the citizens of the commonwealth, and the medical and allied professions believe in this program—with emphasis on the whole program. All parts of it are essential if the problem of bringing about an adequate and economical distribution of medical care to the people of our commonwealth is to be solved. The work of the Commission is before you. The needs of our people have been ascertained and presented. Measures to fulfill these needs have been recommended. They are to us sound and practical and within the means of the state to provide. You will in your wisdom initiate certain changes, and we hope make a beginning; but we respectfully submit that nothing less than the whole program should be the ultimate objective of this and future sessions of the legislature. We have faith in your courage, your initiative, your vision and your knowledge of the needs of your great state, and with this faith we leave the problem in your keeping.

Cancer Control Month

Governor R. Gregg Cherry has joined the governors of every other state in the nation in issuing a proclamation which designates April as Cancer Control Month.

Governor Cherry's proclamation reads as follows:

A PROCLAMATION

Whereas, the control of cancer is a major public health problem and the Congress of the United States, by special enactment, has designated the month of April as Cancer Control Month, and the General Assembly of the State of North Carolina has, by similar action, so designated the month of among women, and

Whereas, cancer deaths in 1944 in North Carolina numbered 2,298, a drop of 19 deaths from the high mark of 2,317 in 1943, and

Whereas, from one-third to one-half of all cancer deaths are needless, and

Whereas, the fight on cancer in North Carolina is being conducted by the North Carolina Division of the Field Army of the American Cancer Society of which Mrs. George E. Marshall, of Mount Airy is Commander and John Kerr, Jr. of Warrenton is State Campaign Chairman, with a campaign slogan this year, "Guard those you love—Give to conquer cancer," and

Whereas, this program is one which deserves the full support of the State,

Now, therefore, by virtue of my authority as Governor of North Carolina, I do hereby proclaim and declare the month of April as Cancer Control Month in North Carolina and urge all citizens of the State to lend every possible support to this commendable and worthwhile movement in the interest of public health.

In witness whereof, I have hereunto set my hand and caused the Great Seal of the State of North Carolina to be affixed at Raleigh this fourth day of April in the year of our Lord, One Thousand Nine Hundred and Forty-five.

(Signed) R. GREGG CHERRY

(SEAL)

By the Governor:

American Red Cross Immune Serum Globulin Plan

Immune serum globulin (gamma globulin) for the prophylaxis, modification, and treatment of measles is now available for the civilian population through an appropriation by the American Red Cross as announced by Mr. Basil O'Connor, Chairman of the Central Committee of the American Red Cross. This action is in keeping with the policy of the American Red Cross to return to the American people, so far as practicable, any useful blood derivatives accumulated in excess of military needs as a result of its blood donor program.

The serum globulin will be supplied without charge to state and territorial health departments or local health departments where biologics are not supplied by the state, provided that the globulin will be distributed without charge to physicians, hospitals, and clinics, and provided that it will be administered in accordance with established standards and without any charge to the patient for the globulin.

As announced in the July 1. 1944, issue of the **Journal of the American Medical Association**, health departments assumed the costs of processing and distributing immune serum globulin. Under the new plan the entire cost of processing and distributing the product is now borne by the American Red Cross.

The crude serum globulin fraction thus made available is derived as a by-product from processing serum albumin under Navy control. It has been declared surplus and assigned by the Navy to the American Red Cross for distribution.

Eligible health agencies are being requested to place their orders promptly with National Head-

Civilian Medical Care for Military Personnel

Statement from the Office of the Surgeon, Fourth Service Command, Atlanta

1. In an emergency, Army Regulations authorize civilian medical attendance to military personnel at public expense when the required attendance cannot be provided by available facilities of The Army or other Federal agency and when such personnel are on a duty status or absent on authorized leave, sick leave, furlough or pass. Civilian medical attendance is not authorized for personnel when absent without official leave or for personnel requiring "elective" treatment. The term "civilian medical attendance" includes medical and hospital care, nursing, ambulance, dental services, donation of blood and furnishing of medicines on prescription.

2. Immediately after a soldier comes under civilian medical or hospital care, the nearest military medical officer should be informed or The Commanding General, Headquarters Fourth Service Command, Post Office Building, Atlanta 3, Georgia, should be advised by letter or telegram collect regarding the following:

   a. Full name, rank, and organization of patient.
   b. Diagnosis and approximate date patient may be safely removed by Army ambulance to nearest Army hospital.

3. Upon termination of civilian medical services and in order that claims covering such services may be immediately settled, the bill in triplicate, itemizing charges, should be forwarded to The Commanding General, Headquarters Fourth Service Command, Post Office Building, Atlanta 3, Georgia, ATTENTION: The Surgeon. The following statement should appear thereon above the signature:

> I certify that the above bill is correct and just; that payment therefor has NOT been received; that the services were rendered and necessary; and that the charges do not exceed those customary in this vicinity.
>
> (Signed) .....
> (Typed)
> (Title)

* * *

Statement from Vice Admiral Ross T. McIntire, M.C. Surgeon General, U. S. Navy

Officers and enlisted personnel of the Navy when on duty are entitled to necessary medical and hospital treatment, which must be obtained, first, through facilities of the Medical Department of the Navy, if available; secondly, through the medical department facilities of any other federal agency in the absence of naval medical facilities; and, if none of the foregoing is available, they may procure the necessary treatment from civilian sources. When the individual is attached to a local naval office or activity, request for treatment should be made by the officer in charge; when on detached duty, treatment may be obtained by personal request.

Navy officers when on leave are required to defray their own expenses for medical treatment.

Enlisted personnel when on leave may be furnished civilian medical treatment at the expense of the Navy Department under the following provisions:

1. When treatment is requested in an emergency where it is impractical to obtain the same from naval or other federal facilities.
2. When report is promptly made by or on behalf of the individual to his commanding officer by telephone or telegram, citing the circumstances and requesting authority for treatment and instructions.
3. Expenses for employment of consultants or specialists or for special treatments will not be allowed unless authorized in advance by the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., or approved subsequently by that Bureau in extreme emergencies upon prompt receipt of report and satisfactory explanation as to the necessity and urgency for the employment.
4. Elective medical treatment under no circumstances may be allowed.
5. Enlisted personnel absent without permission are not entitled to medical treatment at government expense.
6. Civilian dental treatment, other than emergency measures to relieve pain, is not authorized.

Hospital accommodations equivalent only to that provided by the Navy to its personnel will be allowed. Officer personnel are entitled to a private room; enlisted personnel to a bed in a ward, except in contagious disease cases or where the illness requires the seclusion of a private room for proper treatment.

Charges for services rendered will be allowed only at reasonable prevailing rates and for no longer period than is necessary to permit the patient to be transferred to a federal hospital when physically able. The proper naval authorities should be advised as soon as his condition will permit transfer to a federal hospital, or, if further hospitalization is not required, the date of his discharge.

Bills for medical care of Navy personnel should be prepared in duplicate, itemized to show both the nature and dates of services, with the charge for each item indicated and should bear the certificate "Correct and just; payment not received," with the autographic signature of the payee (in the case of a company, etc., by an authorized official whose title should be shown), and if practicable bearing a certificate of the patient that the services were rendered as stated.

As the United States Marine Corps is a part of the United States Navy and the health and medical treatment of its personnel a responsibility of the Bureau of Medicine and Surgery, the members of that organization are entitled to the same consideration as may be provided for other naval personnel in above instructions.

Bills covering civilian medical treatment of members of the Coast Guard may be forwarded to Coast Guard Headquarters, Washington, D. C., for settlement.

Upjohn Message Urges Early Diagnosis of Cancer

Spurred by a rising rate of 165,000 deaths, and 700,000 sufferers annually, Upjohn is assisting in the fight against cancer. With a message of hope which will reach millions during April when the American Cancer Committee's national drive swings into action, Upjohn includes this major health problem in its "Your Doctor Speaks" series directed toward better public health and greater patient-physician cooperation. Since the greatest promise of reduction in cancer mortality lies in early diagnosis and treatment, the new Upjohn message stresses the importance of learning to "recognize warning signs of cancer **before** it's too late," and bluntly tells the reader, "**You** can help—by learning to suspect cancer and to report it at once."

State Board of Medical Examiners

The next meeting of the Board of Medical Examiners will be held June 18-20, at the Sir Walter Hotel in Raleigh. Written examinations will be given and reciprocity licenses issued at this time.

Charlotte Medical Library

The Ciba Pharmaceutical Products, Inc., are lending to the Charlotte Medical Library the original paintings of Mr. James Chapin, "The Seven Ages of a Physician." These paintings will be on display in the Mint Museum for a month beginning April 8.

News Notes from the State Board of Health

The 1945 General Assembly passed or amended three laws designed to control communicable diseases in North Carolina. The first, requiring immunization against whooping cough, is an entirely new law; the second, dealing with vaccination against smallpox, places the matter on a statewide rather than an optional county basis; while the third revises the requirements imposed upon syphilitics who apply for license to marry.

As to the last-named, the law as originally written contained this provision:

"When the applicant with syphilis has been under continuous weekly treatment with adequate dosage of standard arsenical and bismuth preparation given by a regularly-licensed physician for a period of one year", etc.

In view of the development of rapid treatment centers since the statute was passed, the following requirement has been substituted for the above:

"When the applicant has completed treatment and is certified by a regularly-licensed physician as having been cured or probated, and when said physician has certified that he has informed both the applicant and the proposed marital partner of any possible future infectivity of the applicant."

What this amendment really does is to cut down the period of waiting for marriage on the part of an applicant with syphilis until he or she is **cured**, eliminating the time element. This will be of distinct advantage to those syphilitics wishing to marry who take treatment at the Rapid Treatment Centers.

The matter of admitting unvaccinated children to schools has been left with the various counties, which were permitted to require vaccination or not. As amended, the law requires that all children in every county of the state shall be vaccinated for smallpox before being admitted to any school.

The new North Carolina law requiring immunization against whooping cough contains the following provisions:

"All children in North Carolina are required to be immunized against whooing cough before reaching the age of one year.

"A parent, guardian, or person in loco parentis, of any such child not previously immunized, shall present the child to a physician licensed in North Carolina and request the physician to administer to such child a sufficient dosage of a prophylactic whooping cough agent. All whooping cough prophylactic agents used in compliance with this section must meet the standards required by the State Board of Health.

"If the person is unable to pay for the services of a private physician, or for the prophylactic agent, the child may be taken to the county health officer or county physician of the

ating body shall make available sufficient funds for the purchase of such immunizing agent for such cases.

"The physician administering the whooping cough dosage shall submit a certificate to the local health or quarantine officer and give a copy to the parent, guardian, or person in loco parentis, of the child. Forms for the certificate shall be supplied by the State Board of Health.

"No principal or teacher shall permit any child to enter a public, private or parochial school without the certificate provided for or some other acceptable evidence of immunization against whooping cough.

"If any physician, licensed to practice in North Carolina, certifies that such dosage is detrimental to a child's health, the requirements of this section shall be inapplicable until such dosage is found no longer to be detrimental.

"The wilful violation of any part of this section is a misdemeanor punishable by a fine of not more than fifty dollars or by imprisonment for not more than thirty days in the discretion of the court; provided this Act shall not apply to children whose parent or parents or guardian are bona fide members of a recognized religious organization whose teachings are contrary to the practices herein required, and no certificate for admission to any public, private or parochial school shall be required as to them."

This last provision, exempting those whose religious tenets forbid medical treatment of or vaccination against disease, does not apply to individuals who might claim to be simply conscientious objectors in the matter of immunization. They must be bona fide members of a religious organization, which objects collectively, not individually. In other words, an individual parent cannot escape the responsibility of having his or her child immunized against whooping cough simply because he or she, individually, does not choose to believe in it. Such an individual must be a member of a recognized religious group which objects to vaccination as a matter of principle and not prejudice.

* * *

During the past thirty years the State Laboratory of Hygiene has distributed more than 20,000 liters of anti-typhoid vaccine, or enough to give two complete series of inoculations to every man, woman and child in North Carolina.

During this period the death rate from typhoid fever has been reduced from 35.8 in 1914 to 0.5 per 100,000 population in 1943.

The immunization each year of an average of 200,000 people, over a period of thirty years has produced an immune group of uncertain proportions, which has had a great influence on the morbidity and mortality rates.

It is a recognized fact that the presence of such an immune group in an area will effectually prevent the occurrence of any wide spread epidemic. This is borne out by our experience in North Carolina, where typhoid fever has become more and more a rural disease, endemic in certain areas where the percentage of immunes is relatively low.

The reduction in typhoid fever rates testifies to the fact that safe-guards have been placed around water supplies, milk and other foods, as well as by general prophylaxis through immunization of a large portion of our population.

Typhoid has taken a tremendous toll in past years, and unless we continue th

News Notes from the North Carolina Tuberculosis Association

The Trudeau School of Tuberculosis announces its thirty-first session, which will begin at Saranac Lake, N. Y., on September 10, continuing for four weeks, after which two weeks of supplemental work will be offered by the Faculty of Columbia University at Bellevue Hospital, New York.

The course is intended for graduates in medicine who wish to prepare themselves for sanatorium or public health practice; for physicians desiring a refresher course in tuberculosis, and for fourth year undergraduates.

The fee is $100.00 for either the four or six weeks' course. A few scholarships are available to qualified applicants.

For further information write to the State Office.

News Notes from the Bowman Gray School of Medicine of Wake Forest College

Dr. Felda Hightower has resigned as instructor in surgery to accept a position as chief surgeon at the Baker Sanatorium in Lumberton. He left to assume his new duties on April 1.

* * *

Dr. Eugene A. Stead, Jr., Professor of Medicine at Emory University, delivered the third annual Phi Chi lecture at the Bowman Gray School of Medicine on April 9. His subject was "Edema."

* * *

Dr. George T. Harrell and Dr. Robert P. Morehead were guest speakers at a meeting of the Richmond Academy of Medicine on March 26. Dr. Harrell spoke on "Basic Supportive Therapy in Rocky Mountain Spotted Fever," and Dr. Morehead's subject was "Renal Injury in Rats with dl Serine."

* * *

Dr. George Harrell addressed the Columbia Medical Society in Columbia, South Carolina, on April 9.

Edgecombe-Nash Counties Society

Dr. W. W. Vaughan of Durham was guest speaker at the March meeting of the Edgecombe-Nash Counties Society. His subject was "X-Ray Aspects of Gastritis." Following Dr. Vaughan's talk case reports were presented by Dr. A. L. Daughtridge of Rocky Mount.

Forsyth County Medical Society

The Forsyth County Medical Society held a dinner meeting in Winston-Salem on March 13. Dr. Vincent W. Archer of the University of Virginia spoke on "Lesions of the Gastro-Intestinal Tract Other than Ulcer and Cancer."

News Notes

Dr. James P. Bunn of Rocky Mount, secretary-treasurer of the Edgecombe-Nash Counties Medical Society, died unexpectedly at his clinic on April 5.

* * *

Dr. H. M. Montgomery of Burlington died at his home on March 31 after a critical illness of one month. He had been in practice in Alamance County for more than forty years.

* * *

Dr. J. A. Whitaker, Rocky Mount City Health Officer for the past nine years, has resigned to ac-

Dr. L. R. Hedgpeth of Lumberton has been made chief of staff of the Baker Sanatorium. Dr. Felda Hightower, formerly of Winston-Salem, was named chief surgeon, and Dr. Roscoe D. McMillan of Red Springs was added to the staff. Dr. H. H. Bradshaw of the Bowman Gray School of Medicine was made consultant surgeon.

* * *

Dr. John S. Chamblee, Nash County Health Officer, has been appointed acting health officer for Wilson by the State Board of Health.

* * *

Dr. B. E. Stephenson of Roanoke Rapids and Dr. Barnes Woodhall of Durham have been promoted from the rank of major to that of lieutenant colonel.

* * *

Dr. Joseph P. McCracken of Durham, serving overseas with the 158th General Hospital, has recently been promoted to the rank of major.

* * *

Lieut. Comdr. Charles Bunch of Charlotte, stationed at a naval hospital in the Caribbean area, has been awarded the Naval Reserve Medal for his long service and action in the reserve.

* * *

The Navy and Marine Corps Medal has been awarded to Lt. John W. A. Woody of Tryon, with the following citation:

"For heroism in action against the enemy on Guam, MARIANAS ISLANDS, from 21 July to 10 August, 1944. Lieutenant WOODY, serving as medical officer with an infantry battalion, performed his duties with exceptional skill and tenacious devotion. His untiring efforts under extremely hazardous conditions saved many lives by making possible the prompt evacuation and rendering of medical aid to the seriously wounded. During 21-22 July, 1944, in a period of less than twenty-four hours, despite the necessity for evacuation over a high vertical cliff, Lieutenant WOODY treated more than two hundred casualties under heavy enemy mortar fire and managed to evacuate all cases that could survive the trip down the cliff. In a situation which appeared to be hopeless due to heavy enemy mortar fire, lack of medical supplies, extremely difficult terrain, and numerous casualties among his medical personnel, Lieutenant WOODY by his resolute devotion to duty succeeded in treating and saving many lives. His courageous conduct and professional ability were in keeping with the highest traditions of the United States Naval Service.

(Signed) "H. M. SMITH
"Lieutenant General,
"U. S. Marine Corps."

Not Canceled

The art contest sponsored by Mead Johnson & Company on the subject of "Courage and Devotion Beyond the Call of Duty" (on the part of physicians) has **not** been canceled or postponed.

The closing date remains May 27, 1946.

There will be no annual exhibit **this year** of the American Physicians Art Association, due to the cancellation of the American Medical Association meeting which had been scheduled to take place in Philadelphia, June 18-22, 1945.

For full details regarding the $34,000 prizes and the "Courage and Devotion" contest, write Dr.

Chest Physicians Cancel Meeting

The American College of Chest Physicians has cancelled its annual meeting, scheduled to be held at Philadelphia, June, 1945.

The Executive Council of the College voted to hold a business meeting of the Board of Regents at Chicago, June 17.

American Board of Obstetrics and Gynecology, Inc.

The general oral and pathology examinations (Part II) for all candidates will be conducted at Atlantic City, New Jersey, by the entire Board from Wednesday, June 13, through Tuesday, June 19, 1945. The Hotel Shelburne in Atlantic City will be the headquarters for the Board. Formal notice of the exact time of each candidate's examination will be sent him several weeks in advance of the examination dates. Hotel reservations may be made by writing direct to the Hotel.

The Office of the Surgeon-General (U. S. Army) has issued instructions that men in service, eligible for Board examinations, be encouraged to apply and that they may request orders to detached duty for the purpose of taking these examinations whenever possible.

Candidates in Military or Naval Service are requested to keep the Secretary's Office informed of any change in address.

Deferment without time penalty under a waiver of our published regulations applying to civilian candidates, will be granted if a candidate in service finds it impossible to proceed with the examinations of the Board.

Applications are now being received for the 1946 examinations. For further information and application blanks, address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh 6, Pennsylvania.

National Foundation for Infantile Paralysis, Inc.

Scholarships for training in physical therapy under the $1,267,600 program of The National Foundation for Infantile Paralysis are available immediately for classes commencing in June and July.

As a result of the increasing use of physical therapy in the treatment of infantile paralysis and other diseases, and because of the acute shortage of trained personnel, the National Foundation is offering these scholarships for nine to twelve months' courses in approved schools of physical therapy. The scholarships will cover tuition and maintenance in accordance with the student's needs.

Candidates for National Foundation scholarships must have two years of college, including biology and other basic sciences, or be graduates of accredited schools of nursing or physical education. Applications should be made to The National Foundation for Infantile Paralysis, 120 Broadway, New York 5, N. Y., or to the American Physiotherapy Association, 1790 Broadway, New York 19, N. Y.

U. S. Public Health Service Division of Nurse Education

The Division of Nurse Education announces that on April 9, 1945, the District No. 2 Nurse Education Consultant's office was transferred to Richmond, Virginia. All communications should be addressed to: Miss Esther A. Garrison, Nurse Education Con-

AUXILIARY

GUARD THOSE YOU LOVE—GIVE TO CONQUER CANCER

Cancer is the greatest cause of deaths among women, and it ranks second only to heart disease as a killer of men. It brings more suffering and grief into homes than does any other thing. It is more than three times as deadly as war. No age is immune to it, although it takes its heaviest toll among men and women in the very prime of life. And cancer is no respecter of people. The rich and the poor, the humble and the great fall prey to it in ever-growing numbers.

The riddle of cancer has baffled physicians since the dawn of time. It still baffles the medical world. Chronic irritation is known to produce it under certain circumstances, and certain substances—some of the coal tar derivatives, for instance—have produced it in laboratory tests. But the ultimate, fundamental cause—just what makes cells in the human body go berserk and develop into cancers—is a discovery that lies in the future.

Centuries ago, a prominent physician of his day prescribed the application of boiled cabbage as a remedy for cancer of the breast. Today quacks and charlatans in unknown numbers prey upon the gullibility and ignorance of desperate men and women, offering potions, balms, salves, and various so-called miracle cures that are equally worthless. More than 5,000 such fake treatments are known to exist. Medical societies all over the country warn against them. Postal regulations, the Pure Food and Drug Act, and state and federal statutes tend to limit this dark traffic in human misery. But only an alert and informed public can stamp it out. The unvarnished truth is that no medicine or drug has ever been discovered that will prevent or cure cancer.

In spite of all this, the medical profession has three potent weapons in its fight to save patients attacked by cancer. They are surgery, x-rays, and radium. Sometimes one method may be employed. Sometimes a combination of two or of all three is used. Armed with these, doctors could save at least one-third of the patients now dying of cancer. Maybe the figure is as high as one half. Can-

College of Surgeons has case records which prove this. In its files in Chicago are carefully documented records of something like 45,000 cancer patients who were found to have had no recurrence of the disease within five years after treatment.

This means that an ambitious educational program is needed—one that will carry to every individual in the land the facts about cancer and its curability when diagnosed and treated early; one that will sell the public the habit of periodic health examinations. That is where the Field Army of the American Cancer Society comes into the picture. In April, which is Cancer Control Month by Act of Congress and of the North Carolina General Assembly, the Field Army is conducting its ninth annual educational and enlistment campaign. Mrs. George E. Marshall, of Mount Airy, is State Commander for the North Carolina Division of the Field Army.

In discussing plans for the 1945 campaign, Mrs. Marshall stated that her organization will distribute free literature throughout the state; show sound movies at meetings of clubs, organizations, and factory workers; broadcast several hundred programs over the state's twenty-nine radio stations; arrange meetings with lectures by members of the medical profession; publish hundreds of magazine and newspaper articles; and exploit every medium of education and publicity that is available.

The North Carolina Division works under the supervision of the medical profession. Dr. Ivan M. Procter, of Raleigh, is its State Educational Director. Dr. F. Webb Griffith, of Asheville, Chairman of the Cancer Committee of the Medical Society of the State of North Carolina, is Chairman of the State Executive Committee. Dr. Griffith's committee, which includes Dr. Robert P. Morehead of Winston-Salem, Dr. L. W. Oehlbeck of Morganton, Dr. Procter, Dr. W. D. James of Hamlet, Dr. O. B. Bonner of High Point, and Dr. E. McG. Hedgpeth of Chapel Hill, are all members of the Field Army's State Executive Committee. So, too, is Dr. W. Reece Berryhill, of Chapel Hill. D. C. Rector, Mount Airy banker, is State Treasurer, and Miss Myrtle Ellen LaBarr, Greensboro consultant in public relations, is State Publicity Director. Miss Harriet W. Elliott, Dean of Women at the Woman's College of the Uni-

In addition to its intensive program o education in April, the North Carolina Divi sion carries out a year-round schedule o service. During the past year, it has intro duced an attractive little textbook on cance in the junior high schools of the state. Thi is incorporated in the community life course that are being started in schools as fast a teachers to conduct them can be procured Another new service started during the pas year is the making of surgical dressings fo the use of cancer patients. Well-functionin units for this work are operating in Ashe ville, Charlotte, and Greensboro. Others ar being formed. Mrs. Grady Kirkman, o Greensboro, is State Chairman of Surgica Dressings.

The North Carolina Division is providin funds, too, for several local projects that ar serving cancer patients. In fact, such funds made possible the opening last spring of tw new cancer clinics—one at Grace Hospita in Morganton, and one at the Baptist Hos pital in Winston-Salem.

Along with its concentrated educational program in April, the Field Army will conduct its annual drive for funds. This year, the national organization, with Eric Johnston, President of the United States Chamber of Commerce, as National Campaign Chairman, is asking for $5,000,000 for its war chest in the fight on cancer. This is more than it has ever sought to raise, and marks the first time in the country's history that professional and lay persons have joined hands to finance an attack on cancer from all angles. Included in the plans is the raising of funds with which to make possible wide research into the cause, prevention, and cure of cancer. Included, also, is the raising of funds for education and service to cancer patients.

Funds will be derived from three sources. Individuals are being asked to enlist in the Field Army. An enlistment costs one dollar. Gifts of large and small amounts are being sought from large corporations, business concerns, clubs, organizations, and individuals. Books of air mail stickers are being offered for sale. On a per capita basis, the amount sought is less than the price of any popular soft drink. John Kerr, Jr. of Warrenton, is state campaign chairman, and Mrs. Marshall is co-chairman.

ord. On the basis of knowledge and skill now in the hands of the medical profession, one third of these deaths were needless—maybe as many as one-half of them. This means that enough people died needlessly of cancer in 1943 to populate a city like Greensboro or a county like Nash. The North Carolina Division believes that the saving of such lives and the making possible of research which may ultimately conquer cancer is a crusade worthy of the earnest support of every citizen.

Guard those you love — give to conquer cancer!

BOOK REVIEWS

Endocrinology of Woman. By E. C. Hamblen, B.S., M.D., F.A.C.S., Clinical Professor of Endocrinology and Associate Professor of Obstetrics and Gynecology, Duke University School of Medicine; Chief of the Endocrine Division and Endocrinologist, Duke Hospital, Durham, North Carolina. 571 pages. 157 figures and plates. Springfield, Illinois: Charles C. Thomas, 1945.

Dr. Hamblen has for many years represented the invaluable correlative point of view, with his interests evenly balanced between basic endocrine physiology and applied clinical endocrinology. In the present volume, he brings together in an organized clinical monograph the innumerable fundamental discoveries in the field of endocrinology of women. His avowed intention to make available clinical data which can be readily applied to diagnosis and treatment is fully accomplished. The broad scope of this work, covering every physiological endocrine function and practically all abnormalities of the endocrine glands, makes it a ready reference book, as well as a clear and concise text of endocrinology.

He adheres to his usual sound principles in the presentation of this material, clearly stating the established facts as such, presenting the controversial material in a lucid and critical manner, and throughout keeping in mind the clinical significance of each point as it is made.

On page 443, Dr. Hamblen makes the arbitrary statement: "Androgenic therapy, regardless of what may be its supposed indication, always is contraindicated in the treatment of the female." On page 450 he states that "No justification exists for the use of androgens in the therapy of dysmenorrhea ... exposing the patient to possible pharmacologic mayhem." In this one controversial point Dr. Hamblen has taken an almost irrevocable stand. Although the reviewer is definitely inclined to agree with Dr. Hamblen, there have been many favorable reports in the literature on the use of androgens in women.

The book is divided in a very practical manner, making it ideal for use of the practitioner or student, since the material is easily found. The index is complete, and the bibliography is supplied in two ways: "(1) footnotes for documentation and amplification, and (2) bibliography at the end of each chapter." The reviewer feels that the fact that all references are to books and articles in the English language immeasurably enhances the value of the book for the average student and physician.

Part I presents the history, embryology, anomalies, histology, anatomy, secretory control, chemistry, physiology, and interrelations of each of the endocrine glands. The more significant points are adequately emphasized.

Part II is a section on applied endocrine physiology, including antenatal growth, sexual differentiation, childhood development, sexual maturation, sexual maturity (menstruation, conception, gestation) and sexual regression. These chapters provide a clear conception of normal variations in the detail which is necessary for the accurate evaluation of every endocrine problem. The section on the climacteric deserves special mention, and should be read carefully by every physician.

Part III is a complete presentation of endocrine diagnostic methods, with an evaluation of the usefulness of each method in clinical application.

Part IV takes up the known functional disorders of each of the endocrine glands. Each disease is discussed from all aspects, although emphasis is placed upon its effect on the sexual and reproductive functions in the woman. An adequate number of illustrative photographs and photomicrographs are included.

The final section applies the facts and theories of endocrinology to functional disorders and diseases of gynecology and obstetrics, including chapters on abnormal sexual growth, abnormal sexual differentiation, obesity and leanness, abnormal uterine bleeding, functional uterine bleeding, dysmenorrhea, complications of pregnancy, and sterility. The diagnosis and treatment of each condition are clearly outlined.

The reviewer recommends this volume for the use of every student and physician.

Fundamentals of Internal Medicine. By Wallace Mason Yater, M.D., F.A.C.P., Professor of Medicine, Georgetown University School of Medicine. Ed. 2. 1204 pages, with 275 illustrations. Price, $10.00. New York: D. Appleton-Century Co., Inc., 1944.

The second edition of Dr. Yater's book has been revised and brought up to date in a fairly satisfactory manner. The list of contributors is given, but the individual articles are not signed by the author, as in the first edition. The table of contents preceding each chapter has been deleted.

Revisions and additions are included in most of the sections, particularly in those dealing with diseases in which sulfonamides are indicated. A brief outline of the toxic reactions encountered with the use of sulfonamides is included under the section on the treatment of pneumonia. The section on fungus diseases is enlarged. Unfortunately the bibliography which accompanies each section has not been brought completely up to date.

A final section has been added in which general information for the house officer and practitioner is outlined. This section deals with the relationship of the doctor to organized medicine and to his fellow physicians, and is an excellent presentation of general problems with which the young doctor should become acquainted.

The value of the book lies in its brief review of diseases according to systems. It was not intended

Neurology of the Eye, Ear, Nose and Throat. By E. A. Spiegel, M.D., Professor of Experimental Neurology, Temple University School of Medicine, and I. Sommer, M.D., Lecturer in Ophthalmology, Long Island College of Medicine, Consultant Ophthalmologist and Otolaryngologist, Chicago Eye and Ear Hospital. 690 pages, with 118 illustrations. Price, $7.50. New York: Grune & Stratton, Inc., 1944.

This English edition of **Oto-Ophthalmo-Neurologie,** based partly upon and completely rewritten from the German text of the authors published in 1931, is an excellent source of information for those physicians whose interests lie in the field of neurology, neurosurgery, ophthalmology, and otolaryngology.

The anatomy, physiology, and pathology of the nervous system as it is related to the eye, ear, nose, and throat are presented from the experimental and clinical points of view. The acoustic and statokinetic labyrinths in health and disease are considered. The functional tests of the inner ear are presented and the findings of the clinical examination are interpreted. A section is devoted to pain in the face and to otogenic endocranial complications. The neurological conditions of the eye are discussed from the points of view of the optic pathways and centers, the fundus, extra-ocular and smooth muscles, and the sensory nerves. The neurological survey of the nose, mouth, pharynx, and larynx is described. The final chapters are devoted to local symptoms of the brain stem and the cerebrum.

The sixty-eight pages of references and the 118 illustrations are alone worth the price of the volume. No neurologist, neurosurgeon, ophthalmologist, or otolaryngologist should be without this book.

The Chemistry and Pharmacy of Vegetable Drugs. By Noel. L. Allport, F.I.C., Research Chemist, The British Drug Houses, Ltd. 252 pages. Price, $4.75. New York: Chemical Publishing Co., Inc., 1944.

The author has attempted to collect and sort much information concerning the preparation and standardization of drugs derived from the vegetable kingdom. The chemical classification has been adhered to for most of the drugs, but in some cases drugs are classified according to their therapeutic use, especially when such use is rather restricted. This would be somewhat confusing except for an extensive and inclusive index which greatly facilitates the use of the book. The subject is by no means exhaustively treated, but the book serves rather as an introduction to the study of vegetable drugs.

The method of approach is in general consistent for each group. The plant or tree from which the drug is obtained is described, and some of its cultural characteristics and its native habitat are given. The methods of collection and preparation of the crude material are discussed, and the preparation of the more refined product is described in rather general terms. Where possible, a brief and usually somewhat inadequate discussion of the chemistry is given, together with methods for assay and test. Therapeutic uses are briefly mentioned. The frequent insertion of historical material and illustrations adds to the reading pleasure.

The book should be interesting to pharmacists and students of pharmacy. It will also be of interest to physicians and students of medicine, from the cultural rather than the practical viewpoint. The book's worth as a source of information is definitely limited by its briefness and by the complete lack of a bibliography.

Military Medical Manuals. A Manual of Tropical Medicine. Prepared under the auspices of the Division of Medical Sciences of the National Research Council. 727 pages with 284 illustrations. Price, $6.00. Philadelphia and London: W. B. Saunders Company, 1945.

This is by far the most usable recent volume on the subject. The material, prepared in large measure by the staff of the Army Medical School, covers not only the usual tropical diseases but also many other infectious diseases. The book is of such length that it can easily be read by busy practitioners or by medical students and house officers. Since it is intended as a field manual, no references are given; this detracts but slightly from the value of the book. The illustrations are well chosen and excellently reproduced on good paper. They cover not only clinical signs but pathologic lesions. Helpful charts to illustrate the epidemiology and mode of transmission of the parasites and diagnostic features of the diseases are scattered through the book. This manual is unhesitatingly recommended.

Synopsis of Clinical Laboratory Methods. By W. E. Bray, Professor of Clinical Pathology, University of Virginia. Ed. 3. 528 pages. Price, $5.00. Saint Louis: The C. V. Mosby Co., 1944.

This popular book is extremely valuable in the field of the laboratory diagnosis of disease. The author has consistently kept pace with new developments and discoveries, so that each new edition is brought up to date. It adequately meets the demand for a ready reference book of accepted laboratory techniques. It is concise, yet complete, and therefore should find wide use among busy practitioners and students.

Many new subjects are discussed in this third edition, including the Rh factor, anti-Rh, cold agglutinins, tests for sulfonamide crystals, and the laboratory diagnosis of toxoplasmosis. The contents of the book are logically arranged and well indexed. This book is highly recommended to those who wish to have the essentials of diagnostic laboratory procedures condensed into one volume.

Medico-Legal Blood Group Determination. By David Harley, M.D., St. Mary's Hospital, London. 119 pages. Price, $3.50. New York: Grune and Stratton, Inc., 1944.

The subject of the blood groups and their relationships in medicolegal cases is covered adequately in this concise manual. Theory, technique and practice receive emphasis in the author's direct and lucid style. The section on the theory of blood groups is an orderly presentation of the theories and facts of the subject, for which the author expresses his indebtedness to standard textbooks such as that of Wiener. This information is clearly stated and serves as an introduction and background for the material in the rest of the book. The section on technique is complete to the fine details of the procedures to follow and the points to be avoided in the performance of the blood tests. Interpretations of the results obtained are discussed briefly. The section on practice is built up by the use of actual case records covering the history, physical findings, laboratory findings, and the interpretation of these facts. These records are very helpful in accentuating points which may have been slighted in the preceding portions.

Harley's **Medico-Legal Blood Group Determination** is recommended highly to all those interested in the subject.

The Marihuana Problem in the City of New York. By the Mayor's Committee on Marihuana. 220 pages. Price, $2.50. Lancaster, Pa.: The Jaques Cattell Press, 1944.

As a result of the general belief that the use of marihuana was becoming a problem which concerned many public agencies, the Mayor of New York City appointed a committee of experts to investigate the use and effects of the drug. This monograph is the published report of the Committee. The report is divided into three sections: one dealing with the sociological aspects of the problem; one dealing with the effects upon organic and systemic functions, and the effects upon intellectual functions, emotional reactions and personality; and the final section consisting of an exhaustive study of the pharmacological aspects of marihuana.

It was found that the majority of individuals using the drug are between 20 and 30 years old, and are without steady employment. It was felt that idleness, a lack of initiative, and boredom were important factors contributing to the continued use of marihuana. "Smoking is indulged in for the sake of conviviality and sociability and because it affords a temporary feeling of adequacy in meeting disturbing situations." The behavior of the user is usually friendly, aggressiveness and belligerency usually not being seen. No relationship between the use of marihuana and crimes of violence was found; nor was marihuana, **per se**, found to have any "specific stimulant effect in regard to sexual desires." It is possible to stop smoking marihuana abruptly with no after-effects comparable to morphine withdrawal in morphine addicts.

The clinical studies were carried out on volunteers. The most frequent symptoms found were tremor, ataxia and dizziness. Out of 77 subjects psychotic episodes occurred in nine. These episodes were characterized by mental confusion and excitement with periods of laughter and anxiety.

The systemic effects found were: an increase in pulse rate and blood pressure; no effect on circulation rate, electrocardiogram, vital capacity, renal and liver function tests, blood and blood chemistry (except an increase in blood sugar), or the gastrointestinal tract. The metabolic rate was found to be elevated.

Marihuana was found to impair intellectual functioning. It did not change the basic personality structure, but it did lessen inhibitions. Static equilibrium and steadiness of the hand were most frequently disturbed, but simple reaction time, speed tests, and judgments of short time intervals and small linear distances were unchanged.

The committee concluded that "marihuana is not a drug of addiction, comparable to morphine, and that if tolerance is acquired, this is of a very limited degree." Many of the effects suggest therapeutic possibilities, and the impression was gained that marihuana was useful in treating withdrawal symptoms of morphine addicts.

The section on the pharmacological action is quite complete. Methods of bio-assay and the active principles of the drug are discussed. The effects of marihuana were studied in a variety of animals, and no evidence of tolerance was obtained. The effects are attributed to an action on the central nervous system.

This monograph is authoritative and is a very timely contribution to medical and sociological literature. Speculation and superstition concerning marihuana can now be replaced by precise information.

Personal Mental Hygiene. By Dom Thomas Verner Moore, O.S.B., M.D., Ph.D., Professor of Psychology and Psychiatry, Catholic University of America. 323 pages. Price $4.00. New York: Grune and Stratton, Inc., 1944.

This book starts out with a review of concepts of mental hygiene and mental illness, then discusses in a rather superficial way some scattered aspects of emotional difficulties and of mental hygiene in education and in the home, and builds up to religious aspects. Chapter 17 is titled "Unwholesome Drives: Fame and Feminine Charms"; Chapter 18 is titled "Unwholesome Drives: The Lure of Pleasure and Its Rationalization"; Chapter 19, "Religious Sublimation."

The language is difficult to understand. A large number of statements are not acceptable from a scientific standpoint. For example, in Chapter 2, page 14, the author states: "And in all probability one will avoid arteriosclerotic insanity if he does not smoke." Case histories are cited in a scattered, rather inadequate way, and a large part of the book is taken up by quotations from literature and the Bible. The author fails to point out just what he desired to illustrate with these quotations.

The book brings nothing new to the medical profession and workers in allied fields. In the layman's mind it might create a good deal of confusion. This book cannot be recommended to the profession or to laymen.

Proceedings of the Rudolf Virchow Medical Society in the City of New York. Vol. 3, 1944. By the Publication Committee (Franz M. Groedel, M.D., Bruno Kisch, M.D., and Erwin Schiff, M.D.) Price, $2.00. 103 pages. New York: Brooklyn Medical Press, 1945.

This volume is composed chiefly of very short notes summarizing the discussions at meetings. Little original work is represented.

First Use of Intravenous Anesthesia

The first recorded use of an anesthetic agent by vein is credited to a French surgeon, L. Ore, of Lyons and Bordeaux, it is stated in the Winter, 1945, issue of The Journal of Parenteral Therapy, which reviews R. Charles Adams' comprehensive monograph on intravenous anesthesia. In 1872 the Frenchman intravenously administered 9 Gm. of chloral hydrate in 10 cc. of water to a patient with a crushed finger and traumatic tetanus. The most-used intravenous anesthetic agent is evipal, which, since its introduction in 1932, is estimated to have been used over 10,000,000 times.

The Use of Airfoam in the Treatment of Leg Ulcers

Important possibilities in the curing of leg ulcers through use of Airfoam—a leading peacetime material for seat-cushioning and similar purposes—were disclosed recently by The Goodyear Tire & Rubber Company.

Under the direction of Dr. R. A. Simendinger of the Goodyear Hospital staff, Airfoam has already been used successfully in the treatment of several exceptionally stubborn leg ulcer cases.

In Memoriam

WILLIAM MERRITT JONES, M.D.

William Merritt Jones, born in Wake County on January 23, 1881, died in Greensboro, July 29, 1944. He spent his boyhood in Cary, and at about the age of 13 years moved to Asheville, where he attended the public and private schools; later he entered the University of Maryland in Baltimore, from which institution he graduated in 1903. This same year he was licensed by the Medical Board which met in Hot Springs, North Carolina. He very soon located in upper New York state and practiced medicine there for a short time. After traveling for a while through the West he located in High Point, and was very successful in the general practice of medicine. A few years later he was given the position of Director of Health for Guilford County, being among the first whole time county health officers in the United States. One of his main interests along this line was preventive medicine. After being County Health Officer for a number of years he became affiliated with the Jefferson Standard Life Insurance Company, and at the time of his death was Medical Director for this company. His chief interest was the advancement of scientific medicine. He had been president of the Guilford County Medical Society, Councilor for the Eighth District, and a member of the Board of Medical Examiners. He is survived by his wife, who was Miss Lelia Mundy, and three daughters, Miss Hortence Jones, Mrs. Harold C. Ernst and Mrs. Carl Buffington. In the passing of Dr. Jones, Guilford County Medical Society, the Medical Society of the State of North Carolina, and his host of friends throughout the state have suffered a great loss. We shall miss him.

Committee for the Guilford
County Medical Society
Rigdon Dees, M.D.
Walter L. Jackson, M.D.

On motion, duly seconded, it was
RESOLVED: That the foregoing resolution be spread upon the records of the Guilford County Medical Society, and a copy thereof be sent to the family of the deceased and to the Secretary of the Medical Society of the State of North Carolina.

Borden Awards

Nine American scientists received Borden Awards of a gold medal and $1,000, for outstanding contributions to scientific research in the food industry and related fields during 1944. This brings to 39 the total number of awards made since their establishment by the Borden Company in 1936.

Designed to recognize and encourage outstanding research achievements, the awards are administered by seven professional and scientific associations. These are: The American Chemical Society; American Academy of Pediatrics; American Dairy Science Association; American Home Economics Association; American Institute of Nutrition; Poultry Science Association and The American Veterinary Medical Association.

Wyeth Advertising Cited

With paintings occupying four of the three hundred places set aside in the "human interest" group, at the 24th Annual Exhibition of Advertising Art, to be held in New York from April 10th to 29th inclusive, Wyeth Incorporated, of Philadelphia, has again scored heavily with the experts. Each of these paintings dramatically emphasizes the Wyeth message to consumers: "Save your doctor's time in wartime."

"But it's my last night, Dad—can't another doctor go?" is the G. I.'s appeal in one of this series, which, in addition to recognition by the Art Director's Club, has been chosen for inclusion in the hundred outstanding advertisements to receive Wartime Advertising Awards.

Squibb Adds Pituitary Gonadotrophin to Hormone Line

For the treatment of hypogonadism resulting from pituitary hypofunction, E. R. Squibb & Sons, New York, have added to their extensive line of hormone products a Pituitary Gonadotrophin. This is a highly purified, stable preparation extracted from the pituitary glands of horses, the pituitaries of which are richer in gonadotrophin than those of any other species except man.

Pituitary Gonadotrophin Squibb is supplied in dry form in 5-cc. rubber-diaphragm capped vials containing 125 rat units (25 units per 1 cc.) together with a 5-cc. ampul of Sterile Isotonic Solution of Sodium Chloride for use as a diluent.

If you can't be on the battlefield—you can do your part toward winning the war—

BUY WAR BONDS — THE BEST AND SAFEST INVESTMENT

The new drive is now on — America depends on YOU and your money to win an early victory — IT CAN BE DONE!

NORTH CAROLINA MEDICAL JOURNAL

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MEETING THE FUTURE OF MEDICINE

CHESTER S. KEEFER, M.D.

BOSTON, MASSACHUSETTS

I consider it a high honor indeed to be invited to come here today and to take part in your Commencement exercises. I want to be among the first to extend to you my heartiest congratulations. We all share your feelings of happiness and satisfaction because we are convinced that you are well prepared for the responsibilities of your chosen profession. We are certain that you will be a credit to your school. It is undoubtedly a matter of pride to you that you have passed the first milestone in your new work. It has required steadfastness of purpose, personal adjustment to people, and a new way of living for many of you. You have been brought into direct and intimate contact with human suffering. You have met these situations and you have met them well.

Aside from satisfying the requirements for graduating with the degree of Doctor of Medicine, many of you have fulfilled the requirements for receiving a commission in the Medical Reserve Corps of the armed forces. For some time, then, you will have a dual responsibility—that of a *doctor*, and that of a *medical officer*. If you are wise, you will always be a *doctor* first and an *officer* second. Your responsibilities in the dual role will be very great indeed.

It is appropriate at this time to look forward to the future and face some of the problems which your new position in the world will bring. During the course in medical school a large number of subjects have been presented in a relatively short period of time. An effort has been made to teach you the basic principles of the fundamental sciences, and to introduce you to the techniques of studying patients and their diseases. This is the foundation upon which you can build a solid structure. In medicine, the structure is never completed, since medical education is continuous and dynamic. All physicians must continue to learn new techniques and improve on the old ones. They must be able to apply the weapons that are developed by research. The question is frequently asked: "How can this be done?" The plans which have been formed by medical schools such as yours and by civilian teaching hospitals for continuous education and for graduate instruction have proved their worth during the past few years. This is attested by the fact that the medical and surgical care of our men in the armed forces, and of the civilians, is of an extremely high order. We are told that never before in any war have the wounded of our army and navy received such excellent medical and surgical care. These results have been obtained because the medical profession was prepared to render that service. They were prepared because they spent long years of training in our universities and in our civilian hospitals. They had kept abreast of the times; their education was continuous and thorough, and they knew how to apply it effectively.

We must not allow the splendid plan which has been developed by our universities to be changed in such a way that it will interfere with the quality of the training of young physicians. The advances made in medicine during the past twenty-five years have been due to the great improvement in medical education. Physicians have been eager to continue their education when they leave the university. They have done this in many ways, and they have done it even in the

Delivered at the Commencement of the Duke University School of Medicine, Durham, September 23, 1944.

smallest communities. A physician learns from his accumulated experience; he learns from his colleagues, his associates, and his patients; he learns from reading and from attending medical meetings and postgraduate courses. In short, *we learn from one another*. The universities must continue to assume the leadership in medical education, and they must not be unduly influenced by laymen who want to streamline courses in medicine for the sake of increasing the number of physicians in a short period of time.

Many of you have undoubtedly asked yourself the question, "What is the physician's function in life and what place does he take in the community and in society in general?"

The word "doctor" means "teacher"; "doctor of medicine" in its broadest sense means "teacher of medicine." The title implies that here is a man or woman who is qualified to teach the public, his patients, or his colleagues how to maintain health or prevent illness, and how to treat patients when they acquire some illness. In a word, it should imply that here is a person who is interested in all the problems of human beings. The title carries a great responsibility and one not to be entered into lightly.

In our dealings with patients we must treat them as a whole; we must know as much about them as possible. This art is something that is not acquired in medical school. It is acquired by studying men and women and children—their behavior under conditions of external environmental strain, their reactions to minor stresses and to the problems of normal living. One gains information of this sort from his own emotional experiences and reactions to life situations. One learns from the reading of novels and plays. The non-medical literature of the ages is filled with information that aids the doctor in understanding his patients.

The physician with experience, then, realizes that the successful physician is one who understands human beings and who has interests other than the dispensing of pills or the removal of some diseased organ of the body.

As you leave the medical school and take up positions as house officers in hospitals, your responsibilities increase enormously, and your personal relationships with many groups will be thoroughly tested. A period of adjustment is always necessary, and it is not always easy for you or for the others in the environment. Your relationship with your colleagues who may have had an entirely different background and training may be strained. You have important professional relationships with patients, nurses, administrative officers of the hospitals, the patients' families, and a great many other people. You are only one important part of a highly organized regime. Your success and effectiveness as a physician will depend upon your personal relations as much as upon your medical knowledge.

It is customary on an occasion like this to say something about medical ethics. This is a subject of the greatest importance to all of us. There is nothing peculiar about it, since it involves only the problem of human relations on a high and dignified plane. The physician-patient relationship and the relation of one physician to another are involved. The physician-patient relationship is an extremely confidential and personal one. Information that is disclosed to doctors by patients must be held in the strictest confidence, and no physician should disclose any such information to others. If a patient cannot trust his physician, he has no confidence in him or in anything that he says or does.

In dealing with patients or their families, or with your colleagues, honesty is one of the first principles. No patient should ever be deceived. The physician should never hesitate to admit that he doesn't know or that he needs help and assistance. The patient and his family should be taken into your confidence. Your honest opinion in all situations is exceedingly important. Some physicians hesitate to tell the truth and they tend to be indecisive. This indicates that the physician is not always secure in his opinion; he is often afraid of losing a patient, and his personal pride interferes with his logical thinking and good judgment. It should be remembered that no one is infallible and that the doctor is not always right. We are all human and we all make mistakes. It is extremely important, however, for all of us to be honest with ourselves, with our patients, and with our associates. Your advice will be sought on all sorts of matters. You must be prepared at all times to be of service to your community, and to those who call upon you for counsel.

In conclusion, I would like to make a few remarks concerning the progress of medicine in the past few years, and some of the problems for the future.

Recently, there has been a great accelera-

tion of medical research in certain fields. Of necessity, this research has been directed toward solving problems in military medicine. Fortunately, many of the advances can be carried over for the benefit of civilians in peace-time. Such diseases as tetanus, louse-borne typhus fever, and yellow fever can be prevented. Great strides have been made in preventing meningococcus meningitis, and the death rate from that disease is lower now than at any other time in history. The same may be said for other infections, including those with hemolytic streptococci and pneumococci. Malaria can be effectively suppressed by the proper use of chemotherapy, and at least one form can be cured by adequate treatment. Progress has been made in the treatment of wounds and burns, and in many other medical and surgical diseases which one could mention.

These advances have been made possible by applying the results of long years of research in the fundamental sciences and in the field of clinical medicine. We have learned how to make useful many of the facts which in themselves have appeared to be useless in the past. Physicians and other biological scientists have been given an opportunity to develop the results of their researches and to explore new fields. As a result of the cooperative efforts of such organizations as the National Research Council of the National Academy of Sciences and the Committee on Medical Research of the Office of Scientific Research and Development, scientists have been brought together for the purpose of discussing problems and exchanging information. Programs of research have been started and the results have been developed. The results of these broad programs of research and development have been passed on quickly to the military forces and to civilians. New programs of research were made possible by virtue of the fact that scientific laboratories were prepared to assume these responsibilities. They had trained personnel and equipment which has been utilized, and adequate financial support has been provided. The large body of knowledge that has been assembled in recent years is very impressive indeed. New principles of research and its application have been established. These must be continued.

The advent of war has served to focus our attention upon certain medical and public health problems of the future. Two recent disclosures that have shocked the American public are (1) the high incidence of rejections of men for military service, and (2) the lack of so-called physical fitness. When one examines the list of physical defects which were responsible for rejection, it becomes plain that many of them can be corrected by medical or surgical treatment. This is a very large problem, and ways and means must be provided for solving it. It is perhaps worth while to point out that these defects in adults are not of recent origin. Most of them arise during childhood and remain uncorrected. For example, we have recently made a physical survey of 1,000 boys between the ages of 8 and 16 years of age. We found the same distribution of physical defects in this group as was found in young men of military age. The problem, then, is adequate treatment and correction of physical defects in youth. The leadership of the medical profession is required for its solution. Facilities must be provided for correcting these defects which appear during the period of growth and development. It is of little value indeed to recognize a defect if you are not prepared to correct it.

The problem of physical fitness is now attracting widespread attention. Indeed, there is now in existence a national drive to make our youth physically fit. One of the objectives of the campaign is to teach the youth that health and physical training will bring a fuller enjoyment of life. Standards of fitness are being devised, and a National Council is developing a program to improve the health of the country's school children.

Plans are also being made so that the partially handicapped person may be made physically fit for placement in industry. Here, then, is an opportunity for the medical profession to be of additional service to the community. It is one of our responsibilities, and we must be prepared to meet it.

There are many other problems concerned with health, which you will be called upon to solve in the future. We are confident that you will be equal to the tasks that are before you. Your teachers have set a high example. It has been your privilege to receive an excellent training here at Duke University, an institution where the highest traditions of medical research and teaching are maintained. I know that the faculty and your friends join with me in wishing you a happy and successful career.

65 E. Newton Street

BACCALAUREATE SERMON
THE BELOVED PHYSICIAN

JOHN R. CUNNINGHAM, D.D., LL.D.
PRESIDENT, DAVIDSON COLLEGE

Col. 4:14—"Luke, the beloved physician."

A graduate student in the Yale Divinity School made what he considered an original discovery. He stated in his thesis that Paul closed his letters almost invariably with an anti-climax—just a reference to a few individuals who were his friends and associates. Dr. Luccock, a member of the faculty, observed that what the student had not discovered was that people are never the anti-climax to any consideration. There are still many people in politics, business, industry, and even in education and religion, who have not made this discovery. People are important; they are the height of the creation.

Here in our text is a fragmentary reference to a friend, an associate of the writer, the Apostle Paul. It is easy to pass it by as having only local and temporary implications. Closer attention, however, indicates that there is much in it to interest, impress, and intrigue us. Paul writes to the people of Colosse, a city of Asia Minor, in which both he and Luke had worked. He is saying to them in his letter: "Luke, our beloved physician, greets you." We are not dependent, however, upon this reference alone for what we know about Luke. We know, for instance, that he was born in the city of Antioch and was of Gentile parentage. He was a cultured Greek. He was a scientist. He was a friend of the poor, but he had entree to the rich, as is indicated in the dedication of both his books to Theophilus, whose title would indicate that he was the peer of Festus and Felix, both of whom were governors in the Roman Empire. Luke possessed literary gifts. Renan says that his is "the most literary of the Gospels." He wrote a pure Greek. He had an appreciation of hymnology. He it is, and he alone, who tells us of the hymn of the shepherds in Bethlehem. He gives us the Magnificat, the Benedictus, and the Nunc Dimittis. Best of all, Luke is the author of two great books. Doctors have produced some of the best literature we have. For instance, there are the contributions of such men as Dr. Oliver Wendell Holmes, Dr. Conan Doyle, Dr. John Brown (who wrote "Rab and His Friends"), and Sir Thomas Browne (who wrote "Religio Medici"), not to mention many more recent and even local figures. But the two most famous books ever written by a doctor were from the pen of this physician—Dr. Luke. They have influenced the lives of people more widely, more deeply, and more beneficently than any other book ever written by a doctor. When a man writes a book—particularly if it be about other people, or about great philosophies of life—he is, whether he knows it or not, writing an autobiography. Therefore, most of what we know about Luke we discover from the things which came from his pen. Thus, through this medium I propose that we look at the life of this doctor of the long ago.

1. Note first Luke's estimate of the *sanctity and worth of the individual.* It is Luke alone among the gospel writers who gives us the parable of the good Samaritan and who tells us the story of a rich little publican, hated by his neighbors because of unethical business practices, who was won to a life of honesty and nobility by the Saviour. It is Luke alone who gives us that matchless story of the prodigal son. He describes for us scores of individuals. He takes them one by one and shows us Christ's power over devils, over disease, and over death. How many individuals are mentioned in the Book of Luke! Luke makes it exceedingly clear that to him individuals must always take precedence over the crowds, over the masses. This is a fundamental principle at the heart of Christianity. It is basic in the democracy for which we now contend. Christ shocked His followers again and again by the attention and time He was willing to give to individuals—and oftentimes very obscure and unattractive ones at that. Note, for instance, His dealing with the woman at the well—a woman of bad reputation, of low character, an outcast in her community; and yet, when Christ had shown her the way so sympathetically and appealingly, it was she who went back to transform her community and save her city.

In the book LOUISIANA HAY-RIDE there is a keen evaluation of Huey Long. An interesting observation which his biographer makes is that "Huey Long had a great sense of human beings." Whether he used that sense for good or for evil, he possessed it, and one sees in his life an amazing example of how far it will carry a man. It is one of the marks of great leadership.

Delivered at the Commencement exercises of the Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, Sept. 24, 1944.

When you see people *en masse* you can become weary with them, you can become cynical about them; but not when you deal with them as individuals and know out of a sympathetic heart and a penetrating mind what lies back of their foibles and unattractive qualities. You gentlemen who go out into the noble profession of medicine must stand firm on this principle of the dignity of the human individual. People possess as individuals inherent value. The stamp of their Creator is in their hearts. Their potentialities are untold. Scores and scores of illustrations could be adduced to show how the personal interest of some person has aroused the confidence and stimulated the imagination and aspiration of those who later became great servants of humanity.

The story is told of Napoleon that, when he was advising with his military leaders on one occasion, he raised a question as to the strength of the army in a certain area. The reply was in terms of individuals and small groups. His impatient reply was, "Do not annoy me with individuals. Tell me the totals." Perhaps that attitude was all right for Napoleon, who was seeking to destroy life, but it is not well for those who go into your profession. Keep clearly before you the sense of human beings as individuals. It will carry you a long way.

2. Note further Luke's emphasis in his life and writings on the *ideal of service.* You will gain an unmistakable impression, as you observe this great man's approach to life, that he regarded service to humanity as the *summum bonum;* it is he who enforces the thought that "the Son of Man came to seek and to save that which was lost." "He came not to be ministered unto but to minister and to give His life a ransom for many." He depicts in his life of Christ the man who went to and fro touching life unselfishly, and for good wherever He went.

There are the three classic service professions. To mention these does not detract from the great body of unselfish people who are working all down the line in business, industry, and elsewhere. The fact remains, however, that the minister, the teacher, and the doctor are engaged in services so humanitarian as to demand an unselfish spirit. Dr. Conklin of Princeton, speaking to the graduating class of the University of Pennsylvania Medical School some time ago, made this statement: "The saving of life like the saving of souls is so much more important and vital than the saving of property or of social pride, or of class and national prestige, that violations of humanitarian ethics on the part of physicians, or ministers of religion, are regarded as more reprehensible than in business, or law, or statecraft. The profession of medicine, like that of religion, is a humanitarian and holy calling and its ethical code is correspondingly high. These humanitarian professions point the way to better social and moral relations in all phases of society in the world to come after this great crisis in human history."

Some of you have doubtless seen recently the picture, "Mr. Skeffington," in which Bette Davis takes the leading role. If you saw that picture discerningly you saw what comes ultimately to the person who lives a self-centered life. Here is depicted with bold clarity a person who determines that her own selfish whims and desires, her yearning for popularity, and her purpose to be the center of every situation are the test of life and happiness. Her selfishness drove her to such extremes as to take its toll of her happiness long before life terminated. She finally witnessed the cost of selfishness in the crumbling of her entire structure of life.

Woodrow Wilson, while he was President of the United States, wrote a book entitled, WHEN A MAN COMES TO HIMSELF. The thesis of his book is that no man ever really comes to himself or knows the meaning of life until he gets the center of life outside himself. Service, after all, is the law of growth and of greatness and of happiness. I urge you to keep that ideal before you, though the public, with its secular and material standards of success, will make it difficult. A mature and skilled physician said to me some time ago: "A commercial doctor is the most dangerous man in society." He did not mean necessarily the doctor who violates the law in his practice, but rather the one who has self so largely at the center that he preys upon the confidence and innocence of people to serve his gain and increase his popularity.

3. Finally, let us note Luke's *Christian faith and character.* He was essentially a Christian man. His claim to greatness lies more in his character than in his profession. That is true of most men. Indeed, in most cases, a man is valued in his profession first because of his strong character. Luke was great in his spirit and was great in his conduct. He qualified as "the beloved physician." This is only another way of saying that his

life was of such a spirit that people loved him.

Both the disposition and the desire of people is to love their doctor. Indeed, they need to be able to do so if he is to mean most to them. Luke possessed peculiarly the qualities of fidelity and selflessness. In his character the doctor must be above reproach. The ethical standard of his profession is very high. The Hippocratic Oath calls for that. I suggest to you, however, that ethics, like will-power, needs motivation and undergirding. George Washington said in his Farewell Address, "Let us with caution indulge in the supposition that you can maintain morality apart from the religious principle." The qualities of life which are essential to greatness in a doctor must bespeak inner character, else his ethics represent hardly more than a garment which he puts on and takes off at will. I would urge you, therefore, quite sincerely and unequivocally that you set your scientific skill, your practice of your profession, and even your personality against the background of vital Christian faith and character. A doctor who is a true Christian presents a genuine balance of human character. Witness such illustrious figures as Dr. Howard Kelly of Baltimore and Sir Wilfred Grenfell of Labrador.

You will deal intimately with people across the entire span of life, from birth until death. People will wish the satisfaction of knowing that you are scientifically prepared, that you are skilled in the practice of medicine. But they will also want to know that you are a good man, that you are a doctor who has an appreciation of the spiritual values of life—one to whom they can entrust their secrets, and one who can not only give them physical relief but who can treat, as did the Great Physician, their minds and their spirits too.

In the entrance to the Administration Building of Johns Hopkins University stands the heroic statue of Christ. It is a copy of the great figure done by Thorvaldsen portraying the Great Physician. The best word of advice I can leave with you today is that you place His heroic spirit and power at the very entrance to your profession and at the center of your life.

No one in any community is more impressed by the tragedy of tuberculosis than the practicing physician. No one is more aware of its preventability.—William P. Shepard, M.D., Amer. Rev. of Tbc., Sept., 1944.

RUPTURE OF THE UTERUS SUBSEQUENT TO CESAREAN SECTION WITH REPORT OF THREE CASES

HARRY L. BROCKMANN, M.D.

HIGH POINT

Within the past few months I have encountered 3 patients with spontaneous rupture of the uterus, 1 when six and a half months pregnant, and 2 at or near term. All three had previously had cesarean sections. These 3 cases were the first I have seen in almost twenty-seven years of surgical practice, and there has not been another instance of ruptured uterus at our hospital within twenty years.

Case 1

Mrs. A. B., a healthy appearing white woman of 23, came to my office on October 19, 1943, for obstetrical care. The estimated date of confinement was February 8, 1944. This was her second pregnancy. The first had been terminated in February, 1943, at four and a half months, because of severe acidosis brought on by pernicious vomiting. The operation employed was an abdominal hysterotomy. After this operation the patient was found to have diabetes, and treatment by means of insulin and diet was instituted. She had had no serious illness prior to her first pregnancy, and her only previous operation was a simple appendectomy at the age of 16. Her weight at the onset of the second pregnancy was 120 pounds.

When I examined her, her weight was 135 pounds, her height 64½ inches, her temperature 99 F., pulse 90, respiration 20. The abdomen was normal for a five and one half months' pregnancy. Fetal heart sounds were not heard, but movements were normal. The abdominal operative wound was firm.

This patient required a diabetic diet, 32 units of protamine zinc insulin, and 16 units of plain insulin daily to control the diabetes. Her pregnancy progressed normally until November 21, 1943, when she began having abdominal pains at 8 p.m. and was admitted to the hospital at 9 p.m. She had a bloody discharge and pains most of the night. Then she was relatively free from pains and felt very well until 11:30 a.m. on November 23,

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From the Burrus Clinic, High Point.

when the pains started again. Bleeding from the cervix had been slight, and the blood was dark. On November 25 the bleeding had almost stopped, although she continued to complain of pains at intervals. I could not hear the fetal heart. Her own pulse rate was about 120, and her temperature was normal. There was no shock or indication for emergency measures. The red blood cell count was 4,610,000, the hemoglobin 101 per cent. She had developed a thrombotic hemorrhoid, and had considerable borborygmus. Bowel movements had been normal. I concluded that the fetus was dead, and prepared her for delivery by section the following morning.

At operation on November 26, 1943, a midline incision was made, excising the abdominal scar. The uterus was found to have ruptured at the site of the hysterotomy which had been performed nine months previously. The fetus and placenta had been expelled through the opening in the uterus and lay in the right side of the abdominal cavity, with moderate adhesions to the omentum and bladder. The uterus had contracted into the pelvis. There was no blood in the abdominal cavity, and the other organs were normal. The products of conception were separated and removed, and a subtotal hysterectomy was done. Five grams of sulfanilamide crystals were sprinkled in the peritoneal cavity, and the wound was closed without drainage.

The patient made a fine recovery. A few hours after operation her temperature rose to 102.4 F. and her pulse to 140. Two days later both were normal and remained so. She was discharged on the fifteenth day. The diabetes did not create any difficulty. Since February 26 she has been actively at work in industry.

Case 2

On January 20, 1944 — not quite two months after I operated on the first patient —the second patient with a ruptured uterus was admitted to the hospital. This case was much more dramatic.

Mrs. J.H.H., aged 24, presented herself at my office for obstetrical care four months prior to her admission to the hospital. The date of her confinement was estimated to be around January 5 to 10, 1944. Fetal movements had been noted a week before she came to me. She had not consulted a physician previously during this pregnancy. Since she had become pregnant her weight had increased from 98 to 113 pounds. Her height was 61½ inches. She complained of small varicose veins in the left leg.

Her previous health had been fair. An appendectomy had been performed through a right rectus incision when she was 16. Five years before I saw her she had had a cesarean delivery performed at eight months because of placenta praevia. A healthy, 6½ pound baby was delivered in good condition. She told me that two drainage tubes had been left in the wound.

On physical examination the abdomen presented the normal contour of a pregnancy of about seven months, but the abdominal scar from the cesarean section was broad and thinned out, and extended above the navel. A small ventral hernia was seen in this region, a little to the left of the navel. The pelvic examination showed nothing abnormal. The patient was given an abdominal support.

The progress of gestation was normal. The patient's weight increased to 126 pounds, and on January 2 she was thought to be in early labor and was admitted to the hospital. The pains ceased in a few hours, however, and she was sent home. Just before midnight on January 20 she waked up with pain in the substernal region, which became worse and caused her to vomit. When she was admitted to the hospital at 1 a.m. her temperature was subnormal and her pulse was 110. This climbed to 130, and her whole abdomen was tender and slightly rigid. At 3:30 a.m. she was having difficulty in breathing. The fetal heart beat was heard in the right lower quadrant after careful auscultation; the rate was too slow. Rectal examination showed no dilatation of the cervix, and there was no vaginal bleeding. A diagnosis of rupture of the uterus was made. A consultant who was called concurred in this opinion.

Operation was begun at 5 a.m. The patient's condition was critical, and plasma was started as soon as she was anesthetized. A total of 1500 cc. was given, followed by 1000 cc. of normal saline solution with 10 per cent glucose, during the operation; coramine, and caffeine sodium benzoate were also required.

A midline incision was made, removing part of the old skin scar. When the peritoneal cavity was opened a very large amount of blood was found. The uterus was densely adherent to the anterior abdominal wall over an area about the size of the palm

of one's hand. In the line of the former cesarean opening and just to the left of the adherent area there was a rupture of about one inch, through which the placenta was protruding slightly. This was bleeding.

The thick adhesions were severed with a scalpel. The opening in the uterus was enlarged, and a normal, full term, live female infant was delivered. The placenta and membranes were then removed. It was thought that closing the opening in the uterus was the quickest and safest procedure for the patient because of her critical condition. An ampule of pituitrin and one of ergotrate were given intramuscularly, and the uterine wall was repaired with three layers of continuous chromic sutures. The abdomen was closed without drainage.

After operation the patient showed some improvement. Within five hours she was given a transfusion of 500 cc. of citrated whole blood. An ampule of ergotrate was given intramuscularly every four hours for the first day, and 1/320 grain by mouth three times a day for the next two days. Following a second 500 cc. transfusion four days after the operation her temperature rose to 103 F. and her pulse to 140. Sulfadiazine therapy was begun. On the fifth day the temperature was not much lower, and the white blood cell count was only 3,450, with 79 per cent polymorphonuclears, 19 per cent lymphocytes, 1 per cent mononuclears and 1 per cent eosinophils. The sulfadiazine was discontinued. On the eighth day the temperature was normal and the patient had made definite progress.

On the ninth day the patient showed typical signs of postoperative intestinal obstruction. After another transfusion was given, a second operation was performed at 11 a.m. on January 30. The omentum and two loops of small intestines were found to be attached to the uterus by plastic adhesions. The uterus was also adhered again to the anterior abdominal wall. The small intestine was considerably distended above the obstruction, and was empty below it. After the adhesions were separated, 100 cc. of amfetin was instilled into the peritoneal cavity, which was closed without drainage. Eight hundred cubic centimeters of brown fluid was removed from the stomach by lavage. Postoperative shock developed in the early afternoon, but was successfully combatted with plasma and saline solution with glucose. On February 1 she developed mild pneumonia in the right middle lobe with a temperature of 104 F. Although the white blood cells numbered only 4,300, she was given sulfadiazine for two days. The temperature fell to 100 F., where it remained for a week. During this time a fourth transfusion was given to combat the anemia. She was discharged on the twenty-fourth postoperative day, weighing 95 pounds. When she visited my office on April 10 her hemoglobin reading was 78 per cent; she was able to care for her new baby and had increased her weight to 98 pounds—exactly what she weighed before she became pregnant.

Case 3

The third patient, Mrs. T.H.F., was pregnant for the third time when she came to me on January 7, 1944. She was a sturdy white woman of 26 who had always been healthy. Several years ago her appendix had been removed elsewhere through a low right rectus incision. Her first baby was delivered by cesarean section when she was seven and one-half months pregnant, and the baby died at birth. The patient reports that at the same time a cyst was removed from one of the ovaries. She gave birth to her second child by the normal route, and this child is living and well. She had not menstruated since the second child was born, but thought that she became pregnant again the latter part of August, 1943, as she was a little nauseated for about three weeks at that time.

The patient was 62 inches tall and her weight was 154 pounds. In the right lobe of the thyroid a small nodule was palpable, and she said that she had taken iodine during her last pregnancy. The abdomen presented the usual appearance of a five and one-half to six months' pregnancy. The position of the child was not definite. The two abdominal operative scars were rather spread out and there was a weakness of the musculature about the navel. There were a number of moderate sized varicose veins on both legs, larger on the left. The pelvis was normal. We estimated the date of confinement tentatively as April 8, 1944.

On March 3, 1944, this patient was admitted to the hospital at 6:30 a.m., having had marked pain through the abdomen almost continuously for an hour before admission. The pains grew more severe but were intermittent, like labor pains. At 10 a.m. they were most severe above the pubis, but she complained also of some pain across the

upper part of her chest. She was very tender over the whole abdomen. Fetal heart sounds were normal and were heard best below and to the left of the navel. The cervix was not dilated and the head not engaged. X-ray examination showed a normal pregnancy at term, with head presentation. There were 3,230,000 red blood cells and a hemoglobin of 70 per cent; a catheterized specimen of urine showed a trace of albumin and many white blood cells. The patient complained of severe pains and beads of perspiration stood out on her face. She had the same type of pain in the upper part of her chest that we had found such a short time previously in the second patient with a ruptured uterus. We were convinced that this patient had a similar condition.

We operated at 11:10 a.m. and found that the abdominal cavity contained a large amount of clotted blood molded under the dome of the diaphragm, and considerable liquid blood. The uterus was ruptured widely along the whole anterior surface, and part of the placenta was protruding. The fetus was mature but showed no signs of life. Intravenous plasma was started at the onset of the operation and was followed by 1000 cc. of 5 per cent glucose in normal salt solution. The fetus and placenta were removed through the opening in the uterus. After subtotal hysterectomy the abdominal cavity was cleaned of blood clots and blood. Ten grams of sulfanilamide crystals were placed in the abdomen and the wound was closed without drainage. Microscopic examination of the uterus showed nothing to account for the rupture.

Following the operation the patient was given a transfusion of 500 cc. of citrated blood. On the second postoperative day her temperature rose to 102 F., and on the fourth day, to 101.4 F. After this it did not go above 99 F. She was dismissed in very satisfactory condition on the fourteenth day, and was doing well when she was seen in my office a week later. Her weight was then 141½ pounds and the incision had healed. It is interesting to record that the onset of her pain coincided with an auto collision in front of her home, close to her bedroom.

Review of the Literature

Medical literature contains many reports of rupture of the uterus during pregnancy or labor. While spontaneous rupture does rarely result from other causes, it is in most instances preceded by cesarean section[1].

Incidence

Novak[2] believes that about 2 to 3 per cent of cesarean sections are followed by rupture in later pregnancies. Kynoch[3] quotes Shroeder's figure as 2 per cent, Couvelaire's as 2½ per cent, and Eardley Holland's as 4 per cent. A large proportion of women who become pregnant following section are again delivered by the same method. Were this not true, the incidence of ruptures would be greater.

Etiology

In most of the cases reported, rupture has taken place in the scar from the former cesarean section. Much discussion has been devoted to the causes of the scar's giving way. Factors mentioned most frequently are imperfect coaptation of the wound edges; infection and febrile convalescence; the presence of blood clots between the sides of the wound; the use of certain forms of suture; the separation of the scar by syncytial tissue; and the location of the placenta directly under the scar. Cases have been cited which could not be attributed reasonably to any of these causes. It is generally accepted that the low cesarean operation is less likely to be followed by rupture[3]. Several writers have described the edges of the scar at the point of rupture as being thinned out so that they are no thicker than a piece of paper. It is interesting to note that a normal delivery may follow cesarean section, and rupture may take place during a later pregnancy or labor[4]. This was true in case 3 reported above. The situation of the placenta under the scar, with thinning and weakening of the scar during pregnancy, might possibly account for this occurrence. It should be kept in mind that union frequently does take place by first intention following cesarean section, the muscle fibres completely regenerating themselves so as to show a normal structure[5].

1. Kickham, C. J.: Ruptured Uterus in Previously Caesareanized Patient, Boston M. and S. J. 183:602 (Nov. 18) 1920.
2. Novak, E.: Rupture of the Uterus Through the Cesarean Section Scar, J.A.M.A. 71:105-106 (July 13) 1918.
3. Kynoch, J. A.: Antepartum Rupture of the Uterus Through a Caesarean Section Scar, Edinburgh M. J. 28-36 (Feb.) 1927.
4. Thornhill, P. E.: Case of Ruptured Uterus During the Second Labor after Cesarean Section, Am. J. Obst. & Gynec. 13:784-785 (June) 1927.
5. Weber, G. H.: Rupture of Uterus in Caesareanized Women, Illinois M. J. 47:39-41 (Jan.) 1925.

Diagnosis

Uterine rupture is usually accompanied by definite signs and symptoms. It is not uncommon, however, to find cases in the literature in which there were no distinct premonitory signs[6]. During pregnancy rupture may or may not be preceded by labor pains. Bleeding from the cervix may be slight or absent. There is usually sudden sharp pain, which may follow work, a fall, excitement, or some expulsive effort[7]. Rupture may occur, however, while the patient is sleeping[8]. The patient is apt to present a picture of shock. There may be severe pain in the chest or epigastrium, and vomiting or diarrhea may or may not be present. It is difficult to obtain histories from patients when symptoms are pronounced, as they are most frequently; however, a question often reveals the history of a cesarean section. The abdomen typically presents general distention[2], tenderness and rigidity. Frequently vaginal and rectal examinations give no information. The pulse rate rises just before or at the time of rupture. Many of these signs point to intraperitoneal hemorrhage and peritoneal irritation.

In rupture during labor, hard labor pains stop with a sudden, sharp pain and are replaced by a continuous pain. The picture is that of an acute abdominal emergency. There may be slight bleeding from the vagina, but cervical dilatation does not progress. The presenting part may recede, especially if the fetus is extruded through the rupture into the peritoneal cavity.

If the fetus and placenta are extruded without hemorrhage, or with only slight bleeding, through the old uterine scar, and the uterus contracts into the pelvis, the diagnosis may not be made until the peritoneum is opened.

Mortality

The maternal mortality from rupture subsequent to cesarean section is, without operation, approximately 100 per cent; with operation, 50 per cent. Fetal mortality is nearly 100 per cent in either event[7].

6. (a) Marley, L. M.: Gangrene of the Uterus Complicating Caesarean Section; Ruptured Uterus; Case Reports and Review of the Literature, J. Internat. Coll. Surgeons 4:18-23 (Feb.) 1941.
   (b) Heffernan, R. J.: Uterine Rupture at Term after Previous Caesarean Operation, Boston M. & S. J. 193:835 (Oct. 29) 1925.
7. Jacobs, J. B.: Ruptured Uterus, with a Report of Seven Cases, M. J. & Rec. 132:386-388 (Oct. 15) 1930.
8. Hillis, D. S.: Rupture of Uterus, Surg. Gynec. & Obst. 39:32-33 (July) 1924.

Treatment

This condition demands the best we can give in the way of prevention and proper management. A number of men have demonstrated that too many cesarean operations are being done[9]. None deny the necessity and value of section when it is clearly indicated. It is not a part of my discussion today to present these indications. To prevent rupture of the uterus we should avoid the primary cesarean section as far as possible, and instead of extending the indications for the operation we should limit them[1]. The effect on the woman and future childbearing should be kept in mind. When cesarean section is done, every effort should be made to secure healing of the wound in the uterus by first intention.

Most men now agree that routine repeat cesarean operations are not advisable[2]. C. Jeff Miller[1,9] held that all women who have had a cesarean section should be hospitalized for subsequent deliveries. If the same clear cut indications which necessitated the primary section still exist there is no question about the course of procedure. Otherwise, the handling of each patient must be an individual matter. When there has been no reason to suspect that the scar is weak, the patient may be given a trial labor. If it is evident from the history, however, that the uterine wall has been weakened by one or more cesarean sections, the patient should be under close observation during the latter weeks of pregnancy, and a cesarean operation should be performed a few days before the estimated date of labor[6b].

All women who have had a previous section should observe strict precautionary measures against the possibility of rupture, which may occur at any time during the last three months of pregnancy[8]. They should be advised of the danger at the beginning of the last three months, and cautioned against exertion and excitement. At the onset of labor pains or sudden sharp and lasting pain, the physician should be notified.

The operation indicated for ruptured uterus is hysterectomy. To freshen up the edges of the rupture and attempt satisfactory closure is too time-consuming in a patient who is in such a desperate condition. Furthermore, future complications are best avoided by hysterectomy.

9. Miller, C. J.: The Limitations of Caesarean Section, Am. J. Obst. & Gynec. 10:260-265 (Aug.) 1925.

Summary and Conclusions

Three cases of rupture of the uterus subsequent to cesarean section, one at term and two near term, are presented, with a brief review of the literature on this subject.

The placenta was situated under the scar in 2 of the 3 cases here reported. Whether or not this location of the placenta had any causative relation to the rupture, it seems that it might have caused very dangerous hemorrhage and at least temporarily prevented extrusion of the products of conception into the abdominal cavity, with subsequent contraction of the uterus.

Primary cesarean section should be performed only when clearly indicated. Repeat cesarean operations should be done when the indications for the first section are still present, or when for any reason there is lack of confidence in the scar.

All pregnant women who have had cesarean sections should be warned of the danger of rupture of the uterus, should observe strict precaution during the last three months, and *should be hospitalized for delivery.*

The proper operation for rupture of the uterus is subtotal hysterectomy. The condition most frequently is one of great emergency, demanding adequate treatment to combat shock, loss of blood, and infection.

Thrombosis of an Intracranial Artery as a Cause of "Nervous Breakdown". In persons past forty, the **sudden** coming of a nervous breakdown, the symptoms of which do not afterward get better, will make it probable that there has been a thrombosis of some small vessel within the cranium. Although such small strokes are common in older persons and have much to do with ushering in senility, we of the medical profession are not recognizing them as we should be doing. Because these small strokes rarely affect the centers for hand, leg, face, or speech, and because they often cause nausea, dizziness, vomiting, abdominal distress, anorexia, and loss of weight, the patient usually goes to a gastro-enterologist and is treated for "acute indigestion" or Meniere's syndrome.

In a typical case the diagnosis is one of the easiest in the world to make and one that can be made from the history alone. The pathognomonic point, when it is present, is that a person who was previously more or less efficient, wide-awake, pleasant, good-natured, comfortable, optimistic, friendly, and hard-working, **suddenly, at a certain minute of a certain day,** became ill and discouraged, miserable, apathetic, depressed, and unable to work. Alvarez, W. C.: Nervousness, Indigestion, and Pain, New York, Paul B. Hoeber, Inc., 1943, p. 252.

CHRONIC HEADACHES

JOHN R. WILLIAMS, JR., M.D.

WINSTON-SALEM

Mechanism

If one is to understand the mechanism of chronic headaches, it is important to know from what sources pain might arise.

Ray and Wolff[1] studied most of the structures inside the cranial cavity in an attempt to determine which of these are susceptible to pain and which may be concerned in the production of headaches. They found that pain can be produced, first, by traction on the veins that pass to the great venous sinuses; secondly, by traction on the middle meningeal artery; third, by traction on the large arteries at the base of the brain; fourth, by distention and dilatation of the intracranial and extracranial arteries; fifth, by inflammatory lesions near the pain-sensitive areas; sixth, by direct pressure of tumors on cranial and cervical nerves. Other areas and structures inside the head are not sensitive to pain. These experiments and others, chiefly by Wolff[2] and his co-workers, seem to indicate that most chronic headaches, unless they are due to tumor or infection, are primarily caused by vascular changes.

These vascular changes are not necessarily the same for all the various types of chronic headaches. For example, Schumacher and Wolff[2c] noted that the headaches produced by the injection of histamine are abolished by increased cerebral spinal fluid pressure, while the headaches of migraine are not. They also found that in histamine headaches, the amplitude of pulsations in intracranial vessels as measured by fluctuations in the cerebrospinal fluid pressure is increased, although there is only slight increase in the pulsations of the temporal arteries. On the other hand, the amplitude of pulsations in the cerebrospinal fluid is not increased in migraine, but there is a marked increase in the pulsations of the temporal arteries over the affected side.

Read before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Pinehurst, May 3, 1944.

From the Department of Medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, North Carolina.

1. Ray, B. S. and Wolff, H. G.: Experimental Studies on Headache, Arch. Surg. 41:813-856 (Oct.) 1940.
2. Wolff, H. G. and others: (a) Experimental Studies on Headache, Arch. Neurol. & Psychiat. 44:701-717 (Oct.) 1940; (b) 44:929-949 (Nov.) 1940; (c) 45:199-214 (Feb.) 1941; (d) Mechanism of Migraine Headache and Action of Ergotamine Tartrate, Arch. Neurol. & Psychiat. 39: 737-763 (April) 1938.

Classification

In the group of vascular headaches, there are two well recognized syndromes. The majority of people with chronic headaches fall into neither of these two sharply defined groups but seem to have characteristics of each. The first, migraine, is a recurrent type of headache that is predominantly hemicranial in type, is usually preceded by an aura, and is almost invariably associated with visual disturbances, nausea, and vomiting. The headaches are often related to the menstrual cycle and frequently last for hours or days. The patients usually have a family history of allergy, migraine, or epilepsy. These headaches are characteristically relieved by ergotamine tartrate. The second type, histamine headaches[3], are also unilateral, and while they may begin at almost any period of life, they are much more common in the later decades. The headache is of short duration and usually begins and ends suddenly without any aura; it frequently occurs at night and is often eased by sitting or standing. It is associated with watering of the eye on the affected side, stuffiness of the nose, and often swelling of the temporal artery on the affected side. Following the headache, the patient frequently has tenderness of the scalp. Gastro-intestinal symptoms are extremely rare with this type of headache, and it has no relation to the menstrual cycle. The patient may get temporary relief from the injection of adrenalin and can frequently be cured by desensitization with histamine. This can be accomplished by small repeated subcutaneous injections or by the intravenous administration of 1 to 3 cc. of 1-1000 histamine phosphate in 500 cc. of physiological saline. Histamine occasionally helps other types of chronic headaches also, and one is justified in trying it whenever a patient is sensitive to it and is not relieved by other treatments.

The pain of both migraine and spontaneous histamine headaches can be almost exactly reproduced by the subcutaneous or intravenous injection of histamine. Histamine will usually not reproduce the aura or the nausea and vomiting characteristically associated with migraine. Von Storch[4] has shown that all patients who are subject to headaches are more sensitive to histamine than are normal subjects, but that patients with atypical migraine and chronic headaches do not develop their characteristic headache following its injection. The headache produced by the injection of histamine has certain characteristics. Sutherland and Wolff[2b] have shown that such headaches are similar to the ones seen during febrile illnesses and following the injection of foreign proteins. Hypertensive headaches also have many of the same characteristics.

3. (a) Horton, B. T.: Use of Histamine in the Treatment of Specific Types of Headaches, J.A.M.A. 116:377-383 (Feb. 1) 1941; (b) Horton, B. T., MacLean, A. R., and Craig, W. M.: New Syndrome of Vascular Headache, Proc. Staff Meet. Mayo Clinic 14:257-260 (April 26) 1939.
4. Von Storch, T. J. C.: Relation of Experimental Histamine Headache to Migraine and Non-Migraine Headache, Arch. Neurol. & Psychiat. 44:316-322 (Aug.) 1940.

Factors Predisposing to Vascular Headaches

The etiology of vascular headaches has never been proven. There are apparently a good many factors that tend to influence the development of this type of headache. A family history of epilepsy, Meniere's syndrome, or headache is common, and there is little doubt that the hereditary factor is an important one.

Food sensitivity

For a long time it has been known that sensitivity to various substances, particularly foods, might cause chronic headaches. There are many reports in the literature of individuals who have been cured of chronic headaches by the elimination of certain foods from their diets. It is possible to precipitate a headache in these individuals by having them ingest large amounts of the food to which they are sensitive. It has not been possible in my experience to determine in advance, by history, physical examination, or skin tests, the individuals whose headaches will be relieved by elimination of foods, though one should suspect food sensitivity in patients who have any type of chronic indigestion. If food sensitivity is suspected, the patient should keep a food diary or go on elimination diets. It is often surprising how quickly offending foods can be detected by simply keeping a record of everything eaten for twenty-four hours prior to the onset of each headache. In my experience the most satisfactory clinical results have been in this group.

Hypertension

Hypertension is a common accompaniment of chronic headaches. Frequently the headaches precede the development of hypertension by many years. These patients' headaches apparently do not bear a direct relationship to the level of the blood pressure.

It is probably true, as Wolff[2c] believes, that hypertension is only a superimposed factor and that the increased tension tends to dilate blood vessels, thus causing pain in individuals who might not have headaches if their blood pressure were normal. It is almost certainly true that the percentage of individuals with chronic headaches who develop hypertension is much higher than that in the general population. It is my impression that cerebral complications such as strokes and hypertensive encephalopathy are more frequent in hypertensive patients who are subject to chronic headaches than in those without such a history. There is no specific treatment for the headaches associated with hypertension, but relief may be obtained by the treatment of other factors involved.

Endocrine disturbances

A good deal of work has been done on the relationship between endocrine organs and chronic headaches. What this relationship is and what endocrine glands are involved are as yet not very well understood. The pituitary, ovaries, and thyroid have all been implicated. Goldzieher[5] has shown that salt and water metabolism bears a direct relation to the production of migraine-like headaches. It is also true that migraine headaches frequently disappear during pregnancies and that they bear a marked relationship to the menstrual cycle. It is not at all unusual for them to disappear completely at the time of the menopause, or in other cases to become worse when menopausal symptoms develop. Diuretic drugs such as ammonium chloride are sometimes helpful in the treatment of premenstrual headaches. Ovarian substitution therapy frequently gives dramatic results in women who are having menopausal symptoms. Thyroid extract has been reported to give some people relief.

Hypoglycemia

Preliminary observations of my own seem to indicate that a good many people with chronic headaches have mild to moderate hypoglycemia. These individuals exhibit nervousness, irritability, and marked fatigability coming on before meals and relieved by eating. Frequently they become nervous at night and cannot sleep. These people generally eat a high carbohydrate diet and, as a rule, have moderately abnormal glucose tolerance tests, with blood sugars at three and four hours of about 60 mg. per 100 cc. They generally develop rather marked hypoglycemic symptoms when given 7 units of insulin intravenously three hours after meals. When such patients are put on a high-protein, low-carbohydrate diet, their symptoms of nervousness and irritability usually improve markedly. Some of them get almost complete relief from their headaches, and most of them seem to get a fair amount of relief. Why hypoglycemia produces chronic headaches is not understood but we do know that headaches frequently accompany insulin reactions, particularly in individuals on protamine zinc insulin. Goldzieher[5] noted the benefit of low-carbohydrate, high-protein diets, but felt that his results were due to changes in water metabolism. Hypoglycemia is at times caused by the purely physiological process of eating a high carbohydrate diet, and particularly by taking sweets and starches between meals. It apparently also may be the result of low-grade infection. Since the symptoms of hypoglycemia are often relieved by simply omitting starches and sweets from the diet and increasing the protein intake, most people with chronic headaches should be given a trial on such a diet.

Focal infection

All of us are familiar with the type of patient who has some focal infection, the removal of which relieves chronic headaches of the migraine type. These headaches do not seem materially different in most instances from other atypical migraine headaches. It seems likely that infection is one factor producing vascular headaches of the migraine type, and one should be extremely careful to rule out focal infection.

Arthritis and myositis

Numerous investigators, including Cyriax[6], have pointed out that cervical arthritis and myositis in the neck can produce typical vascular headaches. In such cases tender areas are usually present in the neck, and movement of the neck is painful. Heat, especially in the form of diathermy, and deep massage to the neck muscles are of value in treatment. Occasionally good results can be obtained by the injection of these tender areas with large amounts of novocaine or nupercaine in oil.

5. Goldzieher, M. A.: Endocrine Aspects of Headaches, J. Lab. and Clin. Med. 27:150-157 (Nov.) 1941.

6. Cyriax, J.: Rheumatic Headache, Brit. M. J. 2:1367-8 (Dec. 31) 1938.

Vitamin deficiency

While vitamin B_1 deficiencies are not very commonly associated with headaches, it has been observed by Weinstein[7] that large doses of thiamine may give relief to some patients with migraine. It may well be that vitamin B deficiency plays some fundamental role in the production of such headaches, though no one can be certain of this at present.

Psychoneurosis

A good many individuals who have migraine are psychoneurotic. Whether or not this disposition represents the fundamental difficulty in many of them is a very difficult question to decide. It is certainly true that psychic upsets can produce headaches. Numerous psychiatrists have reported good results from psychotherapy in the treatment of certain people with chronic headaches. It seems to me that the neurotic element in such patients is probably largely secondary. While psychic upsets in such individuals should receive due consideration, it has been my experience that more can be accomplished by therapy directed along other lines than by pure psychotherapy.

Other Causes of Headache

There are numerous other causes of pain of the head; chronic sinusitis, brain tumors, various types of neuritis, eye strain and metabolic craniopathy are some of the common ones. These disorders can usually be diagnosed by a careful history and physical examination. Metabolic craniopathy has been of frequent occurrence in patients seen here. It should be suspected in patients who have a multiplicity of complaints, particularly in women who are obese and have some menstrual abnormalities. Severe psychic upsets are common. The diagnosis can be proven by roentgen demonstration of the hyperostosis on the inner table of the frontal bone. The prognosis is poor.

Treatment

In the treatment of chronic vascular headaches, one must consider the patient as a whole and attempt to determine the etiological factors. In many instances it is possible to obtain dramatic results by eliminating the cause of the headaches.

For symptomatic relief of the individual headache, a variety of agents are available. Large doses of barbiturates by mouth, or by rectum if necessary, are often of help. Nicotinic acid given in large enough dosage to cause a flush frequently relieves a headache. Breathing 100 per cent oxygen for three to five minutes is at times helpful. Ergotamine tartrate may precipitate nausea and vomiting but is worth a trial, particularly in patients with typical migraine. Calcium gluconate given intravenously may relieve a headache. Aspirin is not very effective. Pyramidon is more effective but also more dangerous. Codeine and aspirin together are usually effective. Morphine and the allied drugs should never be used because of the possibility of addiction. Headache powders give relief but their use is dangerous because of the possibility of toxic reactions and of addiction.

7. Weinstein, A.: Headaches, J. Tennessee M. A. 85:458-462 (Dec.) 1942.

Conclusion

A brief review of the subject of chronic vascular headaches has been presented. The mechanism by which the pain is produced has been discussed, as have also the factors that tend to influence the development of chronic headaches. By a consideration of these factors, it is possible to treat intelligently many people who have chronic vascular headaches.

Abstract of Discussion

Dr. Robert Graves (Durham): In my practice chronic headaches are steadily on the increase; in fact, I might say they are on a rampage, particularly since the outset of the war. There are innumerable causes for headaches, and the fact that there are more remedies offered than there are causes means that we do not have any specific remedy for headaches; they still are a problem, a "headache" for the physician who has to deal with them.

When we have eliminated the serious organic causes, we have left, as Dr. Williams says, the vascular headaches. I am confident that the autonomic nervous system plays a big part in causing these headaches, irrespective of other factors. Until the psychoneurotic factors are removed these headaches will not be cured, regardless of what treatment is given.

I was very much interested in Dr. Williams' observations on hypoglycemia, for I have run up against that condition myself. I have found it most often in obese women, who eat because of their tension state. Such women usually eat a great deal of the carbohydrates. The question is, whether the headaches are due primarily to the tension state or to hypoglycemia. I hope that Dr. Williams will pursue his investigations along this line.

THE OCCURRENCE OF MYASTHENIA GRAVIS IN A PATIENT WITH MULTIPLE SCLEROSIS

Report of a Case

LESTER H. MARGOLIS, M.D.
and
ROBERT W. GRAVES, M.D.
DURHAM

The diagnosis of multiple sclerosis or of myasthenia gravis is ordinarily attended by few difficulties, although each of these entities is capable of producing a variegated picture. It happens occasionally that one encounters a combination of these two disorders in an active stage in the same patient, and when this occurs the differential diagnosis may be difficult. Especially is this so when myasthenia gravis develops in a patient in whom the diagnosis of multiple sclerosis has been well established. In such a case the myasthenic symptoms can easily be interpreted as a further exacerbation of the previously existing disease. The patient whose history is here reported illustrates such an occurrence.

A white female photographer, 43 years of age, was admitted in July, 1943, because of drooping of the right lid and diplopia of two weeks' duration. While on a fishing trip she had suddenly developed haziness of vision in the right eye, drooping of the right lid, and diplopia whenever this lid was passively elevated. These symptoms persisted until admission but were variable, being worse when the patient became fatigued. There was no excess fatigability, difficulty in swallowing, or weakness of the jaw muscles. There was never any pain in or about the involved eye. The family and marital histories were noncontributory. The patient was extremely reticent in giving the details of her past history, denying any previous visual difficulties and any episodes of weakness or paresthesia.

General physical examination revealed the blood pressure to be 116 systolic, 70 diastolic; there were no significant abnormal findings. On neurological examination the only positive findings were in the right eye. Pronounced ptosis and weakness of the superior rectus muscle were present. The right pupil was larger than the left and did not react as briskly either to light or on accommodation-convergence. Enophthalmos of 3 mm. was present on the right. The ptosis did not increase as the lid was fatigued by sustained gaze upwards. The optic discs and fundi were normal. The visual fields were full to confrontation test, and visual acuity was unimpaired. There was no nystagmus. The other cranial nerves were normal. There were no reflex changes and no abnormal motor or cerebellar signs. The sensory system was intact except for absence of vibratory sense to fork no. 256 over the toes.

Laboratory studies disclosed no abnormal findings. The peripheral blood was normal and serologic tests for syphilis were negative. The initial spinal fluid pressure was 140 mm. of water, and the dynamics were normal. The colloidal gold, colloidal mastic, and Wassermann tests were negative, and the total proteins were 43 mg. per 100 cc. of fluid. X-rays of the skull and chest showed nothing abnormal.

Myasthenia gravis was considered in the differential diagnosis and the patient was given 0.5 mg. of prostigmin methylsulfate subcutaneously; no objective improvement resulted. A four days' trial on oral doses of prostigmin bromide, 15 mg., and guanidine hydrochloride, 125 mg., each given three times daily, was carried out. The diplopia and ptosis were variable but were thought to be essentially uninfluenced by these medications.

Seven weeks later the patient awoke at 2 a. m. cold and sweating; the right side of the face and the right arm and leg were numb and weak. She stated that her memory was becoming impaired, her speech "thick," and that she was having generalized throbbing headaches. Examination at this time showed the eye signs as before and no papilledema present. There was impairment of all sensibilities over the entire right side and partial right hemiplegia, with increased tendon jerks in the right lower extremity. Babinski's sign was absent. At this time multiple congenital aneurysms or an intracranial tumor seemed to be the most likely diagnostic possibilities, and the patient was referred to the neurosurgical department for further study. An arteriogram was done on the right and showed an essentially normal vascular tree on this side. An encephalogram showed a normal ventricular system and a pooling of air over the frontal lobes indicative of slight cortical atrophy. The patient

From the Neurologic Service of Duke Hospital and the Department of Internal Medicine, Duke University School of Medicine.

gave a history of a moderately severe head injury twelve years previously, and the cortical atrophy was interpreted as being on a post-traumatic basis.

Eleven weeks after these studies the patient was seen again. Her right eye signs were variable but essentially unchanged, and she showed only mild residual right hemiparesis. However, there was now slight ptosis on the left and marked weakness of the left external rectus muscle. In spite of specific questioning on each of her previous visits it was not until this late date that the patient was able to remember several pertinent facts in her past history. At the age of 25 she had suddenly developed bilateral amblyopia which lasted three days. At 26 her eyes became "crossed" and remained so for a week. In the past ten years she had changed her glasses as often as three times a year because of transient difficulty in focusing her camera. During the past few years there had been intermittent formication over the right lower extremity. One year before admission her legs suddenly "gave out" while she was dancing and she had to be helped from the floor; there was residual weakness of the right leg for several days after this.

In view of the previous history of amblyopia and ocular palsy, the intermittent visual difficulties, and the more recent transient weakness of the right lower extremity, it was thought that the present findings could best be explained on the basis of multiple sclerosis.

The patient was seen periodically for the next five months and showed fleeting ocular palsies which never completely cleared. On one occasion during a severe upper respiratory infection she suddenly developed pronounced bilateral amblyopia lasting three days, but she was not examined during this time. She was seen again in April, 1944, approximately ten months after the onset of her present ocular symptoms. At this time she showed complete left ptosis, almost complete external ophthalmoplegia on the left, and weakness of the right internal rectus muscle. The ptosis previously noted on the right was no longer present. She did not complain of weakness of the jaws but had noted excess fatigability and stated that her eye signs were worse when she became fatigued.

It was now evident that these varying suggested myasthenia gravis. Accordingly, the prostigmin test was repeated, using 1 mg. of the drug subcutaneously. Within thirty to forty-five minutes there was a dramatic clearing of the ptosis and relief of much of the ocular palsy for several hours.

Discussion

This case is presented as a rare combination of two not uncommon diseases, both of which characteristically pursue a course of remissions and exacerbations. Certain features are compatible only with myasthenia gravis and others are consistent with multiple sclerosis, while some are atypical of either. When myasthenia gravis develops in a patient with multiple sclerosis the new symptoms are likely to be attributed to the pre-existing disease, as in this case.

If the diagnosis of myasthenia gravis had been considered seriously enough and if tests, both with prostigmin and with quinine or curare, had been done repeatedly, this diagnosis probably could have been substantiated at any time during the ten months that the patient was under observation.

CONGENITAL AND HEREDITARY ABNORMALITIES OF THE EXTRA-OCULAR MUSCLES

JAMES WATSON WHITE, M.D.

NEW YORK CITY

Congenital and hereditary abnormalities of the extra-ocular muscles are frequently seen and commonly result in some variety of strabismus, depending on the nature of the anomaly and on the muscles involved. They are more frequently seen as a primary underaction, to which is usually added secondary contracture and secondary deviations of other muscles of the same eye, or of the fellow eye. The truly congenital anomalies are generally present at birth, although they may not be recognized as such until some days or weeks later. The hereditary anomalies may be present at birth, but more frequently are delayed, appearing between the first and third years.

Anomalies of the extra-ocular muscles may be unilateral or bilateral, and may produce either a concomitant or a non-concomitant

strabismus. When the anomaly is unilateral, the patient may fix with either eye. Unilateral amblyopia is often present, and occurs about as frequently in one eye as in the other. It probably develops at quite an early age.

When either eye is seen to deviate from the other, treatment of some kind should be instituted at once. This is usually directed toward causing the non-fixing eye to fix, and may be carried out very early by patching one eye or by the use of atropine in the fixing eye. Many cases of strabismus can be accurately diagnosed on the first visit, while others may need to be observed for such points in differential diagnosis as the effects of atropine and occlusion, the method of fixation, and the position of the head. Many children develop very early a turning or tilting of the head. In some cases this is to aid in obtaining binocular single vision, while in some cases it seems to be more for the purpose of relieving a proprioceptive muscle sense. It is of diagnostic aid to patch each eye in turn. If the head is held straight when *either* eye is patched, it is usually because double images are done away with. If the head is turned to prevent the proprioceptive muscle sense, the patch must be applied to the eye with the paretic muscle.

Many cases of strabismus have as a complicating factor a moderately high or very high degree of ametropia, often anisometropia. A correction of any ametropia must be considered, but in the types of anomalies under discussion in this paper the ametropia plays only a minor or contributing part, except in cases of a familial tendency to hypermetropia, associated with esotropia. These often have a vertical deviation, due to a paretic elevator or depressor muscle. In cases of exotropia the ametropia may be a contributing cause, but the chief exciting factor is a vertical imbalance. F. W. Marlow, in a personal communication, said that approximately 85 per cent of patients with exotropia have a vertical imbalance. My estimate at that time was somewhat less than his, but having observed more carefully since then, I believe that Dr. Marlow was even too conservative.

The overaction or underaction of the extra-ocular muscles may be due to the structure, the insertion, or the innervation of the muscle or muscles affected.

part, by connective tissue. This condition is most frequently seen in cases of retraction syndrome, strabismus fixus, and other allied conditions. Anomalies of insertion are relatively rare in the types of abnormalities being considered. They occur more frequently as postoperative complications. Anomalies of innervation may be due to an agenesis of some part of the motor pathway. From the frequent history of injury at birth, the paralysis seems to be due to a direct trauma or to hemorrhage at the base of the brain or elsewhere, which destroys to a greater or less extent the normal function of the nerve supplying the affected muscle or muscles. While some observers claim that the lateral rectus is the muscle most frequently affected, it has been my observation that the muscles supplied by the third cranial nerve are more often involved. This nerve supplies all of the extra-ocular muscles except the lateral rectus and the superior oblique. All or only part of the muscles supplied by the third nerve may be affected.

Overaction may be due to muscles which are inherently too powerful, but is more frequently due to secondary deviations of the associate or yoke muscle, or to a secondary contracture of a direct antagonist of the paretic muscle.

(Lantern slides were shown to demonstrate the following varieties of congenital or hereditary abnormalities of the extra-ocular muscles:

1. Retraction syndrome.
2. Strabismus fixus.
3. A fibrous condition of all extra-ocular muscles.
4. Paralysis of the lateral rectus.
5. Paralysis of the medial rectus.
6. Paralysis of the superior rectus, unilateral and bilateral.
7. Paralysis of the inferior oblique, unilateral and bilateral.
8. Paralysis of the superior oblique, unilateral and bilateral.)

15 Park Avenue

Improvement in Diabetes. — Failure to recognize that diabetes can improve and grow milder is a definite hazard. It is almost as serious as failure to recognize that it can grow worse. In one case the failure may lead to insulin reaction, and in the other to diabetic coma. There are so many mild diabetic patients today who do improve, and such a considerable percentage who by living faithful dietetic lives and taking proper exercise could give up

THUMBNAIL SKETCHES OF EMINENT PHYSICIANS

JOSIAH C. TRENT, M.D., *Editor*

DURHAM

EVOLUTION OF THE ASEPTIC PRINCIPLE IN SURGERY

V

MADAME MARIE-GENEVIEVE-CHARLOTTE THIROUX D'ARCONVILLE

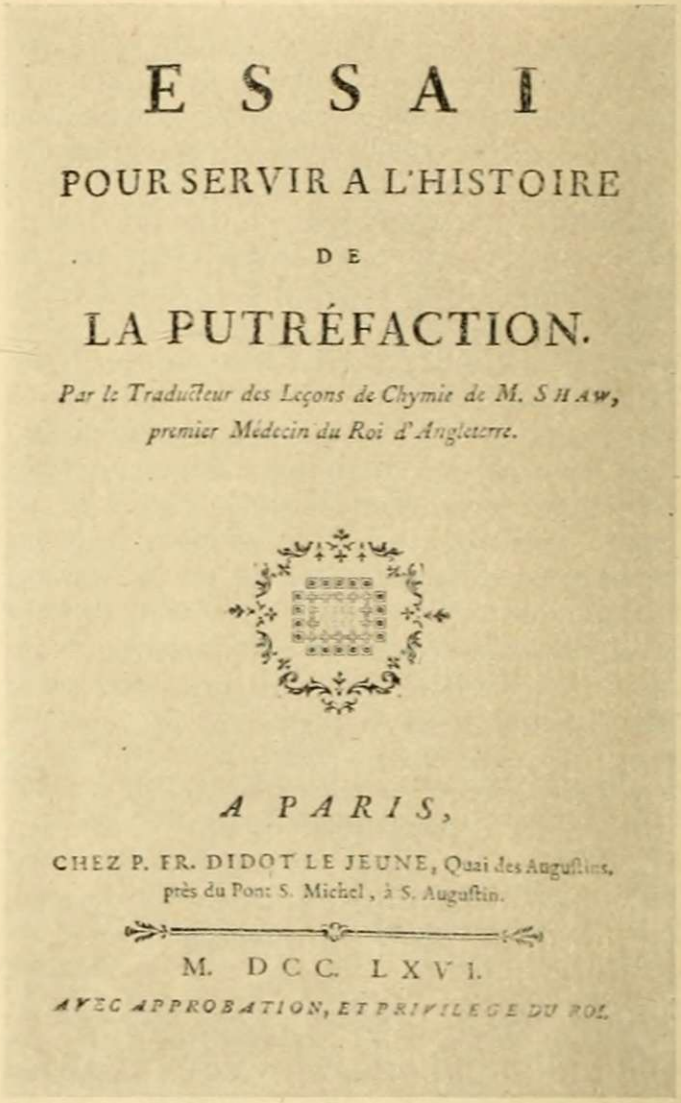
The present sketch concerns neither a physician nor an eminent person by our present standards. Indeed, the justification for including such an individual at all lies chiefly in the facts that, first, she herself is interesting and, second, she did advance our knowledge of antiseptics.

The subject of our memoir, Madame Marie-Genevieve-Charlotte Thiroux d'Arconville, a "grande-dame" of eighteenth-century France, interests us chiefly because of her *Essay on the History of Putrefaction*, published anonymously in 1766. Her personal history is truly remarkable.

She was born October 17, 1720, Marie-Genevieve-Charlotte Darlus, daughter of Andre Guillaume Darlus, Secretary to the King and Farmer-General. At the age of 14 she married Louis Lazare Thiroux d'Arconville, by whom she had three children. At the age of 23, following an attack of smallpox which left her horribly disfigured, she renounced wordly pleasures, donned the garb of an old woman, and devoted herself only to intellectual pursuits. She studied history, medicine, physics, chemistry, and biology. She communicated with Voltaire and had contact with the most distinguished men of her time, including Turgot, Malesherbes, Monttiyen, de Tussieu, Fourcroy, Lavoisier, and Gresset.

During the terror she was imprisoned at Picpus with her eldest son and her brother-in-law, both of whom died on the scaffold; she, however, regained her liberty and died in her Paris hotel on December 24, 1805, at the age of 85. During her lifetime she published works on such diverse subjects as history, literature, physics, philosophy, and chemistry, and in addition left numerous manuscripts.

Madame d'Arconville extended and improved Pringle's work on antiseptics in some



ESSAI

POUR SERVIR A L'HISTOIRE

DE

LA PUTRÉFACTION.

Par le Traducteur des Leçons de Chymie de M. SHAW, premier Médecin du Roi d'Angleterre.

A PARIS,

CHEZ P. FR. DIDOT LE JEUNE, Quai des Auguſtins, près du Pont S. Michel, à S. Auguſtin.

M. DCC. LXVI.

AVEC APPROBATION, ET PRIVILEGE DU ROI.

Fig. 1. Title page of Madame d'Arconville's Essai pour servir a l'Histoire de la Putrefaction, published anonymously by Didot the younger in 1766. (Courtesy of the Library of the New York Academy of Medicine)

three hundred experiments conducted over a period of ten years, 1754-1764, the results of which she published in 1766 as an *Essai pour servir a l'Histoire de Putrefaction* (fig. 1).

She writes, "The observations of Mr. Pringle on septic and antiseptic substances which fell by chance in my hands, inspired me to repeat some of his experiments, having no other object than to satisfy my curiosity. The little research done on this subject leaves a vast field for observation. The

many occupations of Mr. Pringle did not allow him to repeat his experiments nor to add to them. I dared to assert that he was sometimes wrong—but I flatter myself that although some of my experiments seemed to contradict his he did not hold it against me."

All of Madame d'Arconville's experiments were done with great care and precision, using a standard technique. She first placed in a phial a certain determined weight of the substance to be investigated, such as meat, milk, eggs, or bile, and then added to it a certain determined quantity (always the same) of the liquid whose antiseptic properties she wished to test. She was careful to note exactly the temperature, state of the weather, and direction of storms, and by the aid of litmus paper or of syrup of violets, she accurately determined the reaction of the medium. She divided the substances so examined into thirty-two classes, according to the length of time they kept meat sweet.

The last class of antiseptics which she describes comprises those which she found to preserve meat indefinitely. Some of these substances are:

Metallic salts — corrosive sublimate, blue vitriol, subsulphate of mercury, silver vitriol, nitre mercurial.

Gums and resins—balsam of Peru, camphor, Burgundy pitch, styrax, ammoniac.

Extracts and simples—extract of cinchona, powdered cinchona, dried guaiacum, powdered gall-nuts.

Vinous liquids—Bordeaux, Arbois, and Spanish wines.

Acids—red vinegar.

Fixed alkalis—volatile salts of hartshorn.

Earths—quicklime.

"It is true," she writes, "that the metallic salts with which I have made my experiments can for the most part be employed in medicine only with much care and precaution and must be diluted and softened even if they are to be used to preserve anatomical subjects such as birds and insects. But there is every reason to believe that by diluting these substances greatly with water we can diminish their astringent properties without diminishing their preservative power. By this method though we can rarely use them for the treatment of wounds and diseases ever, furnishes us with many other antiseptic substances which can be employed successfully in medicine and surgery without recourse to the metallic salts, namely, cinchona, styrax, benzoin, camphor, balsam of Peru." She concludes, "although the facts are many they are still not adequate to lead to the discovery of the means which nature uses to bring about putrefaction in the body or to abate its progress when it is begun or even to destroy its principle. I have seen only glimpses where I would have had need of the greatest light to aid me in the search for the causes of these marvelous phenomena."

And thus we are again left with a feeling of wonder that so much work could have been done on the phenomenon of putrefaction without its cause being once suspected. Madame d'Arconville's work, however, undoubtedly made the next man's work easier and certainly wins for her a well-deserved place among the pioneers in the study of antiseptics.

J. C. T.

Penicillin Useful in 27 Disease Conditions

Penicillin has already proved useful in at least 27 different disease conditions, ranging from abscesses to wounds, according to a documented table of clinical indications for penicillin therapy, summarized and published for the first time in the current (Spring, 1945) issue of The Journal of Parenteral Therapy. The list:

1. Abscess, deep or superficial
2. Anthrax, human cutaneous
3. Arthritis, suppurative
4. Bedsores
5. Burns, infected
6. Cavernous sinus thrombophlebitis
7. Cellulitis, orbital
8. Empyema
9. Endocarditis, subacute bacterial
10. Eye infections
11. Eye wounds, perforating
12. Fracture, compound
13. Gas gangrene
14. Genito-urinary infections
15. Gonorrhea, sulfonamide-resistant
16. Infections, various
17. Meningitis, pneumococcic
18. Osteomyelitis
19. Otitis media
20. Peritonitis
21. Pneumonia
22. Pharyngitis-tonsillitis
23. Ratbite fever
24. Septicemia
25. Syphilis
26. Tetanus
27. Wounds, surgical and traumatic.

Penicillin is not necessarily the treatment of choice or the only therapy indicated in these conditions. Among the conditions in which a trial of

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MAY, 1945

V-E DAY

At long last the welcome news has come that the war in Europe is—officially, at least—at an end. Perhaps it is just as well that the people of this country were prepared for this announcement by degrees. The week preceding the final, formal surrender of the German armies was, according to the *New York Times*, the most momentous in history. By the time the average citizen had celebrated the premature peace message and had heard the news of Mussolini's death, of Hitler's death, and then of the piecemeal surrender of the German armies, he was too dazed to do more than offer up thanks in his own way for the cessation of the carnage in Europe.

Many people have commented upon the soberness of the mood that followed President Truman's historic announcement. In most cities churches were opened for prayer, and services were well attended. So many homes have suffered irrevocable losses during the past years that jubilant celebration seemed hardly fitting. Only too many people can understand the picture published on the morning of V-E day which showed an elderly couple standing by a grave and saying, "You'll forgive us if we don't join in the celebration."

Another chastening thought is that the war in the Pacific is not yet finished. No doubt the tempo of the assault against Japan will be accelerated immeasurably, as soon as troops can be moved from the European theater of war to the Pacific. Let us hope that the warlords of Japan will take a lesson from the example of Germany and see the folly of continued resistance.

While the fighting in Germany and in Europe is officially over, the real trial of men's souls will come as the victorious Allies attempt to bring order out of chaos as speedily as possible. Let us pray that the representatives of the conquering countries may be given divine leadership as they go about building a plan for the future peace of the world.

To the medical profession will be entrusted the enormous responsibility of ministering to the broken bodies and crushed spirits of the peoples of Europe. It is our hope that this task will be assigned largely to the recent graduates who have completed their medical training at the country's expense, so that our colleagues who have represented us so nobly in this great struggle may come back to those who love them. To the North Carolina doctors who are in the armed forces this JOURNAL speaks for all the civilian doctors in North Carolina in offering its thanks for the services you have rendered. You may rest assured that those of us who have "stayed by the stuff" at home are eagerly looking forward to your return and will do all that is in our power to help you become adjusted to civilian life and civilian practice once more. We know that you have learned much that you can teach us as we gather in future meetings.

* * * *

"THE BACKWATERS OF MEDICINE"

For more than twenty years the Veterans Administration has had a free hand in the management of the various V.A. hospitals in the United States. Congress has voted money without stint, because it was felt that nothing was too good for our veterans. General Hines and his staff have had ample opportunity to demonstrate what type of

medical practice may be expected under federal control.

And what are the results? After five months of intensive study of the Veterans Administration, Albert Deutsch, feature writer of Marshall Field's left wing publication, PM, said[1]: "The quality of medical care is usually so low that the facilities have been termed the 'backwaters of medicine, where doctors and patients stagnate in common.'" Dr. Albert Maisel, whom some doctors in our state knew personally during his student and intern days at Jefferson, has written a series of scathing articles for the *Cosmopolitan,* which were abstracted in the *Reader's Digest* for April and May. Let those who doubt the inefficiency of the Veterans Administration read those articles. Suffice it to say here that, although the *per capita* cost of treating tuberculous patients in the V.A. facilities is $5.80, less than 3 per cent of such patients are discharged as arrested. By contrast, about 50 per cent of all tuberculous patients admitted to our State Sanatorium are discharged as arrested—and the cost of treatment is almost exactly one-third that in the V.A. hospitals. Another index of the type of work done in the V.A. hospitals is that not one is approved by the Council on Medical Education and Hospitals for internships or residencies.

Members of our own legislature who voted to put our state hospitals for mental disease under lay control will be interested in this observation of Mr. Deutsch: "From the top down . . . the medical policy of the V.A. is under the rigid control of laymen . . . This plays havoc with the system, demoralizing the doctors already in it, frightening good doctors away from participation, and making cynics and routineers of most of those who do enter the system and stay."

The medical care given our veterans is so poor as to be a stench in the nostrils even of the advocates of national health insurance. Mr. Deutsch states: "I have long advocated a national health insurance program for the United States. But I would align myself with the most vigorous opponents of such a program should it bear any resemblance to what I have observed in the Veterans Administration's medical care program. If this is an example of so-called Federal medicine, I want none of it." And if this is *not* an example of federal medicine, Mr. Deutsch, please tell us where you will find one.

1. Deutsch, Albert: Federal Medicine Advocate Shocked by V. A. Program, Medical Economics 22:7:53-58 (April) 1945.

WHY NOT REQUIRE OUR LAWMAKERS TO BE EDUCATED?

Reference was made last month[1] to the excellent address of David Roseby appearing in the *Medical Journal of Australia* for January 6. The subject matter of this address was by no means exhausted in one editorial. A suggestion it contains is so pertinent to our own state and nation that it should not be allowed to pass without comment.

Dr. Roseby points out that qualifying examinations are required of all applicants for license to practice medicine or to enter any of its allied professions, and that even those in non-professional occupations must serve apprenticeships before they are entitled to full wages. "Yet those who make the laws are not required to have any academic qualification whatever. Notwithstanding the complexity of the problems which confront them . . . no standard of ability is demanded of their chosen representatives by the electors . . .

"A qualifying examination should be demanded of every candidate for parliamentary honors . . . That we and others should be compelled by the State to obtain a degree of competence, while those who seek to control us go on in the old haphazard way, is nonsense."

Roseby points out that such qualifications for legislators should have prevented many of the mistakes made in legislation enacted by recent Parliaments. In our own state we have had a glaring example of the damage that can be wrought by well-meaning but unqualified men in the passage of the O'Berry Bill establishing lay control of the state hospitals for mental disease. In the national Congress, we have narrowly escaped —so far—the setting-up of a medical dictatorship that would have rivalled the wildest dreams of Hitler and Mussolini.

It is true that lawmakers with proper educational qualifications would have to be paid far more than our legislators now get; but think how much more they would be worth! Furthermore, the members of our law-making bodies could be reduced to half or even one fourth of the present number and, if properly trained, could still accomplish far more.

Certainly Dr. Roseby has given us something to think about.

1. Australia's Experience with Government Medicine, Editorial, North Carolina M. J. 6:209 (April) 1945.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE HOSPITAL

Presentation of Case

DR. EDWARD S. ORGAIN: A 22 year old colored single female was admitted with the complaint of swelling of the abdomen of four weeks' duration and dyspnea of two weeks' duration. Her history was difficult to obtain, because of the patient's extreme respiratory distress, and was considered unreliable because of her poor cooperation and deficient mentality. However, her family history was non-contributory, and the only item of importance in her past history was the development of a *thoracic spine and cage deformity* following a fall at the age of 2 months.

She had been well and able to attend school regularly until six months prior to her entry, when she noticed transient ankle edema and a progressive decline in strength. During the next few months there developed a variety of symptoms — "bulging of the eyes," apprehension, general weakness, easy fatigability, palpitation, and increasing exertional dyspnea. About four weeks before admission orthopnea appeared and generalized anasarca became manifest in the legs, abdomen, arms and face. Within two weeks respiratory distress, cough, and abdominal swelling had progressed to a point where ordinary conversation was impossible. Partial comfort was achieved by the assumption of a ventral position in which her weight rested upon her hands and knees. This condition prevailed until her entry. She said that she had had no systemic symptoms such as chills and fever, and no gastro-intestinal or genito-urinary symptoms (except for frequency of urination).

Physical examination revealed her temperature to be 37.2 C. (99 F.), her pulse 122, and respirations 44 per minute. Her blood pressure was unobtainable. The patient was a dyspneic, orthopneic, markedly deformed and mal-developed, small colored girl who voluntarily assumed a resting position upon the hands and knees with the abdomen sagging. Excessive weight loss and muscular wasting were evident. The spine presented a severe "S" shaped kyphoscoliosis with marked deformity of the entire thoracic cage. Bilateral exophthalmos with suggestive upper lid edema was present. The pupils were round and regular, and reacted to light. The fundi showed definite engorgement of the veins but no papilledema. The lips, tongue and mucous membranes were cyanotic. The pharynx was clear. The neck was displaced by the thoracic and spinal deformity. The neck veins were engorged, excessively prominent, and freely pulsating. No thrills or thyroid enlargement were noted.

The thoracic cage was deformed by the kyphoscoliosis and there was obvious limitation of breathing space. Her respirations were rapid and gasping in type. A few crepitant rales were present at the right lung base. Respirational expansion was confined chiefly to the right chest. Because of the patient's unusual position tactile fremitus and whispered voice were impossible to evaluate. The point of maximal impulse of the heart was found in the third interspace, to the right of the sternum. The sounds were loud, regular and forceful; no thrills were palpated. A systolic murmur was heard best in the third right interspace.

The abdomen was greatly distended with a large amount of fluid. Costovertebral angle pain, referred to the abdomen, was present bilaterally. No masses were palpated in the abdomen; however, palpation was resisted because pressure over any part of the abdominal wall was painful.

The pulses were rapid, regular, and equal in both arms. The blood pressure was not obtainable, but the needle wavered at 140 mm. of mercury. The pulse was felt at 110 mm. of mercury during deflation of the blood pressure cuff. The veins in both arms and over the right chest were engorged and distended. Evidence of collateral circulation was present. Mild edema of the ankles was evident.

The hemoglobin was 87 per cent, and there were 2,230,000 red blood cells and 5,520 white blood cells, with 47 per cent polymorphonuclear leukocytes, 12 per cent large lymphocytes, 37 per cent small lymphocytes, 1 per cent basophils and 3 per cent monocytes. The sedimentation rate was 3 mm. per hour. The urine showed a specific gravity of 1.014, a 1 plus reaction for sugar, and a 2 plus reaction for albumin; on microscopic examination 5-6 white cells per high power field, a rare red cell, and a few epithelial cells were found. The blood chemical findings were as follows: Nonprotein nitrogen 56 mg.

per 100 cc.; blood bilirubin normal; total proteins 6.6 Gm. per 100 cc. (albumin 3 Gm., globulin 3.6 Gm., albumin-globulin ratio .83). Serologic tests on the peripheral blood were negative. Fluid removed by abdominal paracentesis showed a specific gravity of 1.024, 1,810 red cells per cubic centimeter, and 330 white cells per cubic centimeter. No organisms were grown on culture.

The electrocardiogram showed sinoauricular tachycardia; the rate was 125, the PR interval .14 seconds, the QRS interval .06 seconds; T_1, $_2$ and $_3$ were flat, T_4 was upright. Somatic tremor was present in all leads. There was no axis deviation. Films of the chest and abdomen and fluoroscopic studies could not be made, because of the patient's inability to cooperate.

Course in the hospital: The patient remained alive in the hospital for twenty-eight hours and exhibited no improvement under symptomatic treatment. An abdominal paracentesis, performed in an attempt to relieve her intense respiratory distress, yielded 2000 cc. of yellow fluid. As this amount was withdrawn slowly, her respirations suddenly ceased. The trocar was removed and coramine was administered intravenously. Respirations reappeared at a rate of 3 per minute, but the heart sounds and pulse could not be obtained. Respirations quickly ceased and the patient failed to respond to artificial respiration, coramine, adrenalin and metrazol. Palpation of the abdomen immediately after death revealed a large mass in the right upper quadrant, interpreted as liver.

Discussion

DR. ORGAIN: We may summarize the problem by stating that a young colored girl with a severe, long-standing thoracic spine and cage deformity developed the symptoms and signs of rapidly progressive circulatory embarrassment, ending suddenly and fatally within six months after the onset of the first symptom. I have but one diagnosis to offer which will satisfactorily explain the findings, but for the purpose of exposition a short discussion of differential diagnosis may be of aid.

In spite of the fact that the history is considered totally unreliable with regard to detail, all of the cardinal symptoms of congestive heart failure were present—namely, dyspnea, orthopnea, cough, palpitation, weakness, fatigability, and edema. The physical findings of distended, pulsating cervical veins, an enlarged liver (after paracentesis), ascites, and peripheral edema would point to predominant right-sided heart failure. Left ventricular failure cannot be excluded completely, however—particularly in view of the existence of rales in the lung bases and the evidence of forward failure manifested by the absence of recordable blood pressure. While failure of the left ventricle is more common and generally precedes right ventricular failure, instances of primary right ventricular failure are found in association with certain pathologic entities. Before conceding the possibility of right ventricular failure secondary to ventricular dilatation, one must rule out a primary obstruction to the right side of the circulation resulting from a mediastinal tumor pressing upon the great veins, from thrombosis of the vena cava, or from constrictive pericarditis. The presence of dilated, pulsating veins would almost certainly exclude the first two of these possibilities, while the third is unlikely in view of the loud, forceful heart sounds and normal electrical voltage.

The decision that the patient had right ventricular failure is not in itself more than a functional or physiological diagnosis, although it implies the structural lesion of dilatation with or without hypertrophy. The freely pulsating veins of the neck would suggest the presence of tricuspid insufficiency due to dilatation of the tricuspid valve ring. The etiologic factor producing the heart lesion remains for elucidation. The usual and common causes of heart disease can be eliminated fairly easily. Hypertension can be excluded by the unobtainable blood pressure and the non-hypertensive eyegrounds. Coronary disease in a young colored woman is extremely rare. There is no history of rheumatic fever, and the auscultatory findings would exclude a valvular lesion of significance. Tricuspid stenosis is almost never seen unless mitral and aortic stenosis coexist. Congenital heart disease causing cardiac failure at this age would be rather extraordinary in the absence of severe cyanosis, club fingers, or physical signs over the heart proper. The patient's age, the negative blood serology, and the absence of aortic regurgitation would certainly eliminate syphilitic heart disease, which is characterized generally by left ventricular failure.

Turning to the rarer causes of heart disease, we find little to suggest the existence of acute nephritis, anemia, avitaminosis of

the B_1 type, or inflammatory myocarditis. The presence of exophthalmus suggests thyrotoxicosis and chronic glomerulonephritis. The cardinal symptoms of excess thyroid secretion are lacking, and the elevated blood nonprotein nitrogen can be explained on the basis of congestive heart failure alone. Pulmonary hypertension is probably the principal cause of primary failure of the right ventricle, but it is always secondary to some other cause. Mitral stenosis may be excluded by the cardiac findings. There is no history of chronic lung infection with peribronchial fibrosis, and primary pulmonary endarteritis alone is excessively rare and is difficult to diagnose unless adequate x-ray studies are available. Mediastinal tumors causing compression upon the pulmonary arteries alone are also unusual but can be easily diagnosed by x-ray.

Finally, there is one condition which will satisfactorily explain the composite clinical picture presented by this patient—namely, kyphoscoliosis with secondary pulmonocardiac failure. While spinal deformities of this type are fairly common, the disturbance in physiology designated as pulmonocardiac failure which it produces seems not to have achieved sufficient recognition generally. Chapman, Dill and Graybiel[1] in 1939 reviewed the literature on this subject and presented the results of physiologic studies on a series of 12 patients. They pointed out that the primary factor in this disturbance is the thoracic cage deformity, which compresses the lungs, usually early in life, thereby reducing the total lung volume. This compression, plus the inherent mechanical interference with normal respiratory movements of the thorax, serves to reduce the vital capacity in some instances by one half or more, while doubling the ratio of residual air to the vital capacity. Although the respiratory volume may rise, less oxygen is actually removed from the inspired air and deficient oxygenation results. The fact that measurements of the venous pressure, circulation time through the lungs, and cardiac output were normal in some patients supports the contention that the primary disturbance lies in the lung itself rather than in compression of the heart between spine and ribs or distortion and displacement, as had been suggested previously in the literature. As time passes the pressure in the pulmonary arterial circulation rises and leads to right ventricular strain, right ventricular dilatation, and right-sided heart failure. Such patients may exhibit "habitual" dyspnea for years with bizarre symptoms suggesting a psychoneurosis. Eventually, increasing dyspnea, palpitation and edema, or sudden fainting episodes herald the appearance of actual pulmonocardiac failure, and death generally follows in a few months to a year. Marked right ventricular failure with severe edema, as exhibited by this patient, seems to be quite rare, and failure is very refractory to treatment. Sudden death is common in this disease at an average age of 30 years. Death commonly follows any process which interferes with pulmonary function, such as pulmonary infection or respiratory depressants. In all probability the use of preliminary sedatives and the mechanical interference with respiration incident to paracentesis led to sudden death in the patient under discussion today. In any event, no treatment is efficacious once heart failure appears. In the prevention of the initial spinal deformity lies the only hope for these patients.

1. Chapman, E. M., Dill, D. B., Graybiel, A.: The Decrease in Functional Capacity of the Lungs and Heart Resulting from Deformities of the Chest: Pulmonocardiac Failure, Medicine 18:167-202 (May) 1939.

Dr. Orgain's Diagnosis

Right ventricular failure resulting from pulmonocardiac failure secondary to kyphoscoliosis.

Anatomical Discussion

DR. I. N. DUBIN: This is a case of kyphoscoliosis with secondary pulmonocardiac failure. It is essentially similar to the cases reported by Chapman, Dill and Graybiel[1], and by Kerwin[2]. The kyphoscoliosis was probably on a congenital basis, since sections of the lumbar vertebrae showed no evidence of tuberculosis and the spinal deformity had been present from infancy. Other congenital anomalies were also present—namely, hypoplasia of the lungs, hypoplasia of the ovaries and adrenals, atresia of the uterus and vagina, a persistent left cardinal vein, and an anomalous coronary vein of the heart.

The right lung weighed 120 Gm. and the left lung 150 Gm. The combined weight of 270 Gm. is less than half the expected lung weight (600 Gm.) for a female 20 years of age. This hypoplasia of the lungs was probably related to the small size of the thoracic

2. Kerwin, A. J.: Pulmonocardiac Failure as a Result of Spinal Deformity, Arch. Int. Med. 69:560-572 (April) 1942.

cavity produced by the kyphoscoliosis. Except for a few microscopic tubercles no other abnormalities were seen in the lungs.

As Dr. Orgain has pointed out, the small size of the lungs and the interference with the respiratory movements secondary to the deformity of the thoracic cage resulted in an increase in the intrapulmonary pressure. This produced dilatation and slight hypertrophy of the right ventricle of the heart. The total weight of the heart was only 250 Gm., but in cases of right ventricular hypertrophy the total weight of the heart is only slightly increased. The thickness of the left ventricle was 14 mm. and that of the right ventricle 6 mm. Evidence of chronic failure of the heart was found in the liver, which showed a considerable degree of chronic passive congestion. Terminally acute heart failure supervened, and as a result of this there developed edema of the lungs, ascites, and hydrothorax. At autopsy 2,400 cc. of fluid was found in the peritoneal cavity and 150 cc. of fluid in each pleural cavity.

In a large proportion of the cases in Chapman's series[1] there were, in addition to hypoplasia of the lungs, other pulmonary abnormalities which further reduced the volume of functioning lung. For example, 60 per cent of the patients had pneumonia, 46 per cent emphysema, 42 per cent bronchiectasis. Moreover, many of the patients died as a result of an acute pulmonary infection which further decreased the vital capacity and produced failure of the lungs and heart. In our case no such pulmonary abnormalities were found.

This patient had tuberculosis of the mediastinal lymph nodes which produced moderate enlargement of these structures. A large cluster of these nodes was found at the hilus, especially around the pulmonary artery. The question was raised at autopsy whether this mass of enlarged tuberculous nodes might have interfered with the circulation by pressing upon the pulmonary artery. I would think it very unlikely, however, that a mass of such nodes would be able to compress the pulmonary artery sufficiently to interfere with circulation. Microscopic tubercles were also found in other organs. I do not think that the tuberculous process played any role in this patient's death.

Anatomical Diagnoses

Multiple congenital anomalies

Kyphoscoliosis, probably congenital, with hypoplasia of the lungs

Dilatation and slight hypertrophy of the right ventricle of the heart

Chronic passive congestion of the liver

Cardiac failure (ascites, hydrothorax, edema of the lungs)

Tuberculosis of the mediastinal lymph nodes

Microscopic tubercles in the lungs, spleen, liver and myocardium.

CASE REPORTS FROM THE TUMOR CLINIC

North Carolina Baptist Hospital

Case 3

Mrs. V., a 68 year old housewife, came to the outpatient department because of a lump in her left breast. She first noted a small mass in the left upper lateral quadrant of the left breast one year ago. Seven months ago the skin around the nipple became ulcerated. At the same time, she began to have a bloody discharge from the nipple.

Five months ago her family physician examined the lesion, and discovered lymphadenopathy in the left axilla. He advised her to consult a surgeon. The patient waited five months before following his advice. The general history and review of systems revealed no significant points.

Physical examination revealed a small, undernourished, pale, elderly woman in no apparent distress. Her blood pressure was 140 systolic, 85 diastolic. There was no cardiac enlargement. The heart rate was normal, but there were occasional extrasystoles. The lung fields were clear and resonant throughout.

The right breast was atrophic. The left breast contained a mass measuring 3 by 4 cm. directly under the nipple. An eczematoid reaction surrounded the areola and there was a slight purulent discharge from the nipple. The mass was fixed to the skin, and there was moderate fixation to the pectoral muscles. No palpable nodes were found in the pectoral fold, but two round, firm, rubbery, non-tender nodes were present in the apex of the left axilla.

The abdomen, rounded in contour, presented no masses or tenderness. The spleen, liver and kidneys were not palpable. Pelvic and rectal examinations revealed no abnormalities.

The red blood cell count was 4,520,000, the hemoglobin 13.5 Gm.; there were 4300

white blood cells, with a normal differential. Urinalysis showed a specific gravity of 1.017, an acid reaction, and a faint trace of albumin; on microscopic examination innumerable red blood cells and 3-4 white blood cells were seen per high power field. A chest film showed no evidence of metastasis.

Two biopsy specimens were taken from the tumor in the left breast.

Tumor Clinic Discussion

PATHOLOGIST: We have made sections of the biopsy material which was obtained both from the mass and from the overlying involved skin. The biopsy from the skin revealed inflammatory changes but no malignancy. It is extremely important to differentiate Paget's disease from ordinary adenocarcinoma, particularly in this case, where the question of performing a radical mastectomy will arise. It is accepted that the response of the true Paget-cell carcinoma to irradiation and surgery is much better than that of the usual carcinoma. Even though this patient has enlarged axillary nodes, one might expect very good results from radical surgery and x-ray if she had Paget's disease. Cutler's criteria for diagnosing Paget's disease of the nipple are as follows[1]: (1) The lesion must have started in the nipple; (2) Paget's cells must be seen; (3) biopsy at the skin edge must show a transition between normal skin and definite carcinomatous changes; and (4) there must be a positive diagnosis of carcinoma of the deep-lying tumor.

This lesion does not entirely meet microscopic requirements for a diagnosis of Paget's disease of the breast. There are a few cells suggestive of Paget's cells, but the transition between normal squamous epithelium and malignant cells is not present. Our diagnosis is adenocarcinoma of the breast. The ulceration is probably due to lymphatic blockage.

RADIOLOGIST: I am inclined to recommend x-ray therapy for this patient. I believe there is about a fifty-fifty chance that the ulceration will heal with x-ray therapy. Of course, it is possible that it may break down further and slough. This raises the question of the advisability of simple mastectomy to relieve the patient of the care and discomfort of an ulcerated breast.

FIRST SURGEON: This patient was presented primarily with the thought that she had Paget's disease, and for that reason probably deserved radical mastectomy. As you know, Bloodgood has often stated that Paget's disease does not metastasize, but tends to recur locally. I do not think this statement is entirely true, but I feel that if this condition were Paget's disease, we probably should do a radical mastectomy in spite of the advanced stage of the tumor.

SECOND SURGEON: I hardly think radical mastectomy is indicated. Since fixation of the tumor to the pectoral muscle is already present, I would be more inclined to give the patient palliative x-ray therapy. It is interesting to note that most patients with Paget's disease do not complain of bleeding from the nipple—a sign often considered pathognomonic of the lesion—but only of ulceration of the skin overlying a tumor.

THIRD SURGEON: I propose that we treat the patient with the roentgen ray first, and then consider removal of the breast by simple mastectomy after she has received the maximum benefit from irradiation.

Tumor Clinic Opinion

Recommendation: The patient is to be given deep x-ray therapy to the left breast, maximum dosage. After an observation period of two or three months, decision for or against simple mastectomy will be made, depending upon the degree of healing of the overlying skin.

Prognosis: Hopeless; only palliative measures are recommended.

Blame: Ignorance and delay of the patient.

1. Cheatle, G. L., and Cutler, M.: Tumors of the Breast, Philadelphia and Montreal, J. B. Lippincott Company.

The truth is relative and in his effort to be honest the clinician must be sure to advance his explanations on a basis suited to the understanding of each person; otherwise the most veracious statement may lodge in the patient's mind as a falsehood . . . While a patient ought to be informed about his condition to the extent of his capacity for understanding, with the explanation there should be an accompaniment of kindness and consideration as well as an atmosphere of the commonplace. In doing this it is not necessary to be either deceptive nor secretive and it is essential to avoid harshness and over-emphasis. A "compressed vertebra" describes an injury while a "broken neck" suggests death. It is not more truthful to say the "lungs are solid" than to say they are "congested." A "hemorrhage" sounds more ominous than "bleeding." An "enlarged joint" is less distressing than a "bunion." In the minds of many persons, "arthritis" represents wheel chair crippling. If one is discussing a form of rheumatism in which ankylosis seldom occurs the term arthritis, while honest, may represent a falsehood to the patient.—Paul P. Swett: Suggestion as a Cause of Disease, Connecticut State M. J. 8:686 (Oct.) 1944.

TUBERCULOSIS ABSTRACTS

A Review for Physicians

ISSUED MONTHLY BY THE NATIONAL TUBERCULOSIS ASSOCIATION

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ONCE established in the human body, the tubercle bacillus is capable of attacking at many places. Infection of the kidneys, while not uncommon, is often overlooked in its early stages. Partly, this must be blamed on the paucity of symptoms, partly on the fact that renal involvement is usually associated with more obvious disease in other organs, particularly the lungs.

It is well to be reminded of the symptoms, signs and laboratory findings which should lead one to suspect renal tuberculosis. Once the question is raised, there must be an exhaustive search of the patient for evidence that will confirm or allay the suspicion.

EXTRARENAL LESIONS ASSOCIATED WITH RENAL TUBERCULOSIS

Renal tuberculosis is too often symptomatically silent during the time when it can be treated most successfully. The diagnosis of this condition can be made most satisfactorily by the identification of the organism in the urine and confirmed by inoculation of laboratory animals, but in many cases the disease escapes early recognition because tuberculous infection is not suspected. Hence any symptom, sign or laboratory finding that may lead one to suspect the diagnosis of renal tuberculosis is worthy of investigation.

Calcified Mesenteric Lymph Nodes

Calcified mesenteric lymph nodes are seen frequently in the routine roentgenograms of the urinary tract. They attract attention only in the rare cases when it is necessary for them to be distinguished from urinary calculi. Although several conditions are believed to be responsible for the pathologic change in the lymph nodes that is followed by calcification, the vast majority of calcified mesenteric lymph nodes have been the seat of tuberculous infection. This fact prompted the study of the incidence of calcified mesenteric lymph nodes in cases of proved renal tuberculosis. To accomplish this, the intravenous urograms and retrograde pyelograms in 145 consecutive cases of renal tuberculosis were examined. In each of these, nephrectomy had been performed so a pathological as well as bacteriologic diagnosis had been made. This series was compared with a series of 145 consecutive cases of surgically treated renal lithiasis in which the diagnosis of renal tuberculosis was excluded.

Calcified mesenteric lymph nodes were found to be present in 13 per cent of the roentgenograms of patients suffering from proved renal tuberculosis. This incidence (6 per cent) was more than twice that found in a comparable series of patients not suffering from renal tuberculosis.

Tuberculous Epididymitis

Although it is generally known that renal tuberculosis is fairly frequently accompanied by genital tuberculosis, too often intractable epididymitis is treated for long periods before the kidneys are investigated.

In 34 (42 per cent) of the 81 male cases of proved renal tuberculosis incorporated in the preceding study, genital tuberculosis also was present. None of the 93 male subjects in the group with nontuberculous kidneys suffered from inflammation of the genitalia. Thirty-one of the 34 patients had proved tuberculous epididymitis, and the remaining three were believed to have tuberculous prostatitis. In 15 of these cases it was necessary to remove the kidney on the same side as the involved epididymis, and in seven cases the kidney on the opposite side from the involved epididymis was removed. In nine cases both epididymides were involved.

The frequency of concomitant genital and renal tuberculosis is so great that the genitalia of every male patient complaining of urinary symptoms should be carefully examined for evidence of tuberculosis. Although renal tuberculosis frequently occurs in the absence of genital tuberculosis, the

Incidence of Pulmonary Tuberculosis in Cases of Renal Tuberculosis and of Nontuberculous Renal Lithiasis

Thoracic involvement	*Patients with renal tuberculosis*		*Patients with nontuberculous kidneys*	
	No. of Cases	*Per cent distribution*	*No. of Cases*	*Per cent distribution*
All types	145	100	145	100
Healed or active adult type	50	34	6	4
Healed childhood type (Ghon complex)	20	14	20	14
None	75	52	119	82

latter is accompanied more often than not by renal tuberculosis. Every male patient who has epididymitis of possible tuberculous nature should therefore receive complete urologic investigation, even in the absence of urinary symptoms. Only in this manner will the early renal lesions of tuberculosis be detected.

Pulmonary Tuberculosis

Since it seems to be the general opinion that renal tuberculosis largely, if not entirely, represents a secondary hematogenous focus of tuberculous activity resulting from a primary pulmonary infection, it was decided to investigate the incidence of pulmonary involvement in these 290 cases. To do this the pulmonary roentgenograms of the 145 proved renal tuberculosis patients and the 145 control patients suffering from operative renal lithiasis were reviewed. As shown in the table, each case was relegated to one of three categories: first, the healed or active adult type of tuberculosis; second, the healed childhood type of tuberculous infection, which often is referred to as the Ghon complex; and finally those not showing any pulmonary pathologic change whatsoever, which were designated as negative.

The findings clearly indicate the frequency in our series with which renal tuberculosis is associated with demonstrable healed or active adult type pulmonary tuberculosis. The frequency of the healed childhood type of tuberculosis was the same in the two series.

Summary and Conclusions

The diagnosis of renal tuberculosis can be established with relative ease once this disease is suspected. Too frequently this condition, whose successful treatment depends on its early diagnosis, is not considered. The incidences of three easily demonstrable tuberculous lesions often associated with renal tuberculosis have been determined. The presence of any of these associated conditions should cause one to suspect renal tuberculosis.

The presence of calcified mesenteric lymph nodes in the roentgenograms of a patient suffering from a urologic disease should cause one to consider the diagnosis of renal tuberculosis since they are more than twice as frequent in cases of renal tuberculosis as in nontuberculous patients.

Since epididymitis occurred in 38 per cent of 81 cases of renal tuberculosis but did not occur in a control group of 93 cases, every case of intractable epididymitis should be considered tuberculous until proved otherwise. The condition of the kidneys of such a patient should be promptly evaluated.

Since roentgenographic evidence of healed or active adult type pulmonary tuberculosis is more than eight times as frequent in cases of renal tuberculosis as in a comparable control group, in every case of renal tuberculosis the patient should have the benefit of a stereoroentgenogram of the thorax. Renal tuberculosis should be excluded in any case of pulmonary tuberculosis with subjective or objective urinary findings.

Extrarenal Tuberculous Lesions Associated with Renal Tuberculosis, David S. Cristol, M.D., and Laurence F. Greene, M.D., The New England Journal of Medicine, September 21, 1944.

The private physician determines the presence or absence of tuberculosis. He has the responsibility, not only of making a diagnosis and advising treatment when indicated, but also of convincing the patient to accept his advice. The physician should be meticulously careful that in an effort to spare the feelings of the patient he does not minimize the importance of the disease, both to the individual and to his family and other associates. The patient should realize that he has tuberculosis and not a "shadow" or "spot" on his X-ray film, that continued observation is absolutely essential, and that if treatment is indicated it is imperative that he accept it. Roberts Davies, M.D., Nopeming San., Nopeming, Minn.

MEDICOLEGAL ABSTRACT

J. F. OWEN, M.D., LL.B.
RALEIGH

EVIDENCE: *A chiropractor shown to have experience in making x-ray pictures is qualified to testify in malpractice suits against physicians.*

In this case a physician was charged with malpractice in the setting and treatment of a broken arm. The facts brought out in Superior Court were as follows:

The plaintiff in the case suffered a fracture of the right ulna at the junction of the upper and middle thirds. The defendant physician, who was called in two days after the injury, set the bone and gave subsequent treatment. The plaintiff contended that the fracture was improperly reduced, and that the proper subsequent treatment was not given. To prove his case, he relied principally upon the testimony of a chiropractor, although objection was interposed at the time. It was shown to the court, however, that the chiropractor had, during his college course, studied anatomy for two years, and had had six years' experience in x-ray work.

After the court was satisfied that the chiropractor was in possession of this amount of training in anatomy and x-ray work, he was allowed to testify as to an x-ray picture which he had made, showing the break in the bone, its location, and the nature of the union. The verdict was for the plaintiff, and the defendant's motion for a new trial was denied. The defendant thereupon appealed to the Supreme Court.

There were numerous objections considered by the Supreme Court, but the one of most interest perhaps to the medical profession was that concerning the qualifications of the chiropractor to testify against a physician. The court held that there was no error in permitting the chiropractor to testify. The fact of his being a chiropractor, stated the court, was a mere incident, except so far as it showed his knowledge of, and study of, human anatomy. The names, number, and position of bones are the same, stated the court, whether one is a chiropractor or a regular physician. The justice was of the opinion that it is not the school which one follows, but the knowledge, experience, chiropractor, it was held, may testify as to matters in which he is qualified to speak, although he may not testify in regard to a school of treatment separate and distinct from his own without showing his qualifications therefor. Although there may have been some doubt as to just how much study and experience the chiropractor had, the court below had full authority to determine what testimony should be accepted and what should be rejected. No witness, of course, has to be a physician to testify concerning medical matters, if it is shown that he has had certain training sufficient to qualify him. This is demonstrated quite conclusively in the case of State versus Smoak (Vol. 213. N. C.), in which it was held that a toxicologist, although he did not have a medical degree, was qualified to testify in a case involving the poisoning of an individual.

In this case the action was not dismissed, but was remanded for new trial. (Jan. 2, 1931—234 N. W. 75.)

CORRESPONDENCE

April 7, 1945

To the Editor:

I am wondering why all of the reports from Duke Hospital and practically all from the Bowman Gray School of Medicine register temperatures with centigrade thermometers. I doubt that there are one hundred centigrade thermometers in North Carolina outside of these two institutions.

In reading these articles it is too much trouble to stop and translate centigrade to Fahrenheit, and this detracts from the value of the article.

Yours truly,
R. B. Miller, M.D.

Editor's Note: Doubtless the overwhelming majority of doctors, not only in North Carolina but also in the nation, will agree with Dr. Miller's view. Although the metric system is gaining in popularity so far as weights and measures are concerned, the Fahrenheit system of recording temperature is still used by most doctors and hospitals in this country. Hereafter, in any article or case report published in this journal in which the centigrade system is used, the corresponding Fahrenheit reading will be given in parentheses.

A new compound analogous to Synephrine under investigation in the laboratories of the Frederick Stearns & Co. Division of Sterling Drug Inc., Detroit, Michigan, gives promise of providing relief to sufferers from hay fever and asthma, Dr. M. L. Moore, director of organic research, revealed in a recent address (April 25) at the Detroit Institute of Technology.

Dr. Moore declared that in laboratory experiments the new compound proved more stable, more active than "Synephrine, and with action that was not as transient." It is known technically as one of the

BULLETIN BOARD

SECRETARY'S MESSAGE

The following letter has been sent to the secretaries of all county and district medical societies.

Dear Doctor:

The purpose of this letter is four-fold:

I. It is a bitter disappointment that we have postponed, possibly will cancel, our annual meeting at Pinehurst for this year. However, we urge that all county and district medical societies "step on the gas" with more emphasis than usual. This will keep us all in touch with what is transpiring and keep us united against any harmful invaders to our profession. We must maintain our high ethical standards. Some district and some county societies have been rather indifferent about meeting since the war. You must realize that this attitude makes a weak link in the State Society.

I was impressed by an editorial in the *Journal of the South Carolina Medical Association,* from which the following quotation is taken: "No matter how many patients a physician may have to see in his office, no matter how many calls he may have to pay, no matter how tired he may feel, he owes it to himself and to his patients to slip away on occasion and to join his colleagues in an evening of social intercourse and exchange of ideas. He will come from such a gathering not only refreshed but intellectually stimulated, if those in charge of such a get-together make the necessary arrangements. Physicians need to attend medical meetings, and it is the duty of the county and district society officers to see that the opportunity is afforded for them to do so."

II. The Bureau of Information of the American Medical Association is collecting and tabulating information on local medical facilities and openings, so that these data may be available to the doctor who is returning from military service, to aid him in making his decision as to where to locate. To obtain the latest information the Bureau has sent to the secretary of each state society summary sheets (one of which is enclosed) covering all states by counties. The need for this information is urgent to keep the Bureau functioning properly. This Bureau is in charge of Lt. Col. Robert D. Bickel, who served for twenty-nine months in the China-Burma-India theater before his assignment to the American Medical Association headquarters by the Office of the Surgeon General. He is doing his utmost to prepare for the future reception of the medical officers returning into civilian practice. Plans are already under way in many states, including North Carolina, for programs which will make it possible for the discharged medical officers to take up their work after the war under the best conditions possible. Therefore, I ask you to complete this information and *return to my office* at the earliest possible moment.

III. Those of you who have read the April issue of the NORTH CAROLINA MEDICAL JOURNAL will, I am sure, agree that the editorial, "Politics and Mental Hygiene in North Carolina," should not only be read by every physician in North Carolina but should be called to the attention of the lay press so that this information can be distributed widely among the laity. I am, therefore, enclosing several copies of this editorial in the hope that you will use it accordingly.

IV. While I have received probably 50 per cent or more of the annual reports of the county societies, I am insisting that each secretary redouble his efforts to collect the dues for 1945. Last year was a banner year. We passed the 2,000 mark in membership. This year we must exceed this. Before I have to write that "killin' " letter to each member of the Medical Society who has not paid his dues, I hope he will be given another opportunity to pay his membership dues for 1945. No physician in North Carolina can afford not to be affiliated with organized medicine, and certainly can not afford to be deprived of the privilege of reading the NORTH CAROLINA MEDICAL JOURNAL each month. To the secretaries from whom I have heard nothing I am afraid I will have to write that "hangin' " letter. Please notify me if you are the 1944 or 1945 secretary, for I have no other means of knowing.

Again I remind you to send in any news of interest to the medical profession throughout the state. If I can help you in any way, please do not hesitate to call upon me. It is my desire to help each county and district secretary as much as possible throughout the year.

With my best wishes,

Sincerely yours,

ROSCOE D. MCMILLAN. M. D.

Minutes of Executive Committee

The Executive Committee of the Medical Society of the State of North Carolina held a meeting on Thursday, March 29, 1945, in the Sir Walter Hotel, Raleigh. Dr. Paul F. Whitaker, President of the Society, called the meeting to order at 4:10 p.m.

The following were present:

Dr. Paul F. Whitaker, President
Dr. Roscoe D. McMillan, Secretary-Treasurer
Dr. M. D. Hill, Councilor Sixth District

The following were represented by proxy:

Dr. Oren Moore, President-Elect
Dr. Wm. H. Smith, First Vice President
Dr. John Cotten Tayloe, Councilor Second District
Dr. Newsom P. Battle, Councilor Fourth District
Dr. F. L. Knight, Councilor Fifth District
Dr. Joseph A. Elliott, Councilor Seventh District
Dr. Fred M. Patterson, Councilor Eighth District
Dr. I. E. Shafer, Councilor Ninth District
Dr. C. C. Orr, Councilor Tenth District

Dr. Roma S. Cheek, Executive Secretary of the North Carolina State Commission for the Blind; Dr. Frank S. Smith of Charlotte, Dr. Vonnie M. Hicks of Raleigh, and Dr. W. Banks Anderson of Durham, medical advisors to the State Commission for the Blind; and Dr. M. Edward Bizzell, President of the North Carolina Eye, Ear, Nose and Throat Society and chairman of the Section on Ophthalmology and Otolaryngology of the Medical Society of the State of North Carolina, came before the Executive Committee with a statement concerning an article by one Dr. James O. Baxter, optometrist, associate editor of the **American Journal of Optometry**, which was printed in the Beaufort, N. C. (Carteret County) **News** under date of March 1, 1945, entitled "Dr. Baxter Scores Eye Clinic's Alleged Use of Belladonna." Dr. Baxter charged that belladonna in one form or another was used in the treatment of 49 Carteret County school children examined for defective vision at a recent Eye Clinic held at the Morehead City High School. He said that such treatment was tantamount to placing a man under a general anesthesia to fit him for a suit of clothes, and stated that in susceptible persons atropine may cause general toxic symptoms and that in susceptible adults glaucoma may result from the use of atropine or its derivatives. In the main the article was a condemnation of the Eye Clinic conducted in Carteret County under the supervision of the North Carolina Commission for the Blind.

After much discussion of the article a motion was made, seconded, and unanimously carried that some reply be made to the accusations of Dr. Baxter. A reply fully answering all of Dr. Baxter's misrepresentations and comparing the training of optometrists and ophthalmologists was prepared and, after being signed by the president and secretary of the State Society, the executive secretary of the North Carolina State Blind Commission, the president of the North Carolina Eye, Ear, Nose and Throat Society, and as many physicians of Carteret County as were willing to sign, was forwarded to the editor of the **Beaufort News**. The article replying to Dr. Baxter was concluded as follows:

"For a number of years the optometrists in North Carolina have insisted on being allowed to fit glasses at the Commission eye clinics. The Commission has of necessity consistently refused to use them because they are not physicians; they cannot use 'drops,' recognize eye diseases, treat the eyes, operate, or prescribe. If optometrists would study medicine and become competently equipped to recognize, diagnose and treat all diseases and complications of the eye they could then be used to hold Commission eye clinics. The Commission uses first-quality lenses and frames, and glasses are not fitted unless they are absolutely necessary. The price of the glasses is low because it represents a special wholesale charity rate given to the Commission for first-quality lenses and frames. The Commission is trying to help those who may need glasses to secure them and is not trying to make profits at the expense of such persons.

"The North Carolina Commission for the Blind, through the work of eye physicians, has removed more than 3,000 people from the classification of blindness and has prevented and corrected eye difficulties for more than 40,000 children and adults. Belladonna was, is, and will continue to be used by the physicians."

After very careful consideration, Dr. Paul F. Whitaker, Dr. Wm. M. Coppridge, and Dr. Fred C. Hubbard were chosen for recommendation to Governor Cherry for appointment on the North Carolina Hospital and Medical Care Commission to represent the State Medical Society.

There being no further business, the Executive Committee adjourned at 6 p.m.

News Notes from the University of North Carolina School of Medicine

Miss Dorothy M. Strickland, of Roanoke, Virginia, and Daytona Beach, Florida, has established a loan fund for worthy Southern medical students as a memorial to her father, Dr. James Thomas Strickland, of the Class of 1880. For many years Dr. Strickland practiced medicine in Roanoke.

News Notes from the State Board of Health

As a cause of death, accidents rank fifth in the United States, being exceeded only by heart disease, cancer, cerebral hemorrhage, and nephritis. In age groups 2 to 28, accidents rank first. In 1944, according to the National Safety Council, accidents were responsible for 94,000 deaths, and an estimated 10,000,000 disabling injuries.

Accidental injuries in 1943, causing disability beyond the day of the accident, numbered approximately 10,100,000. About 350,000 of these accidents resulted in some permanent injury, ranging from a finger amputation to a permanent, complete crippling.

Accident costs totaled approximately four billion, nine hundred million dollars, including wage loss, medical expense, overhead costs of insurance, property damage in motor vehicle accidents and fires, and the so-called "indirect" costs of occupational accidents.

News Notes from the North Carolina Tuberculosis Association

The 1944 State Christmas Seal Sale exceeded that of 1943 by $74,351.62, or 37 per cent. The total sale was $272,461.75 for 1944 as compared to $198,110.13 for the preceding year.

* * * *

The newest tuberculosis association in North Carolina is the Robeson County Tuberculosis Association. This brings the total number of organizations in the state to thirty-one.

At the last meeting of the Executive Committee of the National Conference of Tuberculosis Secretaries, Mr. W. P. Shahan, President, appointed Mr. Frank W. Webster, Executive Secretary of the North Carolina Tuberculosis Association, to serve on the committee to work with Miss Ellen Lovell, Director of Public Relations of National Tuberculosis Association, on the National Bulletin.

* * * *

The American Legion has announced the appointment of nine eminent physicians and surgeons to a newly created medical advisory board. The board is headed by Colonel Leonard G. Rowntree, Chief of the Selective Service Medical Division, and for many years Chief of the Medical Service at the Mayo Clinic.

The board will work with the national rehabilitation committee in planning and carrying out a nation-wide medical advisory service to aid discharged men. The program calls for the appointment of state medical advisers as well, with the entire plan ultimately reaching post surgeons to serve as medical advisers in the veteran's home community.

Emphasis is to be placed on the Legion's tuberculosis program, particularly in an endeavor to have men remain in hospitals until they are no longer a danger to their friends and families.

Edgecombe-Nash Counties Medical Society

The April meeting of the Edgecombe-Nash Counties Society was held in Rocky Mount on April 11. Dr. D. G. Monroe from the Eastern North Carolina Tuberculosis Sanatorium spoke on "The Treatment of Diabetes."

Forsyth County Medical Society

Dr. Eugene A. Stead, Jr., of Emory University, was guest speaker at a meeting of the Forsyth County Medical Society held on April 10. His subject was "Studies on the Circulation Utilizing the Technique of Right Heart Catheterization."

News Notes

Dr. Robert L. Garrard of Greensboro has recently been promoted from the rank of major to that of lieutenant colonel.

* * * *

Lt. Col. William S. Sloan of Wilson is commanding officer of the 174th General Hospital in France.

* * * *

Dr. J. V. Sykes, who recently received an honorable discharge from the army, has re-opened offices in Rocky Mount for the general practice of medicine and surgery.

Regional Medical Officer Wanted for Fourth United States Civil Service Region

The position of Regional Medical Officer in the Fourth United States Civil Service Command, grade P-5, with basic annual salary of $4600 plus $628 per year overtime pay, will soon be vacant. Qualified physicians who are interested in this position should communicate with Mr. E. S. Burrows, Assistant Regional Director, Fourth U. S. Civil Service Region, Nissen Building, Winston-Salem 3, N. C. The minimum qualifications include at least seven years' professional experience in the field of medicine with at least two years' experience in administrative, industrial, or psychiatric medicine.

American College of Chest Physicians

The Board of Examiners of the American College of Chest Physicians announce that the next written examination for Fellowship will be held at Chicago, June 16. Candidates for Fellowship in the College who plan on taking the examination should write the Executive Secretary of the American College of Chest Physicians, 500 North Dearborn Street, Chicago 10, Illinois.

Educational Opportunities for Army Doctors

Since the start of World War II, over 6,000 selected medical officers have been graduated from short but intensive courses given by the Medical Department in some thirty critical medical and surgical specialties, according to Major General George F. Lull, Deputy Surgeon General. In addition, refresher courses in general medicine and surgery provide medical officers with a chance to "brush up" before returning to professional assignments after other duty.

Hospital Surveys

The need for comprehensive studies of hospital facilities has become widely recognized among the states. Hospital survey committees are in one stage of organization or another in 32 states according to Dr. A. C. Bachmeyer, director of study of the Commission on Hospital Care, which is advising with the state groups.

A survey of health service (exclusive of the City of Baltimore) has been published in Maryland. Hospital survey committees working under official state planning commissions have been established in Alabama, Nebraska, New Jersey and Oklahoma. Special governors' commissions to study hospital or health service have been appointed in Iowa, Massachusetts, Michigan, Missouri, New York, North Carolina, North Dakota, Utah and Virginia. The state health departments are making hospital studies in Georgia and Wisconsin. Indiana has passed legislation providing for the state board of health to make a survey of all hospital and health center facilities in the state. Legislation designed to establish study groups is pending in California, Connecticut, Maine, Oregon, Rhode Island and Washington. State hospital associations have appointed special committees to work toward the establishment of official study groups in Florida, Illinois, Kansas, Minnesota, Montana, Ohio, Texas and West Virginia. The state medical association is undertaking a study in South Carolina.

The results of the state studies will be assembled and correlated by the Commission on Hospital Care, which was organized at the suggestion of the American Hospital Association to make a national survey of hospital facilities and needs to serve as the basis for a unified postwar hospital plan.

The Blakiston Company announces the appointment of William Brown McNett as art director of the Medical and Scientific Division.

English Comes First in New U. S. Pharmacopoeia

For the first time, the English language will take precedence over Latin in the U. S. Pharmacopoeia, the official compendium of drugs. After six years of discussion in the U. S. P. Committee of Revision, of which Dr. E. Fullerton Cook is chairman, it was decided that the new Pharmacopoeia, scheduled for publication in December, would carry the English names of drugs first, followed by the Latin. Medical members of the Committee were chief advocates of the change.

AUXILIARY

THE PUBLIC RELATIONS COMMITTEE

Each of us is well aware of the tremendous burden being carried by the comparatively few doctors available to civilians during these trying years of the war. The lessening of this burden in any way possible would be of great benefit to everyone who may need medical care while the doctor shortage exists. How this can best be done is a problem which warrants our utmost concentration. Perhaps one of the best approaches to the problem is that of health instruction, promotion of child health, and nutrition programs. Some suggestions which have been made by Mrs. Frank P. Dwyer, National Chairman of Public Relations, for the dissemination of such information are as follows:

1. Provide a speakers' bureau for medical speakers for health programs.
2. Open health meetings with speakers provided by state departments of health or state medical societies.
3. Plan for forums or discussion groups on health topics in lay clubs. Provide authentic material for preparation of these topics.
4. Assist in all plans for health meetings properly set up.
5. Provide material for health articles in lay club journals.
6. Sponsor clinics for child care.
7. Sponsor child care centers for working mothers, or if these are already set up, contribute time for personal services at child centers.
8. Buy books for library shelves offering authentic health books.
9. Provide a health film service to schools.
10. Sponsor classes in nutrition.

Much valuable health information may also be dispersed by means of the radio. Each auxiliary is urged to publicize and sponsor, or to interest some other group in sponsoring one or more of the excellent series of transcriptions which have been made by the Bureau of Health Education of the American Medical Association. The two sets which are now available for local use are: (1) "Before the Doctor Comes," a series of sixteen radio broadcasts in which Drs. Austin E. Smith, Edwin P. Jordan and W. W. Bauer are interviewed by Harriet Hester or June Merrill. This series covers such everyday problems as sniffles, cough, rash, use and misuse of prescriptions, dangerous drugs, headache, tummy-ache, and ear-ache. (2) "Dodging Contagious Diseases." This is a series of twelve broadcasts covering such topics as quarantine, home care of patients, and some of the diseases themselves, such as scarlet fever, whooping cough, and chicken pox.

Another problem which has been on the increase during the war period and which merits our attention is juvenile delinquency. Here again we are confronted by a tremendous problem which may affect either directly or indirectly every member of the community, and the eradication of which is everyone's responsibility. It has been suggested that each auxiliary arrange to hold a series of meetings in its community for discussions of the causes of delinquency in the community and the best means of eliminating these causes.

Let each of us as doctors' wives make every possible effort to promote and participate in worthwhile programs which may further health education and eradicate juvenile delinquency in our individual communities.

MRS. GEORGE T. HARRELL, JR.
Chairman of Public Relations.

* * * *

BOARD MEETING

A meeting of the Executive Board of the Auxiliary was held at the home of Mrs. M. D. Hill in Raleigh on April 25, Mrs. J. T. Saunders, president, presiding.

To the end of 1944, the present war has cost the lives of 8,000,000 men killed in action or dead of wounds. This is roughly the same figure as the total of World War I.

U. S. losses: 200,000—between 3 and 4 times the total for World War I.

German: Over 2½ million. 800,000 in 1944 alone.

Japanese: More than 600,000—far exceeding aggregate for all preceding wars in which she had engaged since she first began to emerge as a world power 50 years ago. Admits 168,999 killed and wounded in 1944, but death losses alone are estimated at between 350,000 and 400,000.

Russian: Over 2½ million. 550,000 in 1944 alone.

British: 125,000 dead; 2/3 from British Isles.

French: 10,000 to 15,000. British and French losses are still well below those of 1914-1918, largely because of the differences in the character of military operations in Western Europe in the two wars.

Chinese: 50,000.

Former Axis Satellites: 100,000, mostly Rumanians in Southern Russia and the Crimea. Hungary lost ½ as many as Rumania.

American Hospital Association.

BOOK REVIEWS

Trauma in Internal Diseases. By Rudolph Stern, M.D., Assistant Attending Physician, City Hospital, New York, N. Y. 575 pages. Price, $6.75. New York: Grune and Stratton, 1945.

The author presents this book as a collection of material dealing with the effects of trauma in the production of diseases of the internal viscera. He points out that most of the information on the subject is scattered about in the medical literature of the world and so is not readily available to most physicians. This circumstance gives rise to great difficulty in assembling data when a physician is called upon to testify in court regarding the relationship of trauma and disease in a given case.

The presentation is along anatomical lines for the most part. Diseases of the nervous and osseous systems and the effects of electricity and chronic poisoning on the body are not discussed in this volume, since excellent monographs are already available on these subjects. The effects of trauma on diseases of the heart, arteries, veins, lungs, gastrointestinal organs, kidneys, endocrine glands, and hematopoietic structures are discussed according to the author's highly commendable plan of attack. He avoids dogmatism in such a controversial field. Clinical case reports from the literature are pared down to bare essentials. Those with autopsy proof are separated from unproven cases. A critical analysis of the case is given. The opinion of the court is discussed. Experimental work directly bearing on the problem is presented. Frequently inconclusive cases are used to illustrate their inadequacy. The fallacy of the conclusions reached is pointed out. An excellent bibliography is appended.

Trauma in Internal Diseases is recommended as an interesting and highly informative book on the subject. All medical men will find the book enlightening, particularly in view of the tendency of most medical curricula to neglect this phase of the study of disease.

Alcoholics Are Sick People. By Robert V. Seliger, M.D., Assistant Visiting Psychiatrist, Johns Hopkins Hospital. 80 pages. Price, $2.00. Baltimore: Alcoholism Publications, 1945.

This pocket-size volume is written primarily for the laity. The author discusses the difference between the social drinker and the pathologic drinker. There is a questionnaire to enable the reader to determine which type of drinker he is. The fact is clearly brought out that alcoholism is merely a symptom of some underlying disorder, and the alcoholic is compared with a person who is sick from a physical illness such as fever. The author is very clear on one point: pathologic drinkers must never drink again. This means alcohol in any form, including beer and wine. The fallacy that alcoholism is inherited is exploded. The book should be useful to alcoholic patients, their families, nurses, and psychologists, as well as physicians.

Cataract and Anomalies of the Lens. By John G. Bellows, M.D., Ph.D., Assistant Professor of Ophthalmology, Northwestern University Medical School, Chicago. 624 pages. Price, $12.00. St. Louis: The C. V. Mosby Company, 1944.

This volume is a well planned, well illustrated discourse on "the growth, structure, metabolism, disorders and treatment of the crystalline lens." There are 208 text illustrations and 4 color plates. The bibliography is very extensive, and the index is good.

The scientific evidence for each chapter is well presented, and the book should be of great value to the clinical ophthalmologist as well as to anatomists, chemists, and biologists. This work is one which will be regarded as an authoritative treatise on the crystalline lens.

The Art of Resuscitation. By Paluel J. Flagg, M. D., Chairman, Committee on Asphyxia, American Medical Association; President and Founder of the Society for the Prevention of Asphyxial Death, Inc.; Visiting Anesthetist, Manhattan Eye and Ear Hospital; Consulting Anesthetist to St. Vincent's Hospital, The Woman's Hospital, Sea View Hospital, Jamaica Hospital, Mount Vernon Hospital, Flushing Hospital, Mary Immaculate Hospital, St. Mary's Hospital, and Nassau Hospital. 453 pages, with 176 illustrations. Price, $5.00. New York: Reinhold Publishing Corporation, 1944.

This book is the most complete and lucid work on this subject which has ever appeared. Its full consideration of each phase of asphyxia fulfills the "intensely practical" purpose of the book as stated in the preface: "It is an attempt, based upon more than twenty-five years of intimate experience with the unconscious patient, to tell the reader what to do when faced by an acutely asphyxiated patient about to die. Nothing in the entire field of medicine calls for more understanding and intelligence, for greater calmness and speed combined with a restrained, precise, but strong technique. The instant reward is a life saved at a cost which will vary from a ruptured spleen, fractured ribs, bronchopneumonia, lung abscess, or late cerebral effects of prolonged anoxia, on the one hand, to a total absence of morbidity on the other."

The excellent presentation of the material makes this one of the most interesting books which the reviewer has had the privilege of reading. Part I gives the definition and background of resuscitation. Part II presents the experimental physiology and the problems in clinical medicine which make asphyxia in its broad interpretation a major medical problem. The third section of the book deals with the principles of resuscitation, and includes many practical points. In Part IV, Dr. Flagg discusses asphyxia as a specific problem in relation to asphyxia neonatorum, asphyxia from high altitudes, asphyxia from carbon monoxide poisoning, asphyxia from submersion, asphyxia in anesthesia, asphyxia in poliomyelitis, asphyxia in electrocution, asphyxia from gases encountered in fire-fighting, asphyxia from mechanical obstruction of the respiration, asphyxia from pathological obstruction of the respiration, and asphyxia from clinical disease.

Every physician will have a broader conception of asphyxia and be better prepared for intelligent management of this problem if he is acquainted with the content of this book. It should be required reading for all doctors.

Medical Gynecology. By James C. Janney, M.D., F.A.C.S., Assistant Professor of Gynecology, Boston University School of Medicine, Boston, Massachusetts. 389 pages with 97 illustrations. Price, $5.00. Philadelphia and London: W. B. Saunders Company, 1945.

Dr. Janney attempts to organize the material presented in this text primarily for the use of the general practitioner in the management of office problems. The scope of the book is intended to be limited to office gynecology, and the approach to the material is from the point of view of the patient's complaints. The need for a monograph which adequately fulfills these aims is great.

In general the material presented is factual and conservative. The doubtful opinions presented by the author are largely related to functional problems and endocrinology. He recommends the administration of gonadotropic fractions of the anterior pituitary or the use of estrogens in the management of delayed menarche. There is no description of the physiological changes occurring in adolescence and puberty and their expected order of appearance, or of the abnormalities which one could consider an indication for treatment. The statement that stimulation of corpus luteum activity may be accomplished by the administration of progesterone is at odds with the accepted physiological effect of progesterone. In discussing the treatment of menorrhagia, Dr. Janney recommends the use of chorionic gonadotropin, an endocrine preparation which has been practically abandoned by the endocrinologist. In the section on treatment of the menopause, great emphasis is placed upon replacement therapy with estrogen. The spontaneous remissions and exacerbations which occur with the menopausal syndrome are not clearly presented, and the text indicates that continuous hypodermic or oral administration of estrogen is used. The present concept of the use of estrogens in the menopause is to give an amount adequate to bring about a therapeutic remission of symptoms, and then to discontinue therapy.

Dr. Janney has given much more than usual thought and space to a section entitled "Socio-Medical Problems in Gynecology," including chapters on emotional, economic and social factors, contraception, preparations for marriage, and marital maladjustments. These chapters present valuable material to the practicing physician.

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INDEX TO ADVERTISERS

American Meat Institute XXIV
AR-EX Cosmetics, Inc. 264
Banner Elk Rest Home XXXI
Bilhuber-Knoll VII
Borden Co. XIII
Broadoaks Sanatorium XXXVI
Burroughs Wellcome & Co. ..... XII - XXIII
Camp, S. H. Co. XXVI
Charlotte Eye, Ear, and Throat Hospital XXXIV
Cheplin Laboratories XIV
Coca-Cola Co. XXXVII
Cook County Graduate School of Medicine 263
General Electric X-Ray XVII
Glenwood Park Sanitarium XXXV
Charles C. Haskell and Company V
Holland-Rantos Co., Inc. XXVIII
Hynson, Westcott & Dunning XXXIII
Inter-Ocean Casualty Co. XXXI
Eli Lilly and Company ..... Insert and XX
Luzier's VIII
M & R Laboratories XXVII
Mead Johnson & Company XL
Parke, Davis and Company ..... XXXVIII - XXXIX
Perske, William XXXII
Philip Morris & Co., Ltd., Inc. II
Physicians Casualty Association
Physicians Health Association XXXI
Pinebluff Sanitarium III
Powers and Anderson, Inc. VI
R. J. Reynolds Tobacco Co. XI
Saint Albans Sanatorium XXXII
Schenley Laboratory XXV
Schering Corp. XV
Schieffelin & Co. XXXVII
Julius Schmid, Inc. XVI
Searle, G. T. & Co. XXI
Southern Dairies XXX
Spencer Corset XXXIII
Stuart Circle Hospital XXXVI
Thompson Homestead School XXXI
Tucker Hospital XXXV
United Drug X
Upjohn Co. XIX
Wachtel's, Inc. XXXI
Wander Co. XXIX
Westbrook Sanatorium XXXIV
White Laboratory XXII
Winchester Surgical Supply Co.
Winchester-Ritch Surgical Co. III
Winthrop Chemical Co., Inc. VI
World Insurance Co. IX
Wyeth, John ..... Insert

In Memoriam

HORACE MITCHELL BAKER, M.D.

Dr. Horace Mitchell Baker was born March 10, 1887, at Selbyville, Delaware. He was the son of the late Seth Mitchell Baker and Margaret Holloway Baker. He attended Mt. Hermon School for Boys in Massachusetts. He was graduated with a B.S. degree from the Massachusetts State College in 1912, and received his M.D. degree from Harvard University School of Medicine in 1917.

While an intern at the Children's Hospital in Boston in 1917, he was called into the army. He served at Camp Lee, Yale University, Camp Meade and Detroit before receiving an honorable discharge in 1919.

Dr. Baker was married on August 21, 1918, to Miss Annie Ruth Caldwell, of Lumberton. To this union two children were born—a son, Dr. Horace M. Baker, Jr., an intern at Duke Hospital, and a daughter, Anne Caldwell Baker, a student in the Lumberton High School.

He came to Lumberton in May, 1919, and was engaged in general practice for a short time. When the Sanatorium which was to bear his name was completed, he entered a wider field of service. With his skill and hospital facilities he served well Robeson and the surrounding counties.

He was a member of the International College of Surgeons, the Southern, Massachusetts and New England Medical Associations, the Medical Society of the State of North Carolina, and the Alpha Psi and Kappa Sigma fraternities; he served on the North Carolina Hospitals Board of Control and was a past president of the Robeson County Medical Society. For many years he was president of the Robeson Associational Baptist Training Union, and he had been a deacon in the First Baptist Church since 1926. A thirty-second degree Mason, he was a member of St. Alban's Lodge and of the Temple. He served on the Lumberton School Board for twelve years, was president of the Rotary Club in 1935-36, and at the time of his death was director of the Scottish Bank and a member of the Robeson Grange.

Dr. Baker died in the Baker Sanatorium, Lumberton, early in the morning of February 28, 1945.

It is a colossal undertaking to appraise the life and attainments of Dr. Baker and to find words which are adequate to express his accomplishments. He must be classified as a great man when measured by any yardstick. He possessed all of the attributes which make for success. His fine, keen mind furnished him a generalship which knew only to win. He was possessed of an unusual ability for leadership. His friends became deeply attached to him, and those who differed with him were forced to admire his courage and integrity. He was a fine combination of strength and gentleness. He was long-suffering and patient with those whose vision was less great than his own.

We think of him first as an outstanding surgeon. Early he attained success because of his skill and knowledge of medicine and surgery. No person was too humble to receive his painstaking attention. He worked not for pecuniary reward but for the welfare of his patients. They loved and trusted him. His fellow practitioners learned early to depend on him for consultation and advice.

For Baker Sanatorium he lived, breathed, and thought. The philosophy of the following verse represents his devotion to the institution:

Your soul is of my soul, such a part
That you seem fibre and core of my heart.

To think of Dr. Baker is to think of Baker Sanatorium; the thoughts are almost synonymous.

The spirit of this man is still alive—
This man who fought his battles unafraid.
This was his goal—to serve his fellowman,
Sustained in all he did through Faith in God!

If Dr. Baker could speak to us now he would say to those still holding aloft the torch:

So live, that when thy summons comes to join
The innumerable caravan which moves—
To that mysterious realm,
Where each shall take
His chamber in the silent halls of death,
Thou go not like the quarry slave, at night
Scourged to his dungeon but sustained and
soothed
By an unfaltering trust, approach thy grave,
Like one who wraps the drapery of his couch
About him, and lies down to pleasant dreams.

The Committee, acting for the Robeson County Medical Society, is desirous of having a copy of this tribute spread upon the minutes of the Society, a copy sent to the family of Dr. Baker, a copy published in the **North Carolina Medical Journal**, and a copy sent to the lay press.

Committee:

Roscoe D. McMillan, M.D.
H. A. McAllister, M.D.
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RECENT ADVANCES IN THE TREATMENT OF CARDIOVASCULAR DISEASE

EDWARD S. ORGAIN, M.D.

DURHAM

Major advances in the field of medicine, of necessity, progress slowly because of the time consumed in the initial laboratory research, the subsequent clinical trials, and the final confirmation of results by independent groups of investigators. During the past few years, only a few significant changes have been made in the management of various problems presented by cardiovascular disease. Much relevant work has been done in diversified experimental fields, however; some of the newer concepts have been clarified and some of the older ideas have been discarded. It is my purpose to review briefly certain phases of the treatment of cardiovascular disease in which there has been the most contemporary interest and the greatest progress.

Congestive Failure, Myocardial Infarction and Ectopic Rhythms

From time immemorial, bed rest has been an honored method of treatment in many diseases, particularly those associated with infection and those associated with acute tissue damage. The advisability of prolonged rest in the treatment of cardiovascular diseases has been questioned recently both by Harrison[1] and by Levine[2], who point out that the recumbent position favors the development of pulmonary edema, peripheral venous thrombosis with subsequent pulmonary infarction, and in older subjects hypostatic pneumonia and nitrogen retention. They state further that prolonged rest following myocardial infarction leads in some cases to a neurosis, manifested by anxiety or depression. In general, it is safe to assume that the judicious use of rest, individualized to suit the patient's primary needs—which do not remain static—, is wiser in the end than rigid, unvarying programs of rest for patients with congestive heart failure or myocardial infarction.

In the treatment of ectopic rhythms, the routine use of digitalis and quinidine is well known and requires no elaboration. In special instances, however, other drugs may be utilized to distinct advantage—for example, potassium chloride or acetate (5-10 Gm. daily) for premature beats[3], particularly in digitalis intoxication, or as an adjunct to quinidine therapy; mecholyl[4], prostigmine[5], calcium salts[6], parenteral digitalis glycosides (lanatosid-C, digoxin, digitoxin, and so forth), and ouabain in supraventricular tachycardias[7]; and magnesium sulfate (in 10 and 20 per cent solutions) in

From the Department of Medicine, Duke University School of Medicine, Durham, North Carolina.

Read in part before the Regional Meeting of the American College of Physicians, Chapel Hill, North Carolina, November 3, 1944.

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both supraventricular and ventricular tachycardias[8]. Calcium salts should never be employed during the administration of digitalis, since cardiac arrest may be induced by a synergistic action.

Digitalis, since its introduction by Withering, has been unquestionably the most important single agent in our armamentarium for the treatment of congestive heart failure, whatever the cause; and it is incumbent upon the physician to keep abreast of the recent advances in this particular field, with especial respect to changes in methods of assay, and in the potency and efficacy of the newer preparations[9]. In the eleventh revision of the United States Pharmacopoeia (1936), digitalis was standardized by the frog method of assay, using an "international standard reference powder," in order that uniform potency in various countries might be attained. This increased the potency of digitalis by 25 to 50 per cent[9c,10] and led to certain necessary warnings[10]. The twelfth revision of the Pharmacopoeia[9a,11] (1942) has required that digitalis be standardized by the cat method of assay, using a newly introduced U.S.P. digitalis standard reference powder, since the cat method has been shown to correspond more closely to effects obtained in human beings. The various preparations will be standardized so that 0.1 Gm. of powder or 1 cc. of tincture will be equivalent to 0.1 Gm. of standard reference powder, now defined as 1 U.S.P. digitalis unit, and will approximate 1.3 of the "older cat units." The potency of standard digitalis will thus be reduced by approximately 25 per cent (as compared with U.S.P. XI), and greater uniformity will be obtained. It is necessary that physicians be acquainted with the various commercial preparations available and their methods of assay and standardization in order that correct dosage of the drug may be employed.

The recent work of Gold and his associates[12] has shown that much of the digitalis leaf is not absorbable from the intestinal tract. The oral dose required for digitalization may be three to five times greater in terms of cat units than the intravenous dose. By contrast certain purified glycosides (digitoxin) are readily and wholly absorbed, since 1.25 mg. (3 cat units) will produce the full effect whether given orally or intravenously in a single dose[13].

Considerable experimental and clinical interest has been aroused in the development, action and uses of some of the purified glycosides of Digitalis purpurea, Digitalis lanata, Strophanthus gratus (ouabain) and Strophanthus kombe. Of these, digitoxin (digitaline cristalisee, Nativelle)[12,13], digoxin[14], lanatosid-C[15], ouabain[16], and strophanthin-K[17] have probably received the most attention. These purified glycosides, containing only the potent, active principles of digitalis, have powerful and rapid action and possess advantages over the cruder preparations of digitalis for parenteral administration. These drugs are potentially dangerous when given parenterally, and extreme caution should be observed, particularly in the presence of previous digitalis medication. In general their actions and toxic reactions are similar to those of digitalis, and the view that several of this group—strophanthin, for example—produce effects unattainable with digitalis is not generally accepted. Such drugs should not supplant the familiar digitalis preparations now being used routinely by physicians. Their principal value rests in the treatment of certain medical emerg-

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encies in which rapid digitalization parenterally seems imperative. The ideal drug is a chemically pure crystalline glycoside of reliable potency which is readily and uniformly absorbed in the gastrointestinal tract and which can be assayed by gravimetric rather than biologic methods.

For the conversion of the majority of ectopic rhythms to normal rhythm, quinidine remains the most important single therapeutic agent. Recent studies of the absorption and excretion of quinidine[18] have shown both to be rapid, and clinicians are now leaning toward the administration of larger doses (.4 Gm.) given more frequently (every two hours) in order to accomplish the more rapid restoration of normal rhythm. An unusually large dose[19]—185 grains (12.3 Gm.) given over a period of two and one-half days—recently has been administered without toxic reaction for the conversion of ventricular tachycardia to normal rhythm. Such dosage is obviously heroic and dangerous, but ventricular tachycardia precipitating cardiac failure is an ominous and frequently fatal condition. Of considerable practical interest is the introduction by Sturnick and his associates[20] of a soluble preparation of quinidine for intramuscular use. The mixture contains .15 Gm. of quinidine, .15 Gm. of antipyrine and .2 Gm. of urea per cubic centimeter. The minimal effective dose is said to be .45 to .60 Gm.; this should be repeated in the same or increased amount every one and a half to two and a half hours. Such a preparation is of advantage when patients are unable to receive or retain drugs orally or when accelerated therapeutic action seems desirable.

In spite of the fact that experimentally the xanthines[21]—theobromine, theophylline, and their salts—have not been demonstrated conclusively to exert great beneficial effect except in congestive heart failure, these drugs continue in general use and favor. Mention should be made of occasional reactions of the collapse type[22], ending fatally in a few instances, which have occurred when aminophylline has been given intravenously. Extreme care in the selection of patients and in the administration of the drug should prevent most of these reactions.

Mercury compounds (salyrgan and mercupurin) are quite widely used, because of their diuretic action, as an adjunct to other forms of therapy in the treatment of congestive heart failure. The fact that mercury, when given intravenously, may produce a variety of reactions, mild and severe, immediate and delayed, fatal and non-fatal, is not fully appreciated. Recent reviews of these toxic reactions have been contributed by De Graff and Nadler[23] and by Wexler and Ellis[24]. It seems to be the consensus that the immediate reactions, fatal and non-fatal, represent direct toxic effects upon the myocardium in patients seriously ill from heart disease, while the delayed reactions result from the indirect or diuretic action of the drug, producing transient increase of plasma volume, over-digitalization by digitalis mobilized from edema fluid, depletion of blood chloride, nitrogen retention, or renal tubular damage. It is pointed out that fatal reactions are often preceded by unheeded milder ones. These mercurials, however, are so useful therapeutically and, when employed with care, have so few toxic reactions that their use need not be restricted generally.

Rheumatic Fever

The etiology of rheumatic fever, in spite of the intensive research efforts of many workers, remains as yet undetermined. There is, however, general agreement that respiratory infections with group A beta hemolytic streptococci have an important relationship to rheumatic fever[25]. With the advent of the sulfonamide drugs and the demonstration of their value in the treatment of streptococcal infections, interest naturally has been awakened in their use in rheumatic fever, both for prophylaxis and for treatment. Sufficient evidence now has been accumulated by several investigators to demonstrate that sulfanilamide and sulfa-

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diazine given in small daily doses to rheumatic subjects during the fall, winter and spring may prevent recurrences of hemolytic streptococcus infections and, in turn, rheumatic fever[26]. The development of drug resistant strains of streptococci and their subsequent effects upon the rheumatic fever patient await further observations. It was demonstrated quite early by Swift and others that the sulfonamide drugs have no therapeutic value in the treatment of the acute attack of rheumatic fever, and in some instances appear definitely harmful.

The prophylactic use of salicylates to prevent recrudescence of rheumatic fever in children with quiescent rheumatic heart disease has been advocated by Coburn and Moore[27]. Four to 6 Gm. of salicylates daily, given immediately at the onset of a group A hemolytic streptococcus pharyngitis, protected all except 1 of 47 patients from clinical rheumatic fever, while 57 of 139 controls developed recurrences. The importance of this work is obvious, but it needs confirmation from other workers in the field.

Coburn also has suggested that large doses of salicylates given intravenously and orally tend to suppress the allergic and inflammatory manifestations of rheumatic fever and thus decrease the amount and severity of resultant cardiac damage[28]. The control of drug dosage by determination of the blood salicylate concentration seems entirely rational, but it should be borne in mind that salicylates, in large doses, may produce profound intoxication[29]. The simultaneous administration of equal amounts of sodium bicarbonate and sodium salicylate prevents the establishment of as high a serum salicylate level as would be obtained with the salicylate alone, and a previously established level of serum salicylate will fall when sodium bicarbonate is given[30].

The administration of penicillin to subjects with active rheumatic fever has been demonstrated quite recently to be without therapeutic value[31].

Bacterial Endocarditis

The discovery of sulfanilamide and the subsequent synthesis of its many related compounds immediately widened the narrow horizon in the prognosis of bacterial endocarditis, which at that time was regarded as fatal in 97 to 100 per cent of patients. Sufficient time has now elapsed to warrant an assessment of various therapeutic techniques employing the sulfonamide drugs, both alone and with supplementary forms of treatment[32]. Lichtman[33], in his review of the current results of therapy, presents the following figures:

Spontaneous recoveries in bacterial endocarditis, 1 per cent (25 of 2596 cases)

Recoveries following chemotherapy alone, 4 per cent (21 of 489 cases)

Recoveries following chemotherapy and heparin, 6.5 per cent (7 of 109 cases)

Recoveries following chemotherapy and hyperthermia, 6.5 per cent (4 of 61 cases)

Recoveries following chemotherapy and intravenous typhoid vaccine fever therapy, 15.5 per cent (7 of 45 cases).

If the various types of supplemental therapy are combined, the recovery rate is 8.5 per cent (18 of 215 cases), and in the total group treated by chemotherapy, 5.5 per cent (39 of 704 cases). While these statistics indicate that the general outlook of the disease is still extremely grave, the significant though small rise in the recovery rate justifies the intensive treatment of each individual patient before a hopeless prognosis is given. The best method of chemotherapy, based upon results, remains for future determination. It would appear that chemother-

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apy combined with typhoid vaccine fever therapy has given the greatest percentage of recoveries, but this series contains the fewest cases and judgment must, therefore, be reserved.

The advent of penicillin has stimulated new interest in the treatment of endocarditis, since this new drug has proved to be a "remarkably potent antibacterial agent" in many infections. While the initial report of the Committee on Chemotherapeutic and Other Agents[34] was disappointing in that 17 patients failed to respond to penicillin, the dosage may have been too small. Insufficient time has elapsed to evaluate the optimistic reports of others[35], wherein penicillin combined with heparin gave hopeful results in each of 7 patients.

Congenital Heart Disease

One of the most important contributions to the surgical treatment of heart disease[36] was the accomplishment of the first successful ligation of a patent ductus arteriosus by Gross[37] in 1939. Since this initial report, the statistics regarding operative closure of the ductus in 140 patients have been collected by Shapiro and Keys[38] from the clinics of twenty-five surgeons. In 107 uninfected cases, 81 operations were regarded as completely successful; the operative mortality was 8 per cent. It is presumed that in the hands of experienced surgeons with more refined techniques, this mortality rate may be reduced by one half. These authors estimate that approximately 20,000 cases of patent ductus arteriosus exist in the United States alone and, judging from autopsy statistics (which may be misleading), feel that the span of life after 17 years of age is reduced by about twenty-five years. Furthermore, in 60 cases which came to autopsy[39], death resulted from bacterial endocarditis in 41.7 per cent and from congestive heart failure in 28.3 per cent. Keys and Shapiro concluded that "the majority of patients with patency of the ductus arteriosus should be sent to surgery for ligation after careful clinical studies have been made." Controversies regarding the proper time for ligation have not been fully settled. It is agreed absolutely, however, that the patent ductus arteriosus which has become infected with bacterial implants (principally Streptococcus viridans) should be ligated as soon as feasible, because of the remarkable recovery rate in a disease universally fatal without treatment[40]. Of 33 patients so treated[38] 20 were cured, 5 died at operation, and in 8 the fever persisted. In spite of the demonstration by Touroff[40a] that cure can be effected by ligation without chemotherapy, the sulfonamide drugs and penicillin will continue as useful therapeutic adjuncts, especially in those patients not immediately cured by operation. Too little time has yet passed to allow the collection of statistics regarding re-infection after successful ligation.

Coronary Disease

The influence of extrinsic factors upon the coronary system has been emphasized again by Gilbert[41], who points out that decreased coronary blood flow resulting from reflex coronary constriction, presumably caused by vagal reflexes, may occur in coronary artery thrombosis, pulmonary embolism, hiatus hernia and gallbladder disease. Attention is called to the importance of these extrinsic factors in the production of coronary spasm and to the value of parasympathetic depressant drugs such as atropine in combination with vasodilating substances such as aminophylline and papaverine as temporary aids in therapy.

Papaverine, an opium alkaloid of the benzyl-isoquinoline group, has relatively low toxicity and produces no habituation. Although its powerful coronary dilating effect was recognized by Pal in 1913, only recently has it received significant attention in the treatment of coronary pain[42]. Its use

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in severe angina pectoris and coronary thrombosis to produce increased coronary blood flow has a rational pharmacologic background. It has been recommended also for the eradication of premature beats, but the drug is too expensive to warrant large continued doses. Riseman[43] has recently reviewed the treatment of angina pectoris on the basis of a ten years' objective study and has evaluated comparatively the various methods of treatment. Among the most valuable therapeutic agents he lists the following: nitrites (nitroglycerine, amyl nitrite, octyl nitrite), purines (several of the theobromine and theophylline derivatives), sedatives (phenobarbital, codeine, cobra venom), quinidine sulfate and quinophylline, atropine sulfate, potassium iodide, total thyroidectomy, paravertebral injections of alcohol, and heat. Needless to say, the specificity of some of these drugs and procedures is open to question.

In the search for new methods and drugs to increase the blood flow to the heart muscle in angina pectoris and thus decrease or prevent the seizures of pain, the male sex hormone has been tried. Uniformly good results have been observed by several investigators[44] following the intramuscular injection of 25 mg. of testosterone twice weekly for one to two months. Levine and Likoff[45], however, after a study of 19 patients, attributed the good results observed (5 markedly improved) to the spontaneous variation in the clinical course of the disease, rather than to the drug therapy. An obvious disadvantage of testosterone is its present high cost. Further studies are warranted, however.

The final results of the clinical experiment of administering roentgen therapy to the adrenal glands in patients suffering with angina pectoris have been summarized recently by Raab[46]. He classifies 74 per cent of the 42 patients treated as either completely freed of their anginal complaints or, at least, improved for periods ranging between five and forty-five months, with an average of two years. No significant reactions occurred in the entire group treated. These results have not been substantiated by the experiences of other authorities in the field.

The surgical treatment of angina pectoris and coronary disease by methods designed to augment the blood flow to the affected myocardium[47] (cardio-myopexy, cardio-omentopexy and cardio-pericardiopexy) merits further consideration because of the sound basic therapeutic principle. Unfortunately the results, including the operative mortalities, have not been sufficiently encouraging to promote widespread interest or more general application.

The operation of choice at the present time in patients who have failed to respond to medical management would seem to be sensory denervation by resection of the inferior cervical and the upper three thoracic sympathetic ganglia, through which the sensory axones course[48]. The results have been excellent, but the patients with the worst pain have more intrinsic coronary disease and, therefore, are the poorest operative risks. Chemical destruction of the sympathetic fibers and ganglia in the latter group may be accomplished by the use of paravertebral alcohol injections as described by White[49].

Hypertension

In spite of the very considerable amount of research work devoted to experimental hypertension, both renal and neurogenic, in animals, there is at present no direct translation of the information obtained to the solution of the problem of the most common type of human hypertension, "primary arterial" or "essential" hypertension.

The use of a strict dietary regime, including the substitution of vegetable (rice) protein for animal protein, supplemented by carbohydrate foods in the form of fruit and fruit juices, with restriction of salt and

43. Riseman, J. E. F.: The Treatment of Angina Pectoris, New England J. Med. 229:670-680 (Oct. 28) 1943.
44. (a) Lesser, M. A.: The Treatment of Angina Pectoris with Testosterone Propionate, New England J. Med. 228: 185-188 (Feb. 11) 1943.
    (b) Walker, T. C.: Use of Testosterone Propionate and Estrogenic Substance in Treatment of Essential Hypertension, Angina Pectoris and Peripheral Vascular Disease, J. Clin. Endocrinol. 2:560-568 (Sept.) 1942.
    (c) Hamm, L.: Testosterone Propionate in the Treatment of Angina Pectoris, J. Clin. Endocrinol. 2:325-328 (May) 1942.
45. Levine, S. A., and Likoff, W. B.: The Therapeutic Value of Testosterone Propionate in Angina Pectoris, New Eng-

47. (a) Beck, C. S.: Further Data on the Establishment of a New Blood Supply to the Heart by Operation, J. Thoracic Surg. 5:604-611 (Aug.) 1936.
    (b) O'Shaughnessy, L.: Surgical Treatment of Cardiac Ischemia, Lancet 1:185-194 (Jan. 23) 1937.
    (c) Thompson, S. A. and Raisbeck, M. J.: Cardio-Pericardiopexy: The Surgical Treatment of Coronary Arterial Disease by the Establishment of Adhesive Pericarditis, Ann. Int. Med. 16:495-520 (March) 1942.
48. White, J. C.: Progress in Surgery of the Autonomic Nervous System, 1940-1942, Surgery 15:491-517 (March) 1944.
49. (a) White, J. C.: Technique of Paravertebral Alcohol Injection: Methods and Safeguards in Its Use in the Treatment of Angina Pectoris, Surg., Gynec. and Obst. 71:334-343 (Sept.) 1940.
    (b) Levy, R. L., and Moore, R. L.: Paravertebral Sympa-

fluids, has been employed by Kempner[50] in a variety of vascular and renal conditions. Unquestionably improvement, both subjective and objective, has been demonstrated in patients with decompensated renal disease, but the problem of hypertension awaits further investigative study.

The use of potassium thiocyanate therapy[51] in the treatment of hypertensive vascular disease (essential hypertension) was revived by Barker[51a] in 1936, who introduced a more practical method of control of a potentially toxic drug by blood plasma thiocyanate determination. The pharmacologic properties and actions of the drug are not fully understood. The optimal therapeutic range has been established at 8-12 mg. per 100 cc. of blood, although benefit has resulted with lower levels. The toxic range usually begins at 15 mg. per 100 cc.; toxic reactions and a few deaths have been reported[52], generally with high concentrations. An average clinical experience has been reported recently by Palmer and his associates[53], who found a decrease to normal blood pressure in 12 per cent, significant lowering of pressure in an additional 16 per cent and—equally important to the patient—subjective relief from headache in over half the cases.

The outstanding contribution of Goldblatt and his associates, who first produced hypertension experimentally by renal ischemia, revived lagging interest in the investigative study of the mechanism of hypertension in man. Experimental studies in animals suggest the existence of a renal pressor system initiated by a substance formed in an ischemic kidney. It likewise has been shown that an antipressor substance can be extracted from the normal kidney which is capable of inhibiting or destroying the pressor substance. This has led to a search by several groups of investigators for a renal extract of animal origin capable of reducing human hypertension. The results obtained by the administration of such renal extracts[54], both parenterally and orally, to hypertensive subjects have not been particularly encouraging. The few good responses have been temporary and considered by some[55] to be nonspecific pyrogen reactions resulting from the parenteral administration of crude extracts. The inherent difficulties in the preparation of even small amounts of relatively purified material for administration prohibits at present any practical therapeutic application.

Following the observations of Bing and Zucker[56] that the ischemic kidney is capable of converting an amino acid (without pressor action) into an amine with a strong pressor action, Schroeder and Adams[57] found that tyrosinase (a phenolic oxidase derived from mushrooms, capable of destroying angiotonin) was effective in lowering blood pressure. In view of the demonstration of Prinzmetal and his associates[58] that heat-inactivated tyrosinase has a similar depressor effect, it seems probable that a nonspecific pyrogen reaction similar to that obtainable with typhoid vaccine is responsible.

Considerable interest has been aroused among the laity, if not among the profession, in the reduction of blood pressure by various vitamins, notably vitamin A. While this vitamin has been shown to increase effective renal flow, glomerular filtration rate, and tubular secretory capacity, it has had no effect, favorable or unfavorable, on hypertension, nor has it altered normal blood pressure when given in doses of 100,000 to 400,000 units daily for periods of five to ninety days[59].

Pendergrass and his associates[60] have published a preliminary report on the use of irradiation to the pituitary gland in a small series of hypertensive patients who exhibited positive blood tests for antidiuretic

50. Kempner, Walter: Treatment of Kidney Disease and Hypertensive Vascular Disease with Rice Diet, North Carolina M. J. 5:125-133 (April); 273-274 (July) 1944; 6:61-87 (Feb); 117-161 (March) 1945.
51. (a) Barker, M. H.: Blood Cyanates in the Treatment of Hypertension, J.A.M.A. 106:762-767 (March 7) 1936.
(b) Caviness, V. S. and others: Potassium Sulfocyanate in the Treatment of Hypertension, North Carolina M. J. 2:283-288 (June) 1941.
52. (a) Solomon, J., Greenblatt, M., and Coon, G. P.: Toxic Psychosis and Death Associated with Potassium Thiocyanate Therapy, New England J. Med. 229:241-243 (Aug. 5) 1943.
(b) Weeks, K. D.: Fatal Poisoning with Thiocyanate in the Treatment of Hypertension, North Carolina M. J. 5:234-238 (June) 1944.
53. Fanson, E., Kinsey, D., and Palmer, R. S.: Potassium Sulfocyanate Therapy in Essential Hypertension, New England J. Med. 229:540-543 (Sept. 30) 1943.
54. (a) Page, I. H., and others: A Progress Report on Investigations Concerned with the Experimental Treatment of Hypertension with Kidney Extracts, Ann. Int. Med. 18:29-42 (Jan.) 1943.
(b) Grollman, A., Williams, J. R., Jr., and Harrison, T. R.: Effects of Renal Extract on Hypertension, Bull. New York Acad. Med. 18:190-199 (March) 1942.
55. Schales, O., Stead, E. A., Jr., and Warren, J. V.: Non-Specific Effect of Certain Kidney Extracts in Lowering Blood Pressure, Am. J. M. Sc. 204:797-809 (Dec.) 1942.
56. Bing, R. J. and Zucker, M. B.: Renal Hypertension Produced by an Amino Acid, J. Exper. Med. 74:235-246 (Sept.) 1941.
57. Schroeder, H. A.: The Effect of Tyrosinase on Arterial Hypertension, Science 93:116 (Jan. 31) 1941.
58. Prinzmetal, M., and others: Effects on Arterial Hypertension of Heat-Inactivated Tyrosinase Preparations, Proc. Soc. Exper. Biol. and Med. 50:288-290 (June) 1942.
59. Taylor, R. D., and others: Effects of Large Doses of a Vitamin A Concentrate in Normal and Hypertensive Patients, Am. J. M. Sc. 206:659-667 (Nov.) 1943.
60. Pendergrass, E. P., Hodes, P. J., and Griffith, J. Q., Jr.: Irradiation of the Pituitary Gland in Posterior Lobe Hyperfunction Controlled by Biologic Tests, Am. J. Roentgenol. 46:673-682 (Nov.) 1941.

substances. The efficacy of such treatment, initially reported as 50 per cent, is still uncertain, but larger series of cases treated by the same or similar methods, with careful laboratory control, should settle the question definitely.

During the past decade, the surgical treatment of "primary arterial" or "essential" hypertension has received merited consideration and the value of several operative procedures, particularly those upon the sympathetic nervous system, has been established more firmly[48,61]. It is agreed that in hypertension of this type, the principal initial disturbance in pathologic physiology is a general increase in arterial tone, particularly in the arterioles, which offer increased peripheral resistance to blood flow, thus producing hypertension. The etiology of this increased vascular tone in human hypertension remains obscure, but whatever its cause, the primary object of sympathetic system surgery has been to abolish vasoconstrictor tone over a large area by denervating the vascular beds of the splanchnic area and of the lower extremities. At present four related, yet different, operative procedures are being employed toward this end: (1) Supradiaphragmatic splanchnicectomy and lower dorsal ganglionectomy (bilateral removal of the tenth, eleventh and twelfth thoracic sympathetic ganglia, the lesser splanchnic nerves, and 9 to 13 cm. of the greater splanchnic nerves, Peet)[62]; (2) subdiaphragmatic splanchnicectomy (including the splanchnic nerves as they enter the abdomen and the first and second lumbar ganglia, Allen and Adson)[63]; (3) transdiaphragmatic splanchnicectomy and lumbodorsal sympathectomy (removal of the lower four thoracic sympathetic ganglia and the first and second lumbar ganglia, Smithwick)[64]; (4) subtotal to total paravertebral sympathectomy (removal of the stellate ganglia, the thoracic chains, the celiac ganglia, and frequently the first and second lumbar ganglia, Grimson)[61b].

While satisfactory lowering of blood pressure was obtained in about one half of the patients in Peet's series and in approximately one third of those treated by Adson, neither of these two procedures has received general favor. However, the postoperative survival statistics of Woods and Peet[62b], when compared to those reported by Wagener and Keith[65] for patients treated medically, justify their statement[62a] that "surgical treatment offers a better prognosis in cases of severe hypertension than any other form of therapy as yet reported." Objections to these first two surgical procedures have been based on the grounds that complete denervation of the lower half of the body is not achieved, that regeneration is more likely to occur, and that they have not given satisfactory results in other hands. Smithwick logically combined the two operations and extended the areas of denervation. In his preliminary report[64] of 38 cases, 71 per cent had had significant and persistent lowering of the blood pressure. The best results (87 per cent) were obtained in groups I and II (Wagener-Keith classification), although a significant effect was noted in 60 per cent of the patients in groups III and IV. De Takats and his associates[66] have also reported better results with the Smithwick procedure than with those of Peet and of Adson. Grimson[61b] has recently advocated further extension of the operative field to include subtotal to total paravertebral sympathectomy. His preliminary results have been sufficiently encouraging to warrant continuation of the operation with various modifications according to the needs of the individual patient. The advantages seem to lie in the more persistent lowering of blood pressure, the slower heart rate, postural hypotension without tachycardia, and a decreased probability of sympathetic regeneration; while the disadvantages are listed as greater operative morbidity and mortality, decreased vital capacity, difficult postoperative management, bilateral Horner's syndrome, occasional chronic nasal congestion, excessive sweating

61. (a) White, J. C., and Smithwick, R. H.: The Autonomic Nervous System: Anatomy, Physiology, and Surgical Application, ed. 2, New York, The Macmillan Company, 1941.
(b) Grimson, K. S.: The Surgical Treatment of Hypertension: Collective Review, Internat. Abstr. Surg. (Surg., Gynec. and Obst.) 75:421-434 (Nov.) 1942.

62. (a) Peet, M. M., Woods, W. W., and Braden, S.: The Surgical Treatment of Hypertension: Results in 350 Consecutive Cases Treated by Bilateral Supradiaphragmatic Splanchnicectomy and Lower Dorsal Sympathetic Ganglionectomy, J.A.M.A. 115:1875-1885 (Nov. 30) 1940.
(b) Woods, W. W., and Peet, M. M.: The Surgical Treatment of Hypertension: Comparison of Mortality Following Operation with That of the Wagener-Keith Medically Treated Control Series, J.A.M.A. 117:1508-1515 (Nov. 1) 1941.

63. Allen, E. V., and Adson, A. W.: The Treatment of Hypertension; Medical versus Surgical, Ann. Int. Med. 14:288-307 (Aug.) 1940.

65. Wagener, H. P., and Keith, N. M.: Diffuse Arteriolar Disease with Hypertension and the Associated Retinal Lesions, Medicine 18:317-430 (Sept.) 1939.

in patches, prolonged weakness and postural disability, more extensive postoperative pain and psychic trauma, and occasionally decreased sexual power in the male patient.

It is of interest that subjective improvement or relief of distressing symptoms (headache, dizziness, palpitation, and so forth) is achieved by surgery in over 50 per cent of patients with hypertension, irrespective of blood pressure reduction. The actual mechanism of improvement, both subjective and objective, is not fully understood, but it seems very likely that reduction of the blood pressure is due primarily to a decrease in peripheral arterial tone rather than to significant increase in the basal rate of blood flow through the kidneys[67].

The problem of selecting patients suitable for operation is of paramount importance. No unimpeachable rules have been formulated; each patient must be studied and evaluated individually. Most clinicians and surgeons agree, however, that in general the patient should not be over 50 years of age, nor should he have very advanced arterial disease manifested in the brain, heart or kidney, since the benefit will be limited and the mortality high. Grimson[61b] has aptly summarized the situation by stating that "the lowering of the blood pressure has been directly proportional to the extent of the sympathectomy and inversely proportional to the severity of the disease." At the present moment, the Smithwick procedure seems satisfactory and attended with less risk; however, the more extensive technique of Grimson may be required, at least in many patients, when the therapeutic results have been finally evaluated.

The concept of unilateral renal disease as a cause of hypertension seems acceptable, for in a few instances unilateral nephrectomy of the diseased kidney has been followed by lowering of the blood pressure[68]. The results of other reported techniques, such as nephro-omentopexy, nephro-myopexy, renal decapsulation and renal denervation, have attracted little sustained interest.

67. Talbott, J. H., and others: Renal Biopsy Studies Correlated with Renal Clearance Observations in Hypertensive Patients Treated by Radical Sympathectomy, J. Clin. Investigation 22:387-394 (May) 1943.

68. (a) White, B. V., Durkee, R. E., and Mirabile, C.: Renal Hypertension: A Review of Its Status, Including the Report of a Case of Hypertension Relieved After Nephrectomy, New England J. Med. 228:277-283 (March 4) 1943.
(b) Sensenbach, W.: Effects of Unilateral Nephrectomy in Treatment of Hypertension, Arch. Int. Med. 73:123-130 (Feb.) 1944.
(c) Brooks, R. E.: Hypertension Due to Unilateral Renal Disease; Report of a Case, North Carolina M. J. 4: 463-465 (Nov.) 1943.

Pericarditis

Insufficient emphasis in the past has been given to pericardiostomy in the treatment of suppurative (purulent) pericarditis, which in untreated cases has a mortality rate approaching 100 per cent. The various techniques of drainage proposed, which have reduced the mortality figures to about 50 per cent, have been reviewed recently by Strieder and Sandusky[69]. These authors reiterate the desirability of early recognition and treatment when the optimal condition for surgery exists. Similarly, the necessity for the recognition of chronic constrictive pericarditis is emphasized by the reports of Blalock and Burwell[70] and of Harrison and White[71], which have shown that this condition can be cured or greatly ameliorated by surgery in more than 50 per cent of the patients.

Conclusion

A brief resume of some of the more recent ideas in the treatment of cardiovascular disease has been presented. While significant advances have been few, considerable progress has been achieved in various fields—notably in the use of digitalis and the purified glycosides, in the medical treatment of rheumatic fever and bacterial endocarditis, and in the surgical treatment of hypertension and of patent ductus arteriosus.

69. Strieder, J. W., and Sandusky, W. R.: Pericardiostomy for Suppurative Pericarditis, New England J. Med. 225: 317-326 (Aug. 28) 1941.

70. Blalock, A., and Burwell, C. S.: Chronic Pericardial Disease; Report of 28 Cases of Constrictive Pericarditis, Surg. Gynec. and Obst. 73:433-461 (Oct.) 1941.

71. Harrison, M. B., and White, P. D.: Chronic Constrictive Pericarditis; A Follow-Up Study of 37 Cases, Ann. Int. Med. 17:790-806 (Nov.) 1942.

Increased use of mineral oil may have serious nutritional consequences. Non-rationed mineral oil robs the body of at least two of the fat-soluble vitamins, and of calcium and phosphorus, according to the U. S. Department of Agriculture. Mineral oil, which has been plentiful and relatively cheap as well as not becoming rancid, has been used in increasing amounts in salad dressings and in such foods as salted nuts, potato chips and doughnuts. Its prolonged use, however, may lead to deficiency ills because it prevents the body from making full use of some of the most important essentials in food. Recent studies at the Arizona Station showed that mineral oil not only cheated the user of vitamin A, but also of vitamin D, the "sunshine vitamin," and calcium and phosphorus. Rats taking mineral oil needed three times as much cod liver oil to supply vitamin D as those not given the oil. Puppies fed mineral oil could not use the calcium and phosphorus in their food to build normal bones.—Science News, Science (Supplement) 99:10 (June 2) 1944.

PATENT DUCTUS ARTERIOSUS WITH SUPERIMPOSED SUBACUTE BACTERIAL ENDARTERITIS

General Considerations and Report of a Cure by Surgical Ligation

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Subacute bacterial endocarditis is a very serious complication. The site of the infection is in all cases a tissue previously damaged, usually by rheumatic fever. The fact that congenital anomalies of the heart may also predispose to infection with Streptococcus viridans is not well recognized. Even less commonly known is the recently developed surgical treatment of simple patent ductus arteriosus, which restores the normal physiology of the circulation and, in infected cases, may cure the infection.

In the fetus the ductus arteriosus is a shunt from the pulmonary to the systemic vascular circuit. It closes off usually within twelve weeks after birth. If the vessel remains open, the blood flows through it in a direction opposite to that of fetal life, passing now from a region of high pressure in the aorta to the pulmonary artery, where the pressure is much lower. Thus the blood in the systemic circulation of patients with patent ductus arteriosus is saturated with oxygen to a normal degree, while that in the pulmonic circuit contains oxygen at a tension higher than normal. The continuous stream of blood flowing swiftly under high pressure through the patent ductus into the pulmonary artery over a period of years results in the formation of atheromatous plaques in the intima of the ductus and the adjacent pulmonary artery[1]. On these damaged surfaces bacterial vegetations are implanted. The two swiftly flowing currents of blood meeting at the entry of the ductus into the pulmonary artery repeatedly break off bits of vegetations, roughening the surface and furthering growth of the bacteria. Touroff has pointed out that the abnormally high oxygen tension in the pulmonary artery may also favor bacterial growth. Ligation of the ductus lessens each of these hazards.

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Presentation of Case

The patient, Mrs. C. W., a 34 year old white school teacher, had always had good health and had led an active life, including participation in athletics. She had never had any symptoms of cardiac embarrassment, and would not have known that anything was wrong with her heart had not a school physician mentioned it to her during a routine examination when she was 17. There was no history of rheumatic fever, chorea, or frequent sore throats.

The present illness began on March 8, 1943, when she felt a little "sore and achy." The next day she arose tired and weak, but went to work. She felt faint during the morning but managed to finish the day's work. She went home and to bed with headache and moderate prostration. Her temperature that night was 38.5 C. (101.3 F.) Her physician saw her and thought that she had influenza, which was then epidemic in the vicinity. After some time in bed she felt better, but fever persisted. After being treated with atabrine and quinine for several days without improvement, she entered a hospital, where she remained for a week. A "non-hemolytic streptococcus" was grown from the blood stream. While in the hospital she was given sulfonamides in unknown amounts, but without much improvement. She continued to have fever after she returned home, and a week later—on April 27, 1943—she was admitted to Duke Hospital. During her illness she lost about 10 pounds in weight, but at no time did she have pain in the extremities, abdomen, or chest, nor spots on the skin.

On physical examination the temperature was found to be 37 C. (98.6 F.), the pulse 110, respiration 17. Blood pressure (with the patient supine) was 120 systolic, 60 diastolic. Her height was 67 inches, her weight 98 pounds. She had thin, somewhat drawn facies, but was cheerful and cooperative. The skin, including the nails, was generally a fairly deep yellow, but the sclerae were not discolored; this yellow color had been present since atabrine was given, and was fading. No petechiae were found on the skin, palms, soles, conjunctivae, fundi, or mucous membranes. The thorax was long and thin; expansion was good. The lungs were clear. The heart was not demonstrably enlarged, but its overactivity was easily detected by observing the thin chest wall. There was an

sound at the mitral area was loud and there was a faint systolic murmur which was thought to be transmitted from the base, where a loud continuous murmur, accentuated during systole, was heard. It was harsh, of medium pitch, and loudest in the second and third interspaces just to the left of the sternum, where it obscured the heart sounds. The abdomen was flat; the liver and spleen were not palpable, and there was no tenderness. There was no edema or cyanosis and no clubbing or tenderness of fingers or toes.

The impression was that the patient had a patent ductus arteriosus with no lowering of the cardiac reserve, and with superimposed subacute bacterial endarteritis. All subsequent studies and the clinical course confirmed this.

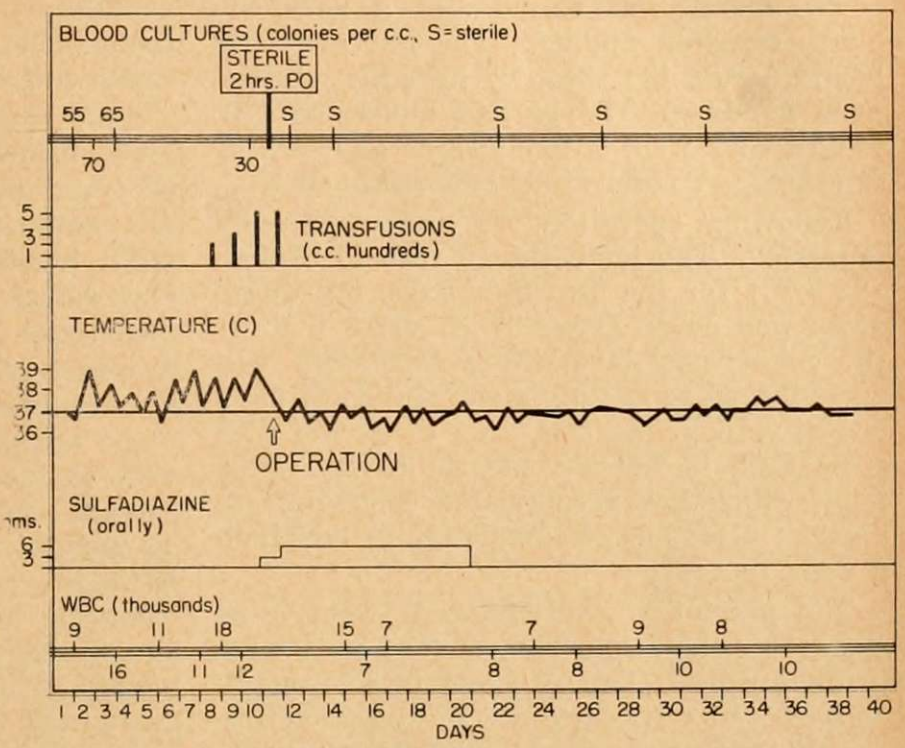

Fig. 1. Chart illustrating the course of the patient in the hospital. The temperature became normal after operation, and remained so. The white blood cell count was normal four days postoperatively and subsequently. Blood cultures were positive on four occasions preoperatively, but became sterile within two hours after operation, and remained so.

Course in the hospital: The temperature, normal on admission, showed fluctuations between 37.5 C. (99.5 F.) and 38.5 C. (101.3 F.), with occasional peaks at 39 C. (102.4 F.). The pulse rate remained around 100. The white blood cell count ranged from 10,000 to 17,000 per cubic millimeter, with 75 to 80 per cent neutrophils. The hemoglobin was 65 to 70 per cent. Blood cultures taken during the ten days before operation showed, in the following order, 55, 70, 65, and 30 colonies of Streptococcus viridans per cubic centimeter.

It was decided that ligation of the patent ductus was the treatment of choice. In preparation for operation the patient was kept in bed, was encouraged to eat, and was given a total of 1500 cc. of whole blood in four transfusions. She ate well and her strength increased during the ten days preceding operation. During this time no petechiae were seen and there was no pain in the extremities.

Operation was performed on May 7, 1943, by Dr. Deryl Hart.

An abstract of the operative note follows: The patient was placed in the supine position, with the left arm extended above the headrest and with a sandbag under the left thorax. The anesthetic was cyclopropane, given under positive pressure while the thorax was open. The skin incision extended from the first interspace in the parasternal line downward and laterally beneath the left breast to the anterior axillary line. The breast was pulled upward, and the superficial thoracic muscles were divided, as were the costochondral junctions of the second and third ribs. The thorax thus was entered through the third interspace; the second and third ribs were reflected upward, and the heart was exposed. After gentle blunt dissection, the ductus arteriosus was identified. It was about 2 cm. in diameter and less than 1 cm. long. A strong thrill was transmitted from it to the pulmonary artery and aorta. The loose connective tissue around the ductus was quite vascular and was suggestive of inflammation. The heart and the pericardium appeared normal. By temporary manual compression, the hemodynamic effects of closing the ductus were observed. It was then doubly ligated with heavy braided silk. Blood pressure before closure was 136 systolic, 66 diastolic; immediately after closure, 142 systolic, 90 diastolic; five minutes after closure, 126 systolic, 82 diastolic; ten minutes after closure, 118 systolic, 90 diastolic.

The thorax was closed and a xeroform gauze dressing applied. The left arm was bound across the chest by an adhesive Velpeau bandage. The patient stood the procedure very well, without signs of shock or of cardiac or respiratory embarrassment.

Following operation the patient steadily improved. The temperature rose to 37.5 C. (99.5 F.) for the first four days, but thereafter was never above 37 C. (98.6 F.) for the twenty-one days before discharge. She was allowed to sit up on the sixteenth postoperative day. At this time there was still some fluid in the left pleural cavity. This fluid, which had accumulated following operation, disappeared completely in less than a week thereafter.

The patient was discharged twenty-nine days after operation. The chart of her course in the hospital (fig. 1) shows in a dramatic manner the disappearance of infection following operation. The blood pressure became stabilized at 110-115 systolic, 70 diastolic. On subsequent visits, she has shown steady improvement. The systolic murmur decreased in intensity and by December, 1943, was almost inaudible. So far, seventeen months after operation, she is well and active.

In addition to the successful outcome there are two interesting features of this case. The first concerns the x-ray examinations. The following report was returned on fluoroscopic and film studies made the second day after admission: "The heart is not enlarged, but there is a relative prominence of the shadow of the pulmonary artery, with marked pulsations of the pulmonary conus. In the right anterior oblique view, the pulmonary artery is larger than normal, and there is a peculiar pointed shadow arising from its superior portion. Roentgen kymogram shows strong pulsations along the left border of the heart shadow. Pulsation of the pulmonary artery is greater than that of the aorta. Pulsations of the right auricle and aorta are shallow. The findings are those of a congenital heart lesion, possibly patent ductus arteriosus." Fluoroscopy was repeated three weeks after operation; the cardiac action was more nearly normal and the pulsations of the pulmonary artery were not as great as before. The latest roentgenographic studies were done on December 20, 1943, seven months after operation, and the findings were practically normal. These studies are reported because of the fact that the roentgenologist was able actually to see the shadow of the ductus.

The electrocardiographic findings are given below in order to record the changes observed during illness and recovery. A record made on admission showed a slurred QRS, low upright T_1, inverted T_2 and T_3, and rounded upright T_4. Another record made four days before operation showed the T waves all upright, and the record within normal limits. Eighteen days after operation there was definite flattening of the T waves, with an inverted T_4. One month after operation T_1 was flat, T_2 and T_3 inverted, and T_4 upright. One month later—on July 7, 1943—T_1 was flat, T_2 and T_3 were more markedly inverted, and there was low voltage of QRS_4. On December 20, 1943, seven months after operation, the electrocardiogram was found to be normal again. The cause of these abnormalities of the T waves is obscure. It will be noted, however, that the waves returned to normal within seven months after operation.

Discussion

The surgical treatment of congenital heart disease has been a recent development. In 1939, the first successful ligation of a patent ductus arteriosus was reported by Gross and Hubbard[2]. Before the operation was attempted in human patients, it was perfected in dogs[3].

Several surgeons have done the operation since; by 1943, at least 140 ligations had been done by twenty-five surgical teams. Shapiro and Keys[4] have summarized the results as follows: Of 107 operations on patients with uninfected ductus, 81 were completely successful, 14 were completely successful except for some persistence of the murmur, 15 were unsuccessful (for various reasons), and 9 were unsuccessful, with death after operation; of 33 operations on patients with infected patent ductus, 20 were completely successful, 5 resulted in death at operation, and 8 failed to rid the patients of persistent fever. It is seen that the mortality from ligation of the uninfected patent ductus arteriosus is less than 10 per cent. The data

2. Gross, R. E. and Hubbard, J. P.: Surgical Ligation of Patent Ductus Arteriosus; Report of First Successful Case, J.A.M.A. 112:729-731 (Feb. 25) 1939.
3. Eppinger, E. C., Burwell, C. S., and Gross, R. E.: Effects of Patent Ductus Arteriosus on Circulation, J. Clin. Investigation 20:127-143 (March) 1941.
4. Shapiro, M. J. and Keys, A.: Prognosis of Untreated Patent Ductus Arteriosus and Results of Surgical Intervention, Am. J. M. Sc. 206:174-183 (Aug.) 1943.

also indicate that ligation of the infected patent ductus offers a better than even chance of cure, against almost certain death within a few months without operation. Operation is thus clearly indicated in all cases of infected patent ductus, unless one of the two absolute contraindications mentioned by Touroff[5] can be shown to be present. These are: (1) definite evidence that the ductus is open as a compensatory mechanism for some other coexisting lesion, such as subaortic or pulmonic stenosis, coarctation of the aorta, and so forth; (2) strong evidence, in infected cases, that the vegetations have spread beyond the ductus and the immediately adjacent portion of the pulmonary artery—that is, into the aorta or onto the heart valves.

In uninfected cases, the indications for operation as outlined by Gross[6] are as follows: (1) retarded physical development in children, from 5 years to adolescence; (2) the presence or history of cardiac failure or embarrassment in any form (including appreciable enlargement, undue increase in the rate and force of beat after mild exercise, and overactive pulsation shown by fluoroscopy); (3) the presence of reduced vital capacity to the degree that orthopnea appears.

The question of routine ligation of all uncomplicated patent ducti has been raised. The incidence and prognosis of the disease must be considered in the evaluation of this question.

Congenital malformations of the heart and great vessels account for 5 to 12 per cent of the cases of organic heart disease in children, and for 1 to 2 per cent in adults[7]. Simple patent ductus arteriosus makes up about 10 per cent of these cases of congenital heart disease. Bullock, Jones, and Dolley[8] state that the prognosis of patent ductus is relatively good in pediatric practice but poorer from the standpoint of the cardiologist who follows the patients in later life; the majority of patients live past the age of 12, but eventually die from complications of the lesion. Of the 80 patients in their series, half were dead by the age of 30, and three-fourths before 40. No less than half the deaths were due to superimposed bacterial endarteritis, and one fourth were due to congestive heart failure. Infection and failure are thus the two chief dangers incident to the patent ductus. In this connection it has been aptly stated by Gross, Emerson, and Green[9] that "most patients with patent ductus arteriosus show little or no disability during childhood, but they are quietly laying the foundations for later trouble by building up atheromatous plaques in the pulmonary artery, which may later become the site of bacterial vegetations, or else they are so over-exercising the heart that decompensation may occur one or two decades later."

In a review of all reported cases of patent ductus arteriosus coming to autopsy, Shapiro and Keys[4] found that 80 per cent had died from complications of the lesion; 40 per cent died of bacterial endarteritis, and most of the remainder died of congestive failure. Furthermore, those patients who were alive at the age of 17 averaged 35 years at death, and the average age at death of the entire series was less than 25 years.

Apart from the lowered life expectancy of these patients, they are subject, according to the degree of patency of the ductus, to retarded physical development, to orthopnea and reduced vital capacity, to diminished cardiac reserve with repeated bouts of decompensation, and to pulmonary embolism. Much has been said against ligation as a routine measure, for unless the operation is performed in early childhood it cannot prevent the formation of the intimal plaques which predispose to infection. It seems entirely reasonable to us, however, to suppose that if ligation of an infected patent ductus will cure the infection, then ligation of an uninfected ductus may prevent an infection, regardless of plaques. Since ligation cures infection without removing plaques, it follows that cure is a result of the alteration of some other factor or factors, presumably hemodynamic relations and pulmonary arterial oxygen tension. While it is true that in a very few cases infection first developed after ligation, these by no means equal the number of patients who failed to get well after operation when infection was already

5. Touroff, A. S. W.: Further Experiences in Surgical Treatment of Subacute Streptococcus Viridans Endarteritis Superimposed on Patent Ductus Arteriosus, J. Thorac. Surg. 12:1-7 (Oct.) 1942.

6. Gross, R. E.: Experiences with Surgical Treatment in 10 Cases of Patent Ductus Arteriosus, J.A.M.A. 115:1257-1262 (Oct. 12) 1940.

7. Wilson, May G. and Lubschez, Rose: Prognosis for Children with Congenital Anomalies of the Heart and Central Vessels, J. Pediat. 21:23-30 (July) 1942.

8. Bullock, L. T., Jones, J. C. and Dolley, F. S.: Diagnosis and Effects of Ligation of Patent Ductus Arteriosus, J. Pediat. 15:786-801 (Dec.) 1939.

9. Gross, R. E., Emerson, P. and Green, H.: Surgical Obliteration of Patent Ductus Arteriosus in 7 Year Old Girl, Am. J. Dis. Child. 59:554-559 (March) 1940.

present. On the basis of the above reasoning, we believe that it would be wise to consider seriously early ligation by an experienced surgeon in all cases of patent ductus arteriosus.

Summary and Conclusions

1. The subject of patent ductus arteriosus with superimposed subacute bacterial endarteritis has been reviewed and discussed.
2. A case has been reported in which ligation effected cure of the infection.
3. It has been suggested, on the basis of prognosis, that the question of routine prophylactic ligation of simple patent ductus for the purpose of prolonging life expectancy and preventing complications be re-opened.

THE INTRAVASCULAR ACCIDENT

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One of the most unfortunate and, at present, most unpredictable casualties to which mankind is subject is the interruption of the blood flow to an important part by an intravascular accident. Sooner or later in the experience of most of us an otherwise normal postoperative[1] or postpartum case will have a sudden and tragic outcome. In medical practice we know that vessel obstruction can be blamed largely for the shocking mortality in patients with cardiovascular-renal degenerative disease.

It will be within the scope of this presentation to classify broadly the abnormal intravascular conditions responsible for such high mortality and morbidity and to point out some of the present-day methods of management. We shall be concerned principally with the conditions known as thrombosis and embolism. Thrombosis is regarded as a stationary obstruction of a vein, artery or capillary. Embolism is the closure of a vessel by a mass which floats in the blood stream until it reaches an artery too small to permit its passage.

Venous Thrombosis

This condition assumes three important patterns which differ markedly as to cause, prognosis, and management — namely, thrombophlebitis, phlebothrombosis, and a combination of the two known as propagating thrombosis.

Thrombophlebitis

Let us see what occurs when a thrombus is formed. Murray and MacKenzie[2] explain that small drifts of platelets settle out from the flowing blood in the region of irregularities in the tube. First white cells, then red cells are deposited, and the clot soon adheres to the vessel wall. During the first twenty-four hours there is no microscopic change in the intima or vessel wall layers. The second step is a further slowing of the blood stream, the formation of strands of fibrin, and firm attachment of the clot to the vessel wall. At seven days the wall and thrombus are hardly distinguishable. The obstruction to the flow of blood promptly gives rise to the symptoms long associated with non-infective phlebitis, or thrombophlebitis—namely, pain, tenderness along the course of the vessel, swelling, and fever. The complications to be feared are persistent edema, recurrent streptococcic infection, and ulceration. In suppurative thrombophlebitis particles may break off and move into the blood stream, giving rise to pyemia and septic infarcts in the lung, perhaps with abscess formation. As soon as this condition is diagnosed, the affected vein should be ligated and sulfonamides employed.

If the deeper veins are thrombosed, the picture is entirely different. The patient has a stepladder pulse, increasing fever, pain over the instep, and a small pedal pulse resulting from reflex constriction of the femoral artery. When the larger pelvic veins are involved there is marked swelling of the leg, the limb is livid or blue, and it pits on pressure.

Phlebothrombosis

Sometimes the progression to the clotting stage is so rapid that fibrin deposit and organization do not take place. In this case there develops the so-called red thrombus, to which Ochsner has given the name of *phlebo-*

Read before the Section on the General Practice of Medicine and Surgery, Medical Society of the State of North Carolina, Pinehurst, May 2, 1944.
From the Department of Surgery, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C.

1. Gibbon, J. H., Jr.: Pulmonary Embolism; Review of Recent Contributions, Pennsylvania M. J. 42:877-880 (May) 1939.
2. Murray, G. and MacKenzie, R.: Postoperative Thrombosis and Embolism, Am. J. Surg. 57:414-428 (Sept.) 1942.

thrombosis. Not being attached to the vessel wall, the clot may easily become free in the blood stream; in fact, a massive pulmonary infarction, too often fatal, may be the first evidence of trouble. Rarely there may be such warning symptoms as a sense of impending doom, an unexplained increase in the pulse rate, and tenderness over the vein. The sedimentation rate is said to be increased.

Instant and precise diagnosis of phlebothrombosis is mandatory if a tragic outcome is to be avoided. If the diagnosis is uncertain, x-ray examination may be helpful. A tourniquet is first placed at the top of the thigh and tightened just enough to prevent circulation in the superficial veins. Diodrast is then injected into a vein at the ankle, and twenty seconds later an x-ray picture is made. If a thrombus is demonstrated, immediate ligation of the vein above the clot is imperative. The femoral is the vein most commonly involved. If ligation is done early, it may be made at the level of the saphenous opening; if later, the iliac vein may be ligated; and if later still, it is possible to ligate the vena cava. Krotoski[3] has reported 48 cases in which this operation was done successfully.

When pulmonary embolus occurs as a complication of phlebothrombosis, 24 per cent of the patients succumb to the first attack. It has been shown that of all patients suffering a fatal pulmonary infarct, 70 per cent had had a previous non-fatal attack, and such an attack must always be considered a warning of more to follow. Aloisio[4] says that death in patients with pulmonary embolism results from reflexes originating in the nerve endings of the lung artery walls and causing vasoconstriction in the respiratory center and later in the cardiac center of the medulla. He cites Frieberg and Ham as having proved that death results from the ensuing myocardial ischemia. To combat this reflex vasospasm, the stellate ganglion may be injected with novocaine. Papaverine in doses of 1 grain or more may be given intravenously for its vasodilating effect, and the cervico-dorsal sympathetic ganglia may be injected with novocaine for the same reason. Oxygen tents are of value, and sulfadiazine may be used to control secondary infection. In patients with non-fatal infarcts it is all-important to locate the thrombosed vein where the emboli originated and to ligate it immediately before a fatal embolus can be dislodged.

3. Krotoski, J., cited by Ochsner and deBakey(5).
4. Aloisio, M. R., in Rev. med. munic. 5:179 (Feb.) 1943.

Propagating thrombus

The propagating thrombus is a combination of the fixed or white clot and the unattached or red clot. It consists of a soft coagulation mass which forms in the stagnated blood proximal to the original clot and rapidly extends. This complication may develop a long time after the acute thrombophlebitis has subsided. For example, a patient aged 40 years with a history of mild phlebitis following childbirth twenty years previously was admitted to the hospital for cystoscopic examination. Twenty-four hours after the examination she complained of pain and swelling in the left ankle (the side previously thrombosed). Very shortly after these symptoms were noted, the calf of the leg was swollen, the color mottled, and the leg somewhat cool. A diagnosis of propagating thrombus was made and immediate ligation of the femoral vein advised. This was at first refused. Later the same day consent was given, but by this time (eight hours since the first swelling was noticed) it was felt that the clot had progressed beyond the femoral vein. The abdomen was opened, the left common iliac vein exposed, and a clot found to be present. The vein was ligated proximally and the clot was sucked out until fluid blood was obtained. The vein was then doubly ligated and the patient was returned to bed, where the leg was kept chilled with ice to lower metabolism. Heparin and dicumarol were given for ten days to prolong the clotting time of the blood. The patient made an uneventful, but very slow, recovery. It was felt that if the femoral vein could have been ligated before the thrombus progressed beyond that point, recovery would have been much more prompt.

Prevention and treatment of acute and chronic thrombophlebitis

Regardless of the explanation for the occurrence of clotting within the vessel, we have come to believe that it is preceded by certain conditions, and that if we can combat these, we will have made headway in preventing the serious consequences of such occlusion. The predisposing causes which we accept are *slowing of the circulation* and *physical changes in the blood.* Injury to the vessel wall or lining is a questionable factor and probably incidental.

Slowing of the circulation, according to Ochsner[5], results from the shallow respiration, toxemia, and generally weakened state of postoperative patients. To offset these conditions, preoperative care should include studies in prothrombin and clotting time, the avoidance of dehydration, and the use of blood transfusions when necessary. According to reports quoted by Ochsner, pre-existing cardiovascular disease may be present in as many as 90 per cent of the fatal cases of thrombosis and embolism. The poor posture and immobilization formerly so common after operation undoubtedly contribute to slowing of the circulation.

Every available means should be employed to combat this condition in postoperative patients, including early change in position, massage, passive exercise, deep breathing, the lessening of abdominal distention, avoidance of tight dressings and binders, and getting the patient out of bed as early as possible. Sometimes the use of thyroid extract to stimulate metabolism proves beneficial. Edema resulting from inflammation or trauma may compress the vessel and slow the flow of blood.

Reflex vasospasm of collateral vessels follows insult to any blood vessel and is often extensive and prolonged. It is responsible for the pain and early edema. The importance of this effect on the normal arteries and veins cannot be over-emphasized. It should be countered by the avoidance of such vasospastic influences as smoking and exposure to cold, and by the use of heat and such drugs as papaverine and atropine. Probably the most effective means is blocking of the lumbar sympathetic nerves. This procedure is so simple that it should be available to every patient. The technique is briefly as follows:

The patient may be placed in the prone position with pillows under the abdomen to straighten the spinal curvature, or in the lateral decubitus position with the involved side on top. This latter position is usually more comfortable for the very sick patient. The spinous processes of the lumbar vertebrae are identified, and wheals of anesthesia are raised two fingers' breadth lateral to the spinous processes, over the transverse processes. A long needle is then passed through each wheal down to the transverse process, this being used for a guide as to depth. When the transverse process is touched, the direction of the needle is changed either up or down to avoid it, and the needle is inserted two fingers' breadth farther. This maneuver will bring the point of the needle into the retroperitoneal space near the lumbar sympathetic chain. After aspiration is done to make sure that the point of the needle is neither in a blood vessel nor in the dura, 5 cc. of 1 per cent novocaine is injected. This process is repeated for each of the four lumbar vertebrae.

In patients with thrombophlebitis relief of pain usually begins before all four injections have been made. Such sympathetic nerve block should be repeated daily as long as fever persists. Early movement should be insisted on, and edema should be controlled by the use of ACE or rubber bandages when the patient is out of bed.

Little is known of the *physical changes in the blood* which accompany or precede thrombosis. The tendency of blood to clot within the vessel is usually indicated by an increase in the platelet count, in the prothrombin time, and in the clotting time. These alterations are likely to follow operation or parturition, particularly in the presence of dehydration and demineralization. Such blood changes are noted in anemic and obese patients, and after the administration of digitalis[6].

Careful pre-operative examination and preparation can do much to prevent these changes in the blood. Anti-coagulants such as heparin and dicumarol have also been used with much success. Heparin has the disadvantage of being costly and of requiring continuous intravenous administration over a long period of time. However, at the Mayo Clinic, Bryson and Code[7] found that finely powdered heparin in a mixture of beeswax and sesame oil injected intramuscularly into dogs increased the coagulation time about two hours after administration, the effect lasting from seventeen to seventy hours. Priestly and Judd used this preparation in 5 patients, giving 200 mg. of heparin in 2 cc. of a 10 per cent beeswax-oil mixture. A distinct rise in clotting time was noted within four hours, and a marked increase at the end

5. Ochsner, A. and deBakey, M.: Therapeutic Considerations of Thrombophlebitis and Phlebothrombosis, New England J. Med. 225:208-223 (Aug. 7) 1941.

6. Gilbert, N. C., Trump, R. A. and deTakats, G.: Effect of Digitalis on the Clotting Mechanism, Proc. Central Soc. for Clin. Research, J.A.M.A. 124:736 (March 11) 1944.

7. Bryson, J. C. and Code, C. F.: Prolonged Anticoagulant Action of Heparin in Beeswax Mixture, Proc. Staff Meet., Mayo Clin. 19:100-108 (Feb. 23) 1944.

of eight hours; the peak was reached in twenty-four hours, and was maintained for three to five days. No harmful reaction was noted in any case.

Dicumarol is given by mouth, but its effect does not begin for some three days. It has been found that the coagulation time may be kept at fifteen to twenty minutes for as long as necessary by repeating the drug as indicated by determination of the prothrombin time. Thill[8] has found that 5 mg. of dicumarol given to dogs in a single dose produced a prothrombin time of twenty minutes two days after administration. Sclerosing solutions which he injected into isolated vein segments resulted in thrombosis in only 20 per cent of these animals as against 56.6 per cent of the controls.

Adams[9] of the Lahey Clinic concludes that with the use of antivasospastic and anticoagulant measures, femoral vein ligation or division is no longer necessary in cases of uncomplicated thrombophlebitis. However, if the thrombosis is deep, and especially if a warning small pulmonary infarct has occurred, the femoral vein should be ligated or divided.

Miley[10] has successfully employed ultraviolet irradiation of the blood in a number of abnormal conditions. He used the Knott technique, in which a calculated amount of blood is withdrawn from the patient, citrated, and re-transfused after being irradiated with a measured amount of ultraviolet rays. He found this method useful in a varied list of pyogenic infections and especially effective in acute thrombophlebitis. General vascular dilatation occurred and was followed by disappearance of pain and tenderness, fever, and edema, in the order named. He feels that this procedure has much promise even though it has the disadvantage of requiring a special apparatus and trained technicians.

In cases of *chronic* thrombophlebitis following acute thrombophlebitis, venous and arterial constriction leads to persistent edema, and this in turn brings about subcutaneous fibrosis. The danger of recurrent infection is ever present; the patient is apt to be disabled by pain or ulcer. In the milder cases reflex dilatation, obtained by applying heat to the uninvolved extremities as well as to the abdomen, tends to cause the involved part to become warm and dry. Repeated lumbar sympathetic block with novocaine is also most beneficial. Vasoconstricting influences, such as exposure to cold, must be avoided. Sulfadiazine is given one week out of the month to prevent recurrent streptococcic infection.

In the more persistent or more severe cases, recourse must be had to lumbar sympathectomy. This gives excellent results in most of these cases. It is now done through a muscle-splitting incision, with a retroperitoneal approach. This technique carries little risk, and the patient may be out of bed in a few days. Shumacker[11] reports 13 cases in which sympathectomies were performed on patients with leg ulcer or chronic edema and pain following a thrombophlebitis. Four out of 6 leg ulcers healed without swelling; the other 2 healed when pressure dressings were applied. We have performed this operation on 1 patient with a leg ulcer, which promptly healed, and in 2 cases of pain and swelling, which were largely relieved.

Arterial Emboli

The source of arterial emboli is usually the left side of the heart or possibly degenerated plaques in the aorta. The cardiac lesions most often responsible for them are mitral stenosis and myocardial thrombi. The mass is carried in the blood stream until the vessel becomes too narrow to permit its passage. This usually occurs at a bifurcation of an artery, and the location is, in order of frequency, the femoral, iliac, aortic, brachial, and popliteal arteries. The incidence of arterial emboli is especially high in the obese. Their seriousness is attested by the figures of Danzis[12], who states that 87 per cent of the patients who were not operated upon within two weeks died, while the remainder required major amputations. The first recorded attempt at embolectomy was made by Severeau of Bucharest in 1894. This was unsuccessful, and it was not until 1911 that a successful operation was recorded. Georges Labay of Paris then removed an embolus from the femoral artery. In 1922, 246 cases were collected from the literature[13], 145 of

8. Prevention of Venous Thrombosis, Current Comment, J. A.M.A. 124:778 (March 18) 1944.
9. Adams, R.: Thrombophlebitis; Diagnostic Methods and Selection of Treatment, S. Clin. North America 23:835-844 (June) 1943.
10. Miley, G.: (a) The Control of Acute Thrombophlebitis with Ultraviolet Blood Irradiation Therapy, Am. J. Surg. 60:354-360 (June) 1943; (b) The Knott Technic of Ultraviolet Blood Irradiation in Acute Pyogenic Infections, New York State J. Med. 42:38-46 (Jan. 1) 1942.
11. Shumacker, J. B., Jr.: Sympathectomy in the Treatment of Peripheral Vascular Disease, Surgery 13:1-26 (Jan.) 1943.
12. Danzis, Max: Arterial Embolectomy, Ann. Surg. 98:249-272 (Aug.); 422-437 (Sept.) 1933.
13. Key, Einar, cited by Danzis(12).

which were in Sweden. As late as 1928 only 20 cases had been reported in the United States and Canada.

The onset of sudden, violent pain in a limb always suggests arterial embolus. If in addition blanching, loss of sensation, and loss of local heat are present, the diagnosis is usually clear. The presence of valvular heart disease strengthens the diagnosis still further. Arterial embolus must be differentiated from arteriosclerosis, arterial spasm, Buerger's disease, and thrombophlebitis. When the embolus lodges in the artery severe vasospasm begins immediately. This is believed to account for much of the pain and for some of the disastrous results.

In the aorta the most usual spot for an embolus to lodge is at the bifurcation. If operation is not done promptly about 92 per cent of emboli in this location are fatal. Of the 19 reported successful embolectomies of the aorta, all but 3 were done in the first six hours. In 1943 Murray[14] reported 5 successful operations; in all of these heparin was used.

In the treatment of arterial embolus early diagnosis is most important. If the case is seen during the first twelve hours, one is justified in first giving papaverine intravenously and performing a sympathetic nerve block with novocaine. This treatment must not be allowed to delay surgery for longer than an hour unless marked improvement results. The surgical procedure of choice is embolectomy. After the first twelve hours arteriectomy will probably be necessary. The section of artery where the embolus has lodged is ligated and removed. This procedure tends to prevent secondary thrombi and also helps to abolish vasospasm in the contiguous vessels. When possible, periarterial or lumbar sympathectomy is combined with embolectomy and with arteriectomy.

Heparin and dicumarol are commonly used in cases of arterial embolism before, during and after operation. The purpose is not to dissolve the already formed thrombus but to prevent further emboli from forming.

Coronary Disease

Inasmuch as current attention is focused upon the enormous increase in cardiovascular deaths, let us give some consideration to closure occurring in the coronary system.

14. Murray, G.: Aortic Embolectomy, Surg., Gynec. & Obst. 77:157-162 (Aug.) 1943.

Myocardial infarction may result from gradual occlusion of the coronary branch as a result of sclerotic changes, or from sudden occlusion by thrombosis, hemorrhage in the arterial wall, or rupture of a subintimal lipoid abscess.

Whatever the cause of occlusion, the insult to the vessel begins a sequence of events which determine the seriousness of the attack. Falk[15] has pointed out the necessity for prompt diagnosis and treatment directed toward protecting "uninvolved areas of the myocardium from vasoconstrictive reflexes which might either extend the area of infarction or induce fatal ventricular fibrillation . . ." The prompt relief of pain and anxiety by the intravenous use of papaverine, and morphine if necessary, will reduce shock and limit the vasospasm. The use of atropine is justified in an effort to lessen the vagal constriction. Experimental ligation of a coronary artery causes reflex spasm in the collateral coronary vessels, producing an extended area of ischemia and infarction. Falk cites the work of others who have shown that coronary ligation in dogs produces a generalized coronary vasoconstriction. This is conceded to be largely responsible for the severe pain, the shock, the low arterial tension, and the ectopic systoles which precede *ventricular fibrillation*, *myocardial failure*, and *pulmonary embolism*—the three leading causes of sudden death in coronary disease.

Ventricular fibrillation

The sections of the myocardium containing infarcts, ischemia and vasospasm are considered to be the hyperirritable foci for extrasystoles which may lead eventually to the establishment of ventricular fibrillation. Routine administration of quinidine sulfate has been advocated by many and apparently has reduced the likelihood of extrasystoles' progressing to a fatal ventricular fibrillation.

Pulmonary embolism

This is a surprisingly frequent cause of fatality in coronary occlusion. Woods and Barnes[16] state that it accounted for 10 per cent of their mortalities. Most of these emboli probably originate in the iliac artery and result from the shock, low arterial tension, and immobilization incident to the

15. Falk, O. P. J.: The Causes and Prevention of Sudden Death in Coronary Disease, J.A.M.A. 119:1251-2 (Aug. 15) 1942.
16. Woods, R. M. and Barnes, A. R.: Factors Influencing Immediate Mortality Rate Following Acute Coronary Occlusion, Proc. Staff Meet., Mayo Clin. 16:341-345 (May 28) 1941.

coronary accident. Here again early diagnosis, followed by massage, passive exercise, and agents to combat vasospasm, may be life-saving.

Treatment of coronary occlusion

There has been no great advance in the management of this ominous condition. Harrison, White and many others are advocating somewhat shorter periods of bed rest for the average patient with coronary occlusion. Doles[17] has pointed out the seeming paradox that the prothrombin time was found to be below normal in tests made within twenty-four hours after coronary occlusion. He then made prothrombin estimations on 457 patients, of whom 8 later developed acute occlusion and 5 had had occlusions when they were seen. In none of them did occlusion occur until the prothrombin time was below 70 per cent of the normal. On the basis of these findings he assumed that if the prothrombin time were restored to normal, occlusion of the coronaries might be prevented, or if it had already occurred, unfortunate sequelae might be lessened. Vitamin K was used for this purpose and maintainence doses were determined by repeated prothrombin studies. Doles felt that the convalescence of patients with coronary occlusion was easier and myocardial damage considerably less. Moreover, acute occlusion did not take place in those whose prothrombin levels were normal or were kept within normal limits.

Often the occlusion of the coronary arteries is of the chronic type, with incomplete obstruction to the blood flow giving rise to the anginal pattern of pain following physical or emotional strain. Extensive research has been done in an effort to promote the establishment of adequate collateral blood supply to the ischemic myocardium. Encouraging results have been reported from the use of sex hormones, from total thyroidectomy, from blocking or resection of the sympathetic nerves, from muscle transplants to the myocardium, and from artificial pericarditis induced by the injection of counter-irritants such as asbestos. While selected cases have shown improvement, no definite promise can as yet be assigned to these procedures.

Summary

The cost of vascular occlusion in terms of mortality and morbidity has been pointed out. Certain conditions which obstruct circulation in the *veins* (thrombophlebitis, phlebothrombosis, propagating thrombus) and in the *arteries* (thrombus, embolism) have been described. The causes have been discussed and present-day methods of prevention and treatment have been outlined, especially those which combat slowing of the circulation and changes in the physical character of the blood.

17. Doles, H. M.: Prothrombin Determinations in Acute Coronary Occlusion, South. M. J. 36: 709-713 (Nov.) 1943.

Abstract of Discussion

Dr. Frank B. Marsh (Salisbury): Just in the last two weeks a patient of mine developed thrombophlebitis of his femoral vein about ten days after a posterior gastro-enterostomy. There was swelling of the leg, a rise of temperature, and all of the usual manifestations. The femoral vein was ligated just below the ligament, with remarkable results. The swelling immediately went down, the patient's temperature dropped to normal in just a few days, and his whole appearance was so entirely different that the treatment readily could be called miraculous. Being an internist and not having seen such an operation done before, I was very skeptical to begin with, but I was amazed at the results that were obtained.

THE INCREASING INCIDENCE OF TOXEMIAS OF THE THIRD TRIMESTER OF PREGNANCY

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The incidence of toxemias of late pregnancy among my private obstetrical patients has increased markedly during the last year. Several other obstetricians have told me that they have noticed a similar increase. My own theory about the cause of this increasing incidence of toxemias is that it is due to the indirect accumulated strain placed on the mother during war years.

For many years the subject of toxemias was confused by the varied classifications employed. It was impossible for different groups to discuss the subject clearly. The American Committee on Maternal Welfare in 1939 recommended the following classification of toxemias:

Group A. Diseases not peculiar to pregnancy
- I. Hypertensive disease (hypertensive cardiovascular disease)
  - (a) Benign (essential hypertension)
  - (b) Malignant
- II. Renal disease
  - (a) Nephrosclerosis or chronic vascular nephritis

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(b) Glomerulonephritis
1. Acute
2. Chronic
(c) Nephrosis
1. Acute
2. Chronic
(d) Other forms of severe renal disease

Group B. Disease dependent on or peculiar to pregnancy
I. Preeclampsia
(a) Mild
(b) Severe (preconvulsive)
II. Eclampsia
(a) Convulsive
(b) Nonconvulsive (coma with findings at autopsy typical of eclampsia)

Group C. Vomiting of pregnancy
Group D. Unclassified toxemias

In 519 consecutive private patients who have come to me in the last four years there have been 39 cases of toxemia of pregnancy. In 1940 the incidence was 1.3 per cent; in 1942, 3.2 per cent; in 1943, 6.2 per cent. For the first four months of 1944 the incidence was *23 per cent*. There was no change in the incidence of toxemias before the twenty-fourth week. The classification committee states that "the twenty-fourth week is arbitrarily selected as the dividing line between preexisting disease and acute hypertensive disease in the preeclampsia and eclampsia group because symptoms among the former group almost always become evident before the twenty-fourth week and symptoms of the latter commonly develop after the twenty-fourth week."

Of the 26 patients with toxemia in this series up to January 1, 1944, 20 had mild preeclampsia, with systolic blood pressures between 140 and 160 and diastolic pressures between 90 and 100. Slight albuminuria and edema were present in most cases. There were 3 cases of severe preeclampsia characterized by a systolic blood pressure above 160 and a diastolic pressure over 100. In no case did eclampsia develop. There were 3 cases belonging in group A of the Maternal Welfare Committee's classification—1 case of benign hypertensive cardiovascular disease and 2 of chronic vascular nephritis. There were only 3 fetal deaths in these 26 cases—2 occurring in the cases of chronic vascular nephritis, in which pregnancy had to be interrupted before the sixth month. The other fetal death occurred in a breech presentation and was due to intracranial hemorrhage. Apparently the toxemia played no part. There were no maternal deaths.

In the 13 cases of toxemia seen from January 1 to May 1, 1944, there have been 9 mild and 2 severe cases of preeclampsia. There was 1 case of portpartum eclampsia. This patient was a 24 year old red-headed primipara who had no symptoms of toxemia until she was admitted to the hospital in labor, with a blood pressure of 140 systolic, 100 diastolic, and albuminuria (3 plus). She did not appear toxic, but the blood pressure rose to 160 systolic, 110 diastolic at the time of delivery. Eight hours later she had a convulsion lasting three minutes. She responded readily to treatment and made an uneventful recovery. There was also 1 case of chronic vascular nephritis. There were 2 fetal deaths, both due to prematurity. One occurred in the case of chronic vascular nephritis; the other resulted when a patient in the severe preeclampsia group started in labor spontaneously at the thirty-second week.

The majority of the cases of toxemia fall into group B of the classification; consequently the treatment of this group is by far the most important. If adequate prenatal care is given, preeclampsia can almost always be diagnosed before it becomes severe. Mild preeclampsia is treated by diet, rest, and perhaps saline laxatives. Fortunately most of these cases respond to treatment. A certain number, however, progress into a severe preeclampsia in spite of anything we can do. If in such cases the pregnancy has progressed far enough so that there is practically no doubt that the baby will live, I believe that delivery should be effected at once—either by induction of labor or by cesarean section, depending on the individual case. If severe preeclampsia develops before the thirty-sixth week the problem is much more difficult. I believe in most instances we should watch the mother very carefully and try to allow the pregnancy to advance to the point where the baby will have a good chance for survival. If the patient is rapidly growing worse one may be forced to effect delivery at once. In such cases it is extremely important that we do our utmost to deliver a live baby. In succeeding pregnancies the woman is very apt to have a recurrence of the hypertension and other symptoms of toxemia. She may never be able to get as far with another pregnancy, and she may even require some sterilization procedure.

As far as I know there is nothing that is extremely new in the treatment of eclampsia. Different obstetricians use somewhat different methods. All, however, use intravenous

glucose solutions and some form of sedation, often in combination with magnesium sulfate. The chief point of disagreement is whether cesarean section should be performed on a patient who is having convulsions. Most obstetricians, however, believe that cesarean section should not be done until forty-eight hours after the convulsions have ceased. I am in hearty agreement with this view.

Conclusion

My purpose in giving this paper has been to bring before you for thought and consideration the increasing incidence of the toxemias of late pregnancy. If my theory of "war nerves" is at least partly correct it is probable that this increase is temporary. By exercising even greater care in prenatal examinations we can recognize these toxemias in an early stage, when treatment is most effective. Thus we can prevent serious damage to the cardiovascular-renal system and allow most of our patients to be delivered of a live baby.

Abstract of Discussion

Dr. James Lounsbury (Wilmington): I wonder whether this increase in toxemias of pregnancy is localized or state-wide. While I have no figures, it is my impression that the incidence of toxemias in my own practice is definitely less now than it was two or three years ago. I rather attributed this to the increased standard of living in Wilmington which has resulted from the war.

In a sense scientists are responsible for the appalling complexities in human relations that have developed within a few generations. They have made it possible to weave the threads that now essentially tie every individual to every other individual in the world. There is no way these ties can ever be broken and isolation can never return. Consequently scientists and educators and industrialists and statesmen and public servants and all others who toil with brains or hands must learn the lesson from both war and industry that only through high purpose and honest cooperation can worthy goals be achieved. If this lesson is not learned, then the desolation and misery that one darkly brooding spirit has caused to be heaped on Europe will inevitably be spread over all the world.—F. R. Moulton: The Middle Man, A.A.A.S. Bulletin 3:42 (June) 1944.

It is an interesting fact that no wars of significance have ever been waged over medical problems. People have fought over about every other problem imaginable. Wars over religion, over commerce, trade and industry, over boundaries, over races and sects, over royal and legal decrees, over social and economic questions but never over medicine. In fact, medicine has been throughout the centuries one of the great unifying agencies to bring the peoples of the earth together. David J. Davis, M.D., Diplomate, Jan. 1944.

THE MEDICAL MANAGEMENT OF GALLBLADDER DISEASE

S. F. LeBAUER, M.D.

GREENSBORO

The wide divergence of opinion concerning the management of gallbladder disease has prompted this attempt to evaluate the prevailing concepts and possibly to indicate a future trend.

That lesions of the gallbladder and bile passages are exceedingly common among the general population of middle age and beyond, and that they occur predominantly in the female sex are well recognized facts. Gallbladder disease is by far the most common upper abdominal ailment, and for this reason deserves our most thoughtful consideration. Mentzer[1] of the Mayo Clinic reported that in 612 routine postmortem examinations 62 per cent of the patients showed evidence of cholecystitis; in only 8 per cent of these, however, was death due primarily to gallbladder disease.

Cases of cholecystitis fall into two groups: (1) those which require medical management alone and (2) those which require surgery plus medical management. Frequently there is no clear line of demarcation, for those cases which at first require medical therapy may later need surgery, and candidates for surgery will require preoperative as well as postoperative medical management. Team work between the surgeon and internist is essential.

Indications for Medical Treatment

Medical therapy should be advised for those patients who have mild dyspepsia and distress in the right upper quadrant and in whom x-ray examination reveals equivocal signs of gallbladder disease. The following groups of patients should also be treated medically:

(1) Those whose complaints are due to motor disturbances, generally referred to as biliary dyskinesia.

(2) Those of neurasthenic temperament with vague digestive disorders.

(3) Those who are regarded as exceedingly poor surgical risks.

Read before the Section on the General Practice of Medicine and Surgery, Medical Society of the State of North Carolina, Pinehurst, May 2, 1944.

1. Mentzer, S. H.: A Clinical and Pathologic Study of Cholecystitis and Cholelithiasis, Surg., Gynec. & Obst. 62:782-793 (June) 1926.

(4) Those without symptoms in whom solitary stones are accidentally found.

Allow me to comment on this last point. I feel quite sure that there are just as many in this audience who would favor surgery for the fourth group as there are who would favor medical management. Much depends upon the experience of the individual observer. Musser[2], an internist, favors the removal of solitary stones, and gives the following reasons for his opinion:

(1) Solitary stones can occlude the neck of the gallbladder, precipitating an acute cholecystitis.

(2) They predispose to the development of other stones in the gallbladder and common duct.

(3) They may cause ulceration into adjacent viscera.

(4) They may contribute to the production of carcinomas.

Rehfuss[3] gives surgery first place in the treatment of gallbladder disease. As he points out, however, surgery has not been the cure-all that many had anticipated, for it does not eliminate or control the causative factors; it merely removes the end result. Gallbladder disease is caused by a combination of disturbed metabolism and stasis, and is frequently associated with hepatitis, pancreatitis, duodenitis, colitis, neuritis, and myocarditis, none of which are readily amenable to surgery. For this reason medical management is an important adjunct to the surgical treatment of biliary tract disease, and frequently prevents the necessity for an operative procedure.

Objectives of a Medical Regimen

For several generations the accepted medical treatment of non-calculous cholecystitis has consisted in a low-fat diet and the use of bile salts, saline laxatives and duodenal drainage. On the basis of recently acquired knowledge concerning the physiology of the biliary tract, certain changes have been made in this routine.

I believe that a better understanding of the physiology of the gallbladder and bile ducts would help to solve many of the controversial points concerning treatment. The liver is intimately concerned with the metabolism of carbohydrate, protein, fat, and vitamins. One of its most important functions is that of carbohydrate metabolism. Among its other important functions may be mentioned bile secretion, hematopoiesis, and the production of substances necessary for the coagulation of blood. The regenerative capacity of the liver and its extraordinary reserve are well known. The former depends on two major factors: (1) patency of the bile passages and (2) an adequate blood supply.

Any program of treatment for cholecystitis should have the following objectives:

(1) Relief of stasis.

(2) Control of infection.

(3) Relief of reflex dyspeptic symptoms.

Components of a Medical Regimen

Dietetic management

The dietetic regimen is a controversial subject. It is quite clear that no one regimen will fit all cases of gallbladder disease, and that individualization by trial and error will be necessary. The diet should be so designed as to stimulate the gallbladder to maximal function without producing distress, and to restore the patient to his normal weight. The asthenic individual with a ptosed, atonic gallbladder will be benefited by a high fat diet distributed in small frequent feedings. An obese individual should be placed on a low calorie diet; fats should not be entirely omitted, however. In the patient with a hypermotile gallbladder, fat will tend to aggravate his distress, and the fat content of the diet should be kept low; furthermore, the diet should be of a non-irritating type containing sufficient bulk to correct constipation.

Drug therapy

We may classify the drugs employed in the treatment of cholecystitis as follows:

(1) Those intended to produce relaxation of the sphincter of Oddi and decrease pylorospasm.

(2) Those given to stimulate the gastric and hepatic secretions.

(3) Those intended to sterilize the bile.

Pharmacologic studies reveal that only the nitrites and theophylline are particularly effective in decreasing sphincteric tonus. The barbiturates in conjunction with belladonna or atropine, while not completely active, do produce considerable symptomatic relief. Trasentin has proved very satisfactory as

2. Musser, J. H.: Medical Treatment of Gall Stones and Cholecystitis, Proc. Interst. Postgrad. M.A. North America (1941) pp. 33-38, 1942.
3. Rehfuss, Martin E. and Nelson, Guy M.: The Medical Treatment of Gallbladder Disease, Philadelphia, W. B. Saunders, 1935.

an anti-spasmodic. Olive oil favors emptying of the gallbladder. Small doses of sodium phosphate or magnesium sulfate have a relaxing effect on the sphincter, and are considered by some to be as effective as passing a duodenal tube. In cases of hypoacidity dilute hydrochloric acid, 30-60 minims in water with meals, proves beneficial. Bile salts such as decholin and ketochol have a choleretic effect, and if used judiciously in selected cases are very helpful.

Attempts to sterilize the bile passages have been multiple, and interest in this subject is revived periodically. Removal of distant foci of infection, the use of autogenous vaccines, and attempts to change the intestinal flora have all been to no avail. A few of the drugs which have been used for this purpose are methenamine, mercurochrome, tetraiodophenolphthalein, and the sulfonamides. The sulfonamides do give some promise, as there is evidence indicating high concentrations in the bile. This work is still experimental.

Duodenal drainage

B. B. Vincent Lyon has, since 1919, been the greatest exponent of non-surgical duodenal drainage. Meltzer, of the Rockefeller Institute, had observed in dogs that douching the mucosa of the duodenum with a solution of magnesium sulfate would readily produce a flow of bile. In 1917 Lyon, on the basis of Meltzer's observations, passed a duodenal tube and accomplished the first biliary drainage. A twenty-five year "follow up" report, based on Lyon's experience with this case and numerous others, was published in 1943[4]. According to Lyon, duodenal tube biliary tract drainage, in the incipient stages of gallbladder disease, is the best prophylactic measure against the formation of stones available at present. The procedure as described by Lyon requires three hours, and adherence to exact details. Many workers do not share Lyon's enthusiasm; however, time will prove or disprove the correctness of his observations.

Treatment of Acute Cholecystitis

Acute cholecystitis is rarely a surgical emergency[5]. These patients should be hospitalized; food should be withheld, and electrolytes restored by the administration of glucose and saline. In the presence of jaundice, vitamin K and bile salts must be added. The introduction of vitamin K has been of great value in the treatment of cholecystitis. If fever, rigidity, pain and leukocytosis increase, an operation becomes necessary. If cholecystectomy is too hazardous cholecystostomy should be done, and the former operation performed two to three months later.

Recurrence of Symptoms Following Cholecystectomy

Gray and Sharpe[6] of the Mayo Clinic state that "the problem of persistence of preoperative symptoms after cholecystectomy for supposed cholecystic disease is well known and perplexing." They review 44 cases in which operation was performed because of symptoms persisting after cholecystectomy. In each of these cases the surgeon reported an enlarged remnant of the cystic duct.

According to these writers, the most important factor in the persistence of symptoms after cholecystectomy is erroneous diagnosis; it is often extremely difficult to distinguish functional biliary tract distress from that of organic origin. The inflammatory or degenerative residua of cholecystic disease constitute a second leading cause for the persistence of symptoms. Injury to biliary ducts during cholecystectomy may account for some instances of persistent distress. Residual stones or putty-like material in the common bile duct is a well known cause. In hyper-irritable patients imbalance of the autonomic nervous system may account for the persistent symptoms. And finally, angulations of the duodenum by attachment to the denuded gallbladder fossa may be responsible for recurring difficulty.

Gray and Sharpe stress the importance of operating only on those patients who present conclusive clinical and roentgenographic evidence of disease in the biliary tract. They urge that meticulous care be exercised to avoid damage to the common bile duct and to remove all but a small remnant of the cystic duct. In cases in which pain recurs after cholecystectomy, necessitating reoperation, diligent search should be made for a remnant of the cystic duct, whether or not calculi in the common bile duct are suspected.

4. Lyon, B. B. Vincent: Duodenal Tube Biliary Tract Drainage. Am. J. Digest. Dis. 10:69-78 (Feb.) 1943.
5. Lahey, Frank: Management of Biliary Tract Disease, S. Clinic North America 23:714-716 (June) 1943.
6. Gray, H. K. and Sharpe, W. S.: Biliary Dyskinesia; Role Played by a Remnant of Cystic Duct, Proc. Staff Meet. Mayo Clinic 19:164-168 (March 22) 1944.

Summary

Many patients with non-calculous cholecystitis may remain in satisfactory health under a regimen of "diet, drugs, and drainage," called by Lyon the "Three D" regimen. In a ten-year follow-up study Blackford and his associates at the University of Virginia summarized their results obtained with the medical management of 200 cases of cholecystic disease as follows: 15 per cent had died, only 1 per cent of cholecystic disease; in 37 per cent the results were satisfactory; in 48 per cent the results were unsatisfactory. When medical management fails, we must resort to surgery.

In conclusion, may I suggest closer cooperation between internist and surgeon in the treatment of gallbladder disease, to the end that the patient's best interests may be served.

THUMBNAIL SKETCHES OF EMINENT PHYSICIANS

JOSIAH C. TRENT, M.D., *Editor*

DURHAM

THE EVOLUTION OF THE ASEPTIC PRINCIPLE IN SURGERY

VI

NICOLAS APPERT (1750-1841)

As we approach the climax of our story we encounter such names as Franz Schulze, Cagniard-Latour, and Theodor Schwann. In 1836 Schulze demonstrated that no putrefaction occurred in boiled infusions if the air which had access to the infusion was first drawn through acid or alkali. In the same year Schwann carried out similar experiments, using heat instead of chemicals to sterilize the air. In spite of these ingenious experiments the problem of spontaneous generation remained unsettled, since neither method overcame the objection that the air had been altered by the heat or chemicals. Schwann and Cagniard-Latour in 1837 presented evidence that the fermentation of sugar solutions was due not to oxygen but to the growth in the solution of a yeast, Torula cerevisiae. Their experiments led directly to Pasteur's epoch-making work on spontaneous generation and fermentation.

Instead of discussing the lives of the aforementioned gentlemen of science, whose work has already been evaluated, I should like to present a man, a French confectioner and inventor, who though not trained in science succeeded in finding a method of preventing putrefaction and fermentation in foodstuffs without the addition of antiseptics—a discovery which Pringle and Madame D'Arconville, for all their knowledge, failed

Nicolas Appert, born at Chalons-sur-Marne in 1750, experimented with foods all the working years of his life. He superintended confectionaries, kitchens, distilleries, breweries and storehouses, and was provisioner for the ducal house of Christian IV. By numerous carefully controlled experiments requiring great perseverance, he succeeded in finding a way to prevent fermentation and putrefaction in foods without rendering them inedible. His method was simple. The substance to be preserved was sealed tightly in a bottle and heated in a water bath. If the air had been properly excluded the substance could be kept indefinitely. The remarkable success of his method led the French government to offer him a grant of 12,000 francs to make it public. This he did in his book *Le Livre de tous les Menages ou l'Art de Conserver pendant plusieurs annees les substances animales ou vegetales (1810)*. The first English edition (fig. 1) appeared in 1811, and the first American edition a year later. This work laid the foundation for the entire modern canning industry. Appert also discovered the method of preserving wine by heat, a process later credited to Pasteur and called pasteurization.

He continued his experiments on food preservation up to the ripe old age of 91 and, having exhausted his means in this work, died a poor man in 1841.

The following account of his method is taken from *l'Art de Conserver les substances animales ou vegetales*:

"As far as my knowledge extends no author either ancient or modern has ever pointed out or even sus-

THE ART

OF

PRESERVING

ALL KINDS OF

Animal and Vegetable Substances

FOR

SEVERAL YEARS.

A WORK PUBLISHED BY ORDER OF THE

FRENCH MINISTER OF THE INTERIOR,

On the Report of the Board of Arts and Manufactures,

BY

M. APPERT.

TRANSLATED FROM THE FRENCH.

LONDON:

PRINTED FOR BLACK, PARRY, AND KINGSBURY, BOOKSELLERS TO THE HON. EAST-INDIA COMPANY, LEADENHALL STREET.

1811.

Fig. 1. Title page of the first English edition (1811) of Appert's l'Art de Conserver les substances animales ou vegetales, published in 1810. This work laid the foundation for the modern canning industry. (Author's collection)

"This method is not a vain theory. It is the fruit of reflection, investigation, long attention and numerous experiments, the results of which for more than ten years have been so surprising that notwithstanding the proof acquired by repeated practice, that provisions may be preserved two, three and six years, many persons still refuse to credit the fact.

"My process consists principally in: (1) closing in bottles the substances to be preserved (2) corking the bottles with the utmost care; for it is chiefly on the corking that the success of the process depends (3) submitting the inclosed substances to the action of boiling water in a water-bath for a variable time according to the nature of the product (4) withdrawing the bottles from the water-bath at the period prescribed.

"I have become convinced that: (1) heat has the peculiar property not only of changing the combinastroying the natural tendency of those same products to decomposition; (2) the application of heat to all these products after having with the utmost care and thoroughness deprived them of all contact with the air effects a perfect preservation of those same products with all their natural qualities.

"This principle by which all alimentary substances are preserved and kept fresh is invariable in its effects; but in every case the exclusion of air is a precaution of the utmost importance to the success of the operation.

"The adoption of this new method of preserving food which unites the greatest economy to a perfection unlooked for till the present time will secure the following advantages:

"(1) That of considerably diminishing the consumption of cane sugar and of giving the greatest extension to the manufacturer of grape syrup.

"(2) That of preserving for use in all countries and in all seasons a number of foods and medicinal products.

"(3) That of procuring for civil and military hospitals and even for the armies the most valuable assistance. But the great advantage of this method consists principally in its application to the service of the Navy. It will supply fresh and wholesome provisions for his majesty's vessels on long voyages. Mariners will be able to partake of a number of substances which alone will be sufficient to prevent or cure the diseases contracted at sea, more especially the worst of them all, the scurvy.

"(4) From this method will arise a new industry.

"(5) This method will facilitate the exportation of the wine of many vineyards; wine which can scarcely be kept a year, even when not removed from the spot, may hereafter be preserved many years though sent abroad."

Liebig and Gay-Lussac later undertook to explain why Appert's products kept, but both failed to grasp the underlying significance of oxygen deprivation in fermentation.

Although Appert's work did not significantly influence our knowledge of chemistry and bacteriology, it remains a monument to clear thinking and perseverance and deserves to be ranked with some of the best scientific thought of the time.

J. C. T.

Importance of dust in transmitting infections.—It has been shown that pathogenic microorganisms—such as the hemolytic streptococcus and pneumococcus—may remain suspended in the air for many hours or days and that their virulence after several weeks' sojourn in the dried state in dust is unimpaired. Buchbinder's observations are especially informative in this respect. Since air currents redistribute the bacteria which have settled in the dust, control of dust has become an important consideration in preventing air contamination. Experiments of Van den Ende and Thomas have demonstrated that the bacterial content of the air of wards or patients' rooms may be greatly reduced by oiling the floors and sweeping with oiled or moistened brooms. Furthermore, they and others have found that treating blankets with a diluted light mineral oil is most effective in preventing distribution of bacteria from the bed clothes. Employing both these measures resulted in a reduction of more than 90

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JUNE, 1945

"O CONSISTENCY . . .!"

No other profession, excluding the regular army, has sacrificed more in World War II than have the doctors of America. Thanks to the excellent planning and efficient records of the American Medical Association, medical personnel was supplied to the army and navy as fast as it was needed. The high mortality among civilian doctors testifies that they have borne their share of the burden imposed by war.

Not only have the doctors of America driven themselves without stint in caring for their own patients and those of their colleagues in service; they have also foregone their accustomed state and national meetings at the request of the Office of Defense Transportation. For the first time since the Civil War our State Society failed to hold its annual session this year. After V-E Day, Secretary McMillan ventured to ask permission to meet this fall, but this was denied on the grounds that transportation facilities would be strained to the limit by the redeployment of troops from the European war theater to the Pacific. Presumably for the same reason, Dr. Olin West's application for a permit to hold an annual meeting of the House of Delegates of the American Medical Association was also denied. This stand seemed reasonable, and as good patriots we were glad to comply.

When, however, the annual Jefferson Day Dinner was held in Raleigh on June 2 with 350 in attendance, including notables from all over the country, the hard-pressed physician might be pardoned for wondering "how come." When he learned that a "summer session" of the North Carolina senate is to be held in Hendersonville, with a bevy of politicians from Washington in attendance, the wonder grew. The *Greensboro Daily News*, however, explained editorially "how you can recognize an ODT ban on conventions and gatherings by more than 50 persons. Why, by its political loopholes, silly."

The recent lifting of the ban on horse racing is still more puzzling. As the *Charlotte Observer* remarks editorially,

> "Horse racing is a popular and entertaining form of sporting diversion enjoyed by millions of Americans. It is, however, not one of such urgent necessity as to be given priority to other civilian meetings which, in many cases, would, undoubtedly react more advantageously in the national interest."

Medical men are willing and anxious to do their full share in furthering the war effort; but they are not quite ready to adopt the attitude that it is

> Theirs not to reason why:
> Theirs but to do and die.

In the homely phrase, we want to be sure that all are fed from the same spoon. Americans are supposed to have developed to an unusual degree a love of fair play. Let us hope that this trait may not be lost as a result of temporary submission to dictatorial agencies of government.

THE NEW WAGNER-MURRAY-DINGELL BILL

The NORTH CAROLINA MEDICAL JOURNAL takes pleasure in printing on page 300 a letter from Senator Robert F. Wagner. It is to be hoped that every doctor will read this letter and the amended version of the Wagner-Murray-Dingell Bill, now labeled S. 1050 or H.R. 3293. Those who do read this new bill must inevitably be impressed with the effort made by its authors to improve the flavor of the huge dose of taxation prescribed by them for John Q. Public to swallow. Perhaps the attempt to make the dose more palatable accounts for the bill's being diluted with additional verbiage until it is now more than twice its original volume—185 pages instead of 90.

It is interesting to note in Senator Wagner's letter that he and his colleagues "have benefited greatly from the constructive advice and suggestions of practicing physicians, and of physicians in clinical and teaching positions." Naturally one would think that the American Medical Association, representing as it does an overwhelming majority of our doctors, would have been consulted, or representatives of the Colleges of Surgeons and Physicians. Instead, Senator Wagner states in his speech introducing the bill that it "incorporates the constructive suggestions of many organizations and persons, including the American Federation of Labor, the Congress of Industrial Organizations, the Physicians Forum, the Committee of Physicians for the Improvement of Medical Care . . . the American Public Health Association, the National Lawyers Guild," and others. Conspicuous by their absence are the American Medical Association, the American Colleges of Surgeons and Physicians, and the American Bar Association.

The Physicians Forum is composed of a few hundred doctors, most of whom live in New York City, and all of whom lean heavily toward Communism. The Committee of Physicians for the Improvement of Medical Care is also a small group which has as a nucleus a number of leftist contributors to Miss Esther Everett Lape's two-volume "American Medicine: Expert Testimony out of Court." The National Lawyers Guild, be it remembered, is the group that sought to neutralize the scathing denunciation which the American Bar Association gave the first Wagner-Murray-Dingell Bill. This JOURNAL stated then[1]: "Apparently the National Lawyers Guild bears the same relation to the American Bar Association that the Physicians Forum does to the American Medical Association. Each is composed of a small minority group representing the extreme left wing of their profession; and each group seeks to make up in vehemence what it lacks in numbers."

Despite the improved flavor and greater dilution of the new bill, those who read it carefully can hardly agree with the distinguished senator that the bill does not socialize medicine nor advocate state medicine. It is true that a National Advisory Hospital Construction Council of eight members is provided for, in addition to the sixteen-member National Advisory Medical Policy Council; but both these councils are to be appointed by the Surgeon General of the United States Public Health Service, are purely advisory, and have no real authority. Just as in the original bill, the Surgeon General would still be the Commissar of Medicine, with authority transcending that of the specialty boards and all other standardizing agencies created so patiently and carefully by the doctors of America. He would have the same power of the purse over the medical schools of the country that was provided in the original bill.

The tax on the worker's wage has been reduced from 6 per cent for employee and 6 per cent for employer to 4 per cent for each —a total of 8 per cent instead of 12 per cent. The bill still provides, however, for medical care expenditures of approximately three billion dollars annually.

Lip service is paid to the doctor-patient relationship, and any attempt to regiment the doctors is denied; but the stubborn fact remains that the patient can not choose a doctor who does not agree to participate in the scheme, without assuming the obligation of paying him directly. Furthermore, although the bill nowhere uses the word compulsory in painting the benefits of national health insurance, the insurance *would be* compulsory, not voluntary. The difference between these two words is the difference between free enterprise and regimentation; between democracy and dictatorship; between self-respect and slavery.

No doubt a determined effort will be made by various groups, notably the labor leaders who are closest to Moscow, to force this bill

upon the public. Unless virtually all commentators are mistaken, however, President Truman is not nearly so inclined to the left as was his predecessor, and it is hardly likely that any great pressure will be exerted from the White House to force the passage of the bill. The doctors of America proved, when the first bill was under consideration, that they could exert considerable political influence. Let us not rest upon the laurels of our first victory, however. Politicians will not stay licked so long as they are motivated by "the cohesive force of public plunder" (Grover Cleveland), and we now have to fight our battle all over.

There are three things which every doctor can do to bring about the defeat of this obnoxious bill: (1) Write a brief letter to his senators and his representative urging that they vote against the present Wagner-Murray-Dingell Bill; (2) use every opportunity to talk to his patients about it, and suggest that they write letters of protest; and (3) send a contribution, large or small, to the National Physicians Committee, the Pittsfield Building, Chicago 2, Illinois. If only enough doctors will become interested, there is every reason to expect that this bill will go the way of its unlamented predecessor.

1. The Report of the National Lawyers Guild on the Wagner-Murray-Dingell Bill, Editorial, North Carolina M. J. 5:246 (June) 1944.

* * *

A LESSON TO BE LEARNED FROM PRESIDENT ROOSEVELT'S DEATH

Death came to Franklin D. Roosevelt as he himself would doubtless have planned it —while he was in the midst of the day's work. A very wise and keen observer has said that Roosevelt had been lucky throughout all his public life, but that the best luck he ever had was in dying just when he did. The San Francisco Conference, which was to mark the climax of his efforts to bring about a lasting union for peace, was just ahead. No matter what the outcome of the conference, Roosevelt stands to win. If it succeeds beyond the most optimistic expectations, he will be given credit for having planned it; if it proves to be a disappointment, his friends will say that it was because he could not be there to see it through.

One lesson which we should learn from Roosevelt's death is that eight years in the White House are enough for any man. It was a matter of general comment that the third term aged Roosevelt more than did the first two together. In all probability he would be living today if he had not decided to break the precedent of one hundred and fifty years in order to be elected for a third time. No man should ever consider himself or be considered indispensable, and no man or group of men should ever again jeopardize the welfare of the American people because of political ambition. It is quite possible that Roosevelt was sincere in wanting to retire at the end of his second and third terms; but his party leaders were willing to take chances with his life in order to use his vote-getting appeal that they might stay in power.

Had Roosevelt stepped down at the end of his second term, he could have given his successor the benefit of the experience accumulated during eight years in office, and especially of his keen insight into foreign affairs. Thus we would have had the judgment of two experienced men to guide our country through the critical years of war and world reconstruction. The country is fortunate that a man of Mr. Truman's caliber was chosen for the Vice Presidency; but it must be admitted that his selection was due more to a kindly providence than to human foresight.

The passing of the decades makes us marvel more and more at the wisdom of our founding fathers. Let us hope that in the future no one will be tempted to violate the principle enunciated by George Washington and emphasized by Thomas Jefferson that two terms as President are enough for any man.

JOURNALS WANTED

Our supply of the following issues of the NORTH CAROLINA MEDICAL JOURNAL is either completely exhausted or nearly so. The JOURNAL will be glad to pay 15¢ for each copy of one of these issues, in good condition, which is sent to the editorial office at 300 S. Hawthorne Road, Winston-Salem 7, N. C.

February, 1945
March, 1945
April, 1944
May, 1944
October, 1943
August, 1942

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

BOWMAN GRAY SCHOOL OF MEDICINE
OF WAKE FOREST COLLEGE

The patient was a 40 year old male Indian admitted to the hospital on November 10, 1944. Six weeks prior to entry the patient was shot through the right anterior portion of the chest with a 38 calibre pistol, the bullet emerging beneath the right scapula. He did not lose consciousness but was unable to estimate the amount of blood loss resulting from this wound. He was taken immediately to a local hospital, where he was treated conservatively for approximately one week, leaving against advice at the end of that time. Ten days later he developed an intermittently recurrent, dull, aching, and non-radiating pain which was substernal in location and was aggravated by coughing and deep breathing but was not related to exertion. Three weeks after his chest injury he developed a chronic cough which, one week later (two weeks prior to admission to this hospital), became productive of increasingly large amounts of foul-smelling, yellowish-green sputum. At this time he also developed progressive exertional dyspnea and orthopnea. At the time of admission he was sleeping on four pillows, and his sputum amounted to about a cupful a day. During the two weeks prior to admission he began having progressive evening ankle edema and persistent night sweats, but no frank chills. One week prior to admission thoracentesis on the right was attempted, but no fluid was obtained. The patient stated that he had lost 30 pounds in weight since the onset of his present illness. His appetite throughout this period had been poor.

The *past history* is not significant except for a urethral discharge in 1925. The patient denied having had a concomitant penile lesion, but stated that he was given four intramuscular and four intravenous injections shortly thereafter. He had had no further treatment and no further symptoms referable to venereal disease.

On *physical examination* the temperature was found to be 101.2 F., pulse 88, respirations 24, and blood pressure 120 systolic, 80 diastolic. The patient was a well developed male who appeared both acutely and chronically ill. He had frequent paroxysms of coughing and dyspnea. In the skin of the right anterior chest was a well healed puncture wound in the fifth interspace, 2 cm. in diameter and approximately 7 cm. lateral to the edge of the sternum. A similar well healed wound was present just beneath the inferior border of the right scapula. Marked pitting edema from the level of the knees downward was noted bilaterally. The superficial veins of the arm and neck were distended. Both lungs were filled with coarse, bubbling, high-pitched, musical inspiratory rales and expiratory rhonchi, and amphoric breathing was heard over the right lower posterior part of the chest. The percussion note was dull in this area. The heart was not enlarged to percussion and no murmurs were heard, but a suggestion of a gallop rhythm was present. Examination of the abdomen showed dullness in both flanks which shifted with change of position; the liver edge was palpable 3 fingers' breadth below the costal margin, and moderate tenderness was noted in this area.

Accessory clinical findings: The hemoglobin was 7.5 Gm., and there were 3,410,000 red cells and 7650 white cells with 69 per cent polymorphonuclear leukocytes, 2 per cent young forms, and 29 per cent small lymphocytes. The red cells were hypochromatic, and anisocytosis and poikilocytosis were fairly pronounced. Urinalysis showed a specific gravity of 1.010, an acid reaction, and no albumin or sugar. One or 2 red blood cells and 2 or 3 white blood cells per high power field were seen in the centrifuged sediment. No epithelial cells and no casts were present. The nonprotein nitrogen was 28 mg. per 100 cc., blood sugar 85 mg. per 100 cc., total serum proteins 5.7 Gm. per 100 cc., carbon dioxide combining power 55 volumes per cent, blood chlorides 580 mg. per 100 cc. Stool examination revealed the ova of Necator americanus. Kahn and Wassermann tests of the blood were positive. Examination of the cerebrospinal fluid showed a protein content of 60 mg. per 100 cc.; the Kahn and colloidal mastic tests were negative. Sputum smears showed gram-positive cocci in chains and in clumps, and gram-negative cocci and bacilli. No acid-fast organisms, spirochetes, or fusiforms were seen. Sputum cultures showed gram-positive

dium. A chest film revealed bilateral lower lobe pneumonitis of uncertain etiology, and a right hydropneumothorax, with collapse of the right lower lobe. On bronchoscopic examination the larnyx, trachea, and coryna appeared normal. There was evidence of inward displacement of the right bronchial tree toward the mediastinum. The mucosa of the right tracheo-bronchial tree, especially toward the distal radicals, was moderately inflamed, and whitish, purulent secretions were present. The left tracheo-bronchial tree was normal. No foreign bodies were seen.

Course in the hospital: The patient's temperature fluctuated between 100 and 104 F. His pulse rate varied from approximately 90 to 130. Sulfadiazine therapy was instituted and blood levels of 6, 15.6, and 12 mg. were obtained. Digitalization was begun and the patient was treated with aminophylline and salyrgan with some improvement in his orthopnea and dyspnea. Postural drainage was instituted, and 300 to 800 cc. of sputum was obtained daily. The patient was given a high-protein, high-calorie diet and multiple blood transfusions, but with little change in his serum protein level. On the eighth hospital day, fluoroscopy of the chest showed marked bilateral infiltration in both lower lung fields, more marked on the right; a fluid level was present at approximately the origin of the middle lobe bronchus. The heart was enlarged and showed no visible pulsations. There was no significant change in the hemoglobin and red cell count, and the patient's clinical status showed little, if any change, except possibly some subjective improvement. At 3:45 a.m. on the ninth hospital day the patient was seen by a nurse to be sleeping quietly. Fifteen minutes later the nurse again entered the room and found the patient dead.

Discussion

DR. HOWARD H. BRADSHAW: It is impossible to tell by the wounds of entrance and exit just what structures have been traversed by a bullet. Such projectiles hit bones and ricochet from one place to another. However, the position of the scars described in this case would indicate that no major vessels were struck. In support of this belief is the fact that the man apparently was not critically ill, since he left the hospital at the end of one week, although against advice. Since he had no immediate pulmonary symptoms, we can assume that none of the major bronchi were damaged.

I think the conservative treatment of his wound was perhaps correct. The present war has taught us a great deal about the management of puncture wounds of the lung. Formerly, it was the general practice to aspirate the blood from the pleural cavity and replace the aspirated blood with air, in the belief that the pneumothorax compression would stop bleeding from pulmonary vessels. As a result of military surgical experience the accepted method of treatment now is to remove the blood from the pleural cavity in order to get as rapid re-expansion of the lung as is possible. This may be done by aspiration, repeated if the blood re-accumulates. However, the tendency now is to open the chest widely, scoop out the clots, and remove the coat of fibrin over the visceral pleura, so that the lung can re-expand. Following such a procedure most patients are able to return to work within a few weeks. The previous method of treatment frequently resulted in the development of chronic empyema which would perhaps require years for complete relief.

After his discharge from the hospital, this patient began to have what I interpret to be pleural pain, followed by definite pulmonary symptoms—cough productive of large amounts of foul-smelling material. Do these symptoms represent the onset of a pulmonary abscess, or the development of a bronchopleural fistula following infection of the pleural cavity? Either condition might result from a bullet wound. When a bullet traverses lung tissue, it causes considerable alveolar hemorrhage in surrounding areas. As a matter of fact, the bullet does not even have to enter the lung to produce considerable damage to it. Bullet wounds have been made on animals in such a fashion that the bullet hit the chest wall tangentially and did not enter the pleural cavity; yet examination of the lungs showed considerable hemorrhage, closely resembling an infarct in the lung.

The x-ray picture showed bilateral lower lobe pneumonitis and a fluid level which extended out to the chest wall in the right lower part of the chest. This fluid could be either in the lung or in the pleural cavity. The development of marked dyspnea and orthopnea and progressive ankle edema is quite unusual in my experience with simple pulmonary abscesses or empyema. The patient apparently had not lost enough blood to account for any

of these symptoms, and his serum proteins were above the critical edema level; therefore, I am unable to explain these symptoms.

An unsuccessful thoracentesis is by no means proof that no fluid is present in the thoracic cavity. I have many times made "dry taps" and then, after resecting a portion of rib and getting through pleura 2 or 3 cm. thick, have encountered large pockets of fluid.

Although hookworm ova were found in this patient's stools, he had apparently had no symptoms of hookworm disease.

The loss of 30 pounds in weight in six weeks' time is again unusual in cases of lung abscess, unless the patient is running extremely high fever and is extremely toxic. It is difficult to know how much of this patient's weight loss can be attributed to his poor food intake. The frequent paroxysms of coughing and dyspnea which the patient was having on admission are indicative of pulmonary rather than pleural infection. The fact that the heart was not enlarged to percussion does not mean that the heart was not enlarged, since it is impossible to percuss a heart accurately. The dullness in both flanks which shifted with a change in position indicates that fluid was present in his peritoneal cavity. The liver edge was palpable three fingers' breadth below the costal margin and there was moderate tenderness over that area. The physical findings do not suggest either pulmonary abscess or empyema.

The secondary anemia, pronounced changes in the red cells, and absence of eosinophils are not in keeping with acute blood loss. They are found in patients suffering from hookworm disease, although eosinophilia is more characteristic of this disease. The anemia, edema, peritoneal fluid, enlarged liver, and possibly the distended neck veins might be attributed to the final stages of hookworm disease. I must confess that I know very little about this disease, however.

I think that protein deficiency can be ruled out as a cause of the fluid in the peritoneal cavity and the edema of the extremities. In the presence of intrathoracic infection, whether pulmonary or pleural, one has to think of mediastinal edema or abscess producing compression of the vena cava, and also of fluid in the pericardial cavity, causing some degree of tamponade. I do not see how the syphilitic infection can account for any of this man's symptoms. The sputum studies are of no aid, because a mixed infection would be characteristic with either a pleural or a pulmonary infection at this stage of the game. Bronchoscopic examination did not yield any helpful information.

While he was in the hospital, this patient was treated for heart failure, and despite chemotherapy and supportive measures his condition grew worse. The fact that the heart showed no visible pulsations under the fluoroscope suggests that the heart action may have been muffled by fluid within the pericardium. Sudden death in the presence of pulmonary abscess is rather unusual. It results usually from hemorrhage, which is not suggested in the clinical summary, from cerebral metastasis, and occasionally from flooding of the sound bronchial tree with pus from the abscess cavity. In the last instance, however, the patient dies a cyanotic, choking type of death. There is no indication that that has occurred here, and I am at a loss to explain this man's sudden death.

It seems to me that with the available evidence the most likely diagnoses are empyema, lung abscesses, pericardial effusion or pericardial empyema, and hookworm infestation. The last diagnosis would account for the queer blood picture and the edema, which I am unable to explain in any other way.

Anatomical Discussion

DR. ROBERT P. MOREHEAD: The symptoms and signs relating to the circulatory system in this case may be explained on the basis of myocardial failure, resulting from toxic myocardosis.

Suppurative pulmonary disease was present and three abscesses were found in the lower lobe of the right lung. One may have represented a walled-off emphysema, for when the lung was freed from the chest wall a cavity containing pus was entered.

The finding of especial interest, however, was a rather extensive tuberculous process involving the right lower lobe, with miliary spread throughout both lungs. One must assume from the distribution of the lesions that a caseous lymph node involved the thoracic duct. It is difficult to evaluate the role played by a bullet passing through an area of tuberculous tissue.

Hookworm infestation was not a factor in this case, since the parasites were present in small numbers only.

Anatomical Diagnoses

1. Tuberculosis of the lower lobe of the right lung.
2. Pulmonic miliary tuberculosis.
3. Perforations of the diaphragm, one due to a tuberculous process in the right lower lobe of the lung, the other of undetermined etiology.
4. Focal area of acute and chronic hepatitis on the superior surface of the liver.
5. Arteriosclerotic heart disease with toxic myocardosis.
6. Chronic passive congestion.

Closing Discussion

DR. BRADSHAW: I have repeatedly warned the students that cancer and tuberculosis must be ruled out in all patients with atypical pulmonary symptoms. It seems that in this case I have failed to follow my own advice.

CASE REPORTS FROM THE TUMOR CLINIC

NORTH CAROLINA BAPTIST HOSPITAL

Case 4

Two years ago Mrs. R., a 52 year old housewife, began to have dull, cramp-like pain in both lower quadrants of the abdomen. This seemed to be partially relieved by defecation. Gradually this pain shifted to the epigastrium and the left inferior portion of the chest. Other symptoms were nausea, frequent eructation, and flatulence. The patient consulted a physician, whose impression was, according to the patient, that she had either gastric ulcer or cancer. He put her on an ulcer regimen and gave her weekly intramuscular injections of liver extract.

She improved slightly on this schedule, but the improvement was short-lived. In the next few months she consulted three other physicians, whose diagnoses were achlorhydria, pellagra, and anemia. She was given hydrochloric acid and "shots" for pellagra. The last of these doctors, who saw her eight months after the onset of her present illness, did a gastro-intestinal series and told her that he found a "diverticulum" which was not related to her trouble. He requested that she return for further x-ray studies at a

under the care of two other physicians, who treated her for anemia, pellagra, and arthritis of the spine. During this period she began to have alternating constipation and diarrhea, anorexia, and occasional tarry stools. Vomiting became more frequent, and for the last several months the patient has been able to retain little solid food. Over the two-year period, she has lost 17 pounds in weight. Two weeks before her admission here she was sent to another hospital for a tonsillectomy (because of her "arthritis"). Because of her poor condition the tonsillectomy was not done, but she was given a blood transfusion instead.

Two nights before admission to the North Carolina Baptist Hospital, this patient vomited approximately one pint of bright red blood, and subsequently passed a tarry stool. Her physician then referred her to this hospital.

The patient's past history reveals that she was told some years ago that she had pellagra. She has had a large cystocele since the birth of her children. She has had nocturia, dysuria, and known pyuria. In 1921, she had some type of minor "bowel operation," a bilateral salpingo-oophorectomy, and a uterine suspension.

Physical examination on admission revealed a pale, middle-aged woman who showed evidence of weight loss. The temperature was 98.8 F., the pulse 76, respiration 16, blood pressure 125 systolic, 80 diastolic. The lungs and heart were normal. The abdomen was flat and soft. There was a questionable mass in the right upper quadrant and epigastrium. It was thought that this might be the liver. The spleen was not felt, but the right kidney could be made out three fingers' breadth below the costal margin. The sigmoid colon was palpable and tender. No abnormal masses or tenderness was noted on pelvic examination. A moderate degree of rectocele and cystocele was present. The uterus was small and freely movable.

These physical findings have remained constant throughout the patient's stay of three weeks.

On admission the red blood cell count was 2,790,000, the hemoglobin 8.5 Gm., the white blood cell count 5,800, with a normal differential. The hematocrit was 28 volumes per cent; the reticulocyte count 8 per cent. The patient has received two transfusions, and

Urinalyses have consistently shown a few white blood cells, but no other abnormalities. The stools have been tarry, containing red blood cells and occult blood.

Gastric analysis after histamine revealed no free hydrochloric acid, 30 clinical units of total acidity, lactic acid, gross blood, and Boas-Oppler bacilli. Bleeding time, clotting time, prothrombin time, venous pressure, circulation time, and vital capacity were normal. Fishberg and phenolsulfonphthalein tests showed impaired kidney function. Blood sugar, carbon dioxide combining power, and blood chlorides were all within limits of normal. The Kahn test was negative.

Two x-ray studies of the stomach and duodenum were made. The roentgen diagnosis at first was "gastric ulcer, question of malignancy." After the patient had been on a Meulengracht regimen, the stomach was again studied and the radiologist thought that the lesion was probably malignant ulceration of the fundus of the stomach.

Esophagoscopy was performed. Although no lesion was visualized, the operator shares the opinion that Mrs. R. has a carcinoma of the stomach, because of her history.

Tumor Clinic Discussion

RADIOLOGIST: Fluoroscopy revealed the anterior wall of the stomach flexible, but the posterior wall showed multiple ulcerations and a constant filling defect close to the greater curvature in the prepyloric region. The posterior wall was fixed, rigid, and void of waves—completely abnormal from the esophagus to the pylorus. The findings by the two x-ray examinations indicated an organic lesion *which had not improved over a period of two weeks.* This type of lesion in its earlier stages is commonly overlooked by many examiners, and would certainly not be discovered in a stomach filled with barium by film examination alone. At the stage of involvement indicated by our examination the extent of the lesion is obvious.

Although the x-ray findings are those seen so frequently in advanced carcinoma of the stomach, lymphosarcoma of the stomach and possibly a tumor arising in the body of the pancreas and invading the stomach should be considered in the differential diagnosis. No pulmonary metastases were seen, but this negative finding does not, of course, rule out intra-abdominal, peri-aortic, and hepatic metastases.

FIRST SURGEON: All the facts in this case seem to point to the diagnosis of a non-resectable gastric carcinoma. The patient appears to be a poor surgical risk, but I would like to have the tumor clinic's opinion on the advisability of an exploratory laparotomy. I feel that we should carry out either a transperitoneal or left transpleural exploratory operation on the slim chance that the lesion may be resectable.

SECOND SURGEON: I believe that an exploratory laparotomy should be done, a biopsy specimen obtained, and a gastroenterostomy performed if the patient's obstructive symptoms warrant it. The history and x-ray examination are suggestive of posterior wall involvement, which often infiltrates the head of the pancreas, making removal difficult and cure impossible. It is lamentable that more complete studies were not done two years ago to differentiate benign ulcer from early carcinoma.

Tumor Clinic Opinion

Recommendation: Exploratory laparotomy with biopsy of the lesion. Further procedures to be decided upon at the time of operation.

Prognosis: Very poor.

Blame: Inadequate study by several examining physicians.

Follow-Up Note

When this patient was operated upon, five days after the above discussion took place, an extensive penetrating tumor mass was found completely obliterating the posterior wall of the stomach. The anterior wall was intact and pliable. The tumor mass extended far beyond the stomach, and a biopsy specimen was obtained from the region of the gastro-hepatic ligament. Frozen sections of the specimen showed adenocarcinoma. The patient's obstructive symptoms were not considered sufficient to warrant gastroenterostomy. The prognosis is hopeless.

Summer Diarrhea in Babies

Casec possesses outstanding merit in the treatment of diarrhea and loose stools, in infants and in children. The promptness with which Casec checks diarrheal stools is an important factor in arresting the dehydration which makes infantile diarrhea so serious a clinical problem. At the same time Casec replenishes calcium lost in the stools. The high protein content of Casec, moreover, aids in promoting tissue-growth in infants who have become wasted as a result of diarrhea. Because of its anti-fermentative action and its growth-promoting constituents, Casec is a particularly effective weapon against the so-called summer diarrheas.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.
Raleigh

Expert Testimony: *A physician, or one qualified in other fields, may be asked to give expert testimony as to facts concerning a case, or his opinion concerning the matter, or both.*

The following abstract describes an instance in which a doctor was asked to give expert evidence both as to fact and as to his opinion. "Expert testimony as to fact" is knowledge received directly and immediately by facts perceived through the senses, whereas "expert opinion" is an inference based on other facts. In reality, most evidence given is of the opinion variety, inasmuch as it is based upon conclusions drawn from what one perceives through the sense organs. The differentiation between "expert testimony as to fact" and "expert opinion" rests upon the degree of removal from the immediate process of perception. As a general rule, opinion is the exclusive province of the jury, and the witness under ordinary circumstances should testify only to facts, so that the jury may form an opinion as to such facts and render their verdict accordingly. Expert testimony is, therefore, an exception to the rules of admissibility, and is allowed for the sole purpose of aiding the jury, who are not prepared to form opinions based upon technical facts.

The plaintiff in this case was employed as a laborer on a coal dock operated by a corporation engaged in the coal business. While so employed, and while about his ordinary duties, the plaintiff fell from a platform which was twenty-eight feet above the dock. He sustained serious injuries—namely, fractures of certain bones of the arms, skull, and jaw, and the loss of vision in one eye.

It was found by the jury in Superior Court that the injuries complained of were due to negligence of the defendant coal company, and the jury awarded the plaintiff the sum of eight thousand dollars in damages. After the defendant's motions to set aside the verdict and to order a new trial were denied, the defendant appealed the case to the Supreme Court, assigning various errors. The one of interest medically was the objection to the Superior Court's allowance of testimony by physicians, the facts concerning which are as follows:

The physicians were allowed to give information as to the injuries, their location, extent, and importance, and in addition were asked for their opinion about certain hypothetical questions concerning the possibilities of future suffering consequent to the plaintiff's injuries. The Supreme Court stated that there was no objection to the opinion evidence being placed before the jury, despite the fact that the doctors had in addition been asked to testify concerning facts elicited by examination. The medical testimony was ruled acceptable, although other exceptions were sufficient to return the case to Superior Court for a new trial.

There is evidently some confusion among experts as to the type of testimony they are allowed to give. Fortunately, doctors and other types of qualified experts have nothing to do with the determination of admissibility of testimony, this being the function of the judge; but it is well to know in advance what type of question is likely to be asked, so that some preparation may be made. (Supreme Court of Wisconsin, April, 1905—102 N. W. 1049.)

Life Magazine Devotes Editorial Space to the Upjohn Company Health Campaign

Life Magazine in its May 14 issue signally honors The Upjohn Company educational health campaign "Your Doctor Speaks". This series of health messages, appearing monthly in national periodicals since December, 1944, has been selected by Life Magazine for a lengthy feature story with many color reproductions, commending The Upjohn Company's use of fine paintings by outstanding American artists to illustrate the series. Says Life: "Over the past ten years U. S. business has become a thoroughgoing patron of American art, having commissioned top U. S. painters to illustrate for their advertisements. Today The Upjohn Company, manufacturers of pharmaceuticals, is practicing a different kind of art patronage. Instead of having paintings done to order, they are buying the already completed work of the best U. S. easel painters."

"The Doctor Fights"

Schenley Laboratories, Inc., will present a series of coast broadcasts over the Columbia Broadcasting System beginning Tuesday, June 5. The series, entitled "The Doctor Fights", will feature leading Hollywood dramatic motion picture stars in half hour dramatizations of the actual feats accomplished by medical officers of the armed forces during World War II. In many instances, the actual surgeons or physicians whose deeds will form the highlight of the dramatic program will themselves be heard in the broadcasts.

The program series will be broadcast from Hollywood at 9:30 p.m., e.w.t., over CBS, beginning Tuesday, June 5, and for twelve additional weeks.

TUBERCULOSIS ABSTRACTS

A Review for Physicians

ISSUED MONTHLY BY THE NATIONAL TUBERCULOSIS ASSOCIATION

VOL. XVIII JUNE, 1945 NO. 6

MANY reports, often contradictory, have appeared concerning the effect of the war on the tuberculosis death rate. News from some of our crowded centers of war production has been discouraging. The press has featured alarming dispatches about appalling conditions in war-torn areas abroad. A few domestic analyses have sounded unduly optimistic. For these reasons, hard-pressed physicians will welcome a sensible, factual statement of the status of tuberculosis mortality in the United States at the present time.

THE TUBERCULOSIS DEATH RATE IN WARTIME

As the war has progressed, persons interested in the problem of tuberculosis control, and in fact the general public, have evinced considerable concern regarding the trend of the country's death rate from tuberculosis.

Inasmuch as war conditions usually lead to an increase in the incidence of tuberculosis a rise in the death rate was to be expected in 1943, the second full year of American participation in the war. For this reason the decline registered is even more encouraging than those recorded in previous years. In view of the chronic nature of the disease, however, several years may elapse before the impact of war conditions is reflected in a mortality rise. Therefore, we must all realize that the probability of an increase in the incidence of tuberculosis is enhanced each day the war continues.

The decline in tuberculosis mortality has continued steadily each year since 1936 and, with the exception of two minor interruptions, each year since 1918. These sustained decreases must be attributed to quite a number of factors, among which are:

1. Greatly improved and enlarged facilities for the care of the tuberculous, including better managed sanatoria and thousands of additional beds; a higher standard of clinic service and of public health nursing service, as well as a great improvement in health administration generally.

2. Earlier diagnosis and improved methods of diagnosis, including mass X-ray surveys among apparently healthy adults.

3. Recognition on the part of patients and their families of the importance of sanatorium care with the result that a much larger proportion of infectious patients have been segregated, thus minimizing the spread of the disease.

4. Increasing awareness of the tuberculosis problem and acceptance of the greatly amplified program of health education.

5. Decided improvement in the standard of living throughout the country.

6. Intensive efforts directed toward certain groups, such as high school and college students, medical students, nurses, expectant mothers and young women generally. More recently these efforts have been directed toward industrial employees, Negroes and Spanish-speaking people, and men and women who are being examined for service in the armed forces.

The most interesting trend noted in 1943 is the fact that so many of these increased death rates are concentrated in the industrial states of the northeastern and north central sections of the country, while, on the other hand, even more pronounced declines are noted in the states of the south and west.

According to one theory, these increased rates in our industrial states may indicate rising mortality from tuberculosis in the country as a whole. Others are of the opinion that the stupendous migration of the past few years may have resulted in a realignment of the American people—to some extent, at least, on health grounds. Only time can determine which of these two hypotheses is correct.

The abnormal conditions incident to the war have affected the population distribution in the states more than is usually realized. Internal migration, both civilian and military, has resulted in decreased population in the northeastern and north central states,

while in the south and west the population has increased materially since the date of the last decennial census in 1940.

The assignment of millions of the country's healthiest young men and young women outside continental United States and the elimination of their number from population estimates upon which death rates are based, have had the effect of raising tuberculosis mortality slightly in the country as a whole. Many more millions of our healthiest young citizens have likewise been assigned to training camps which are largely concentrated in the states of the south and far west, where climatic conditions facilitate military training throughout all months of the year.

Since all (or approximately all) of these young people had been recently X-rayed it is highly probable that the deaths from tuberculosis among their number would have been negligible in 1943; yet 2,500,000 of them were eliminated from the population base on which the death rate is computed.

Simultaneously other millions of all ages whose state of health is unknown have migrated to and fro without pattern in search of industrial employment. It is quite possible that this population upheaval, which has no parallel in American history, will affect the trend of tuberculosis mortality in the states for years to come.

The difficulties of computing sound death rates in these days of major population shifts cannot be appreciated until one makes an effort to obtain population estimates for a given date, to evaluate the extent of the changes in a given community, and to analyze the effect of the population changes on the death rates.

Changes in the size of a state's population are allowed for when death rates are computed on the basis of the best available population estimates. But changes in the age, sex and color composition of the population cannot be taken into consideration until a new population census has been taken. Obviously, no population census will prove to be worth while until the people of the country have had a few years to settle down after the war.

What Is Happening to the Tuberculosis Death Rate? Mary Dempsey, American Review of Tuberculosis, December, 1944.

In terms of practical management, pulmonary tuberculosis can be as much a disease of the personality as it is of the lungs.—Jerome Hartz, M.D., Psychosomatic Medicine, January, 1944.

CORRESPONDENCE

Dear Dr. Johnson:

On Thursday, May 24, I introduced with Senator Murray a bill, S. 1050, entitled: "The Social Security Amendments of 1945". The bill provides for "the national security, health and public welfare". Representative Dingell of Michigan introduced a companion bill (H.R. 3293) in the House at the same time.

I am forwarding the bill itself, and a copy of my speech in the Senate for your information and use.

I particularly invite your earnest study of the provisions of the bill relating to health. There is absolutely no intention on the part of the authors to "socialize" medicine, nor does the bill do so. We are opposed to socialized medicine or to State medicine. The health insurance provisions of the bill are intended to provide a method of paying medical costs in advance and in small convenient amounts.

During the formulation of this bill, we have benefited greatly from the constructive advice and suggestions of practicing physicians, and of physicians in clinical and teaching positions. Their constructive suggestions have resulted in changes in the bill which we presented in the last Congress. Undoubtedly other changes will be made before this bill is enacted into law. We wish to have it known that we invite constructive suggestions from the medical profession.

In addition, members of the medical profession will be given full opportunity to voice their opinions in open hearings when the bill is considered in Committee.

I hope that you will print this letter in your Journal and that you will join me in urging the medical profession to undertake an earnest study of the actual provisions of the bill. In this way you can help immeasurably in avoiding misunderstanding and misinterpretation of the legislation and in stimulating physicians and medical and hospital organizations to come forward with constructive suggestions and advice.

Sincerely yours,
ROBERT F. WAGNER.

Natural Drugs under Scientific Scrutiny

Plant drugs may be subjected to scientific scrutiny under a cooperative research program to be undertaken by proprietary drug manufacturers. It will represent the fourth such project sponsored by the Proprietary Association of America. Participation in the research program will not be restricted to members of the Association. Scientific institutions will be asked to set up a research program to ascertain scientific facts concerning the various drugs, and these facts are to be published in recognized scientific journals.

The new program is similar to three other cooperative research projects undertaken by the Proprietary Association members. Functioning since 1938 is the Institute for the Study of Analgesic and Sedative Drugs. Other research groups have investigated phenolphthalein and ammoniated mercury.

Preparations employing crude drugs have been used for centuries on an empirical basis, but the scientific data to support the usage is essential and it is necessary that certain corrections be made in the literature.

BULLETIN BOARD

News Notes from the State Board of Health

The formal dedication of Union county's new health center at Monroe was held on May 18, with Governor R. Gregg Cherry as the principal speaker. The official host was Dr. Clem Ham, Union County health officer. Preceding the Governor's address, Dr. Carl V. Reynolds, North Carolina State Health Officer, spoke briefly, and distinguished guests were presented, including Dr. W. K. Sharp, Jr., director of District No. 2, United States Public Health Service.

News Notes from the University of North Carolina

The laboratory of the Department of Pharmacology has been appointed as a consulting bureau to the Federal Security Agency, Food and Drug Administration, Drug Division.

* * *

The Department of Pharmacology has recently received the following grants: $3,000 annually for two years from the Standard Alcohol Company of New York, through the courtesy of James G. Park, Vice-President, to carry on studies in the pharmacology of isopropyl alcohol; $3,000 annually from Lakeside Laboratories in Milwaukee, Wisconsin, through Dr. C. O. Miller, Vice-President, to be used for a study of the effect of pentavalent arsenic on the therapeutic efficiency of bismuth on syphilis.

* * *

Dr. Wm. deB. MacNider and Dr. John H. Ferguson represented the School of Medicine at a meeting of the Medical Advisory Committee, under the direction of Dr. Vannevar Bush, Director of the Office of Scientific Research and Development, held in New York City on April 10.

* * *

Dr. M. J. Rosenau, Dean of the School of Public Health, was the speaker at the ninth annual meeting of the Public Health Association of New York City held at the Hotel Martinique on May 17. The subject of Dr. Rosenau's address was "The Four Roads of Public Health."

* * *

Miss Margaret Blee, Assistant Professor of Public Health Nursing, Department of Public Health Nursing, School of Public Health, has just returned from a month's experience with the care of the premature infant at the Michael Reese Hospital in Chicago.

News Notes from the North Carolina Tuberculosis Association

An Institute for the training of new-in-service tuberculosis workers will be held in Raleigh from July 9-21, inclusive. The Institute is sponsored by the NCTA and new workers in tuberculosis will be especially invited and all their expenses paid. Others desiring to attend and needing more information may write to Mr. L. L. Miller at the State Office.

* * *

Mrs. Fannie S. Leary of Greensboro has been awarded the University of Michigan health education fellowship offered by the NTA's Committee on Negro Program. Mrs. Leary is expected to leave for Ann Arbor sometime in June to take up her studies. Mrs. Leary's application was one of a dozen

In January, 1945, through the combined efforts of the Lenoir County Health Department and the Lenoir County Tuberculosis Association, a pneumothorax clinic was established in Kinston. Any person needing pneumothorax treatments may go to this clinic, where treatment is administered by Dr. G. F. Meadors, County Health Officer. In addition to continuing the treatment of patients returning from the sanatoria, the clinic administers treatment to the newly diagnosed cases of tuberculosis while the patients are awaiting admittance to the sanatorium. Through the cooperation of Dr. Lynwood Williams, local physician, and the Memorial General Hospital, the Health Department is able to hospitalize new patients while they are taking pneumothorax and waiting admittance to the State Sanatorium. Dr. Williams gives his services and the Lenoir County Tuberculosis Association makes the arrangements and pays for the hospitalization of such cases while they are at the local hospital.

* * *

The Annual Meeting of the Board of Directors of the NCTA was held at the Carolina Hotel on Tuesday, May 15. Plans were formulated for extension of the work of the Association by adding to the staff an additional field worker and a health educator for Negroes. Mrs. J. Henry Highsmith, State Seal Sale Chairman, gave a report on the 1944 Christmas Seal Sale. The following officers were re-elected for next year: President, Dr. David T. Smith, Duke University; Vice-President, Dr. H. L. Seay, Huntersville; Secretary, Mrs. Marie B. Noell, Raleigh; Treasurer, T. H. Bell, Greensboro; Executive Secretary, Frank W. Webster, Raleigh. The Executive Committee consists of the above officers and the following: Dr. M. D. Bonner, Jamestown; Dr. Clyde A. Erwin, Raleigh; and Mrs. Blanche Lambe, Durham. Twenty-three members of the Board of Directors whose terms expired were re-elected. New members added were: Richard H. Mason, Dr. T. F. Vestal, and T. W. Steed, all of Raleigh. The following representative directors were elected: Mrs. Paul B. Fry, Albemarle; Mrs. Robert W. Glenn, Greensboro; Mrs. Hugh Campbell, Charlotte; O. A. Tuttle, Selma; W. A. Julian, Gastonia; and Dr. Derwin Cooper, Durham.

Fifth District Medical Society

A meeting of the Fifth District Medical Society was held at the North Carolina Sanatorium on May 17. The following scientific program was presented:

Caudal Analgesia—Dr. M. T. Pishko, Moore County Hospital, Pinehurst.

Surgery of the Gallbladder with Reference to Relief of Upper Abdominal Pain—Dr. Stephen McIntyre, Thompson Memorial Hospital, Lumberton.

Discussion opened by Dr. F. L. Knight, Sanford.

Subacute Bacterial Endocarditis, Its Recognition and Modern Management—Dr. Robert L. McMillan, Bowman Gray School of Medicine, Winston-Salem.

Discussion opened by Dr. W. T. Rainey, Fayetteville.

Clinical Significance of Hematuria of Upper Urinary Tract—Dr. Fred M. Patterson, Greensboro.

Discussion opened by Dr. J. M. Harry, Fayetteville.

Present-Day Treatment of Syphilis—Dr. J. Lamar Callaway, Duke University, Durham.

Discussion opened by Dr. Robert F. Young, Rockingham.

Following the dinner Dr. Roscoe D. McMillan, Secretary of the State Medical Society, discussed post-war planning for returning medical officers. Brigadier-General H. C. Coburn of Fort Bragg also gave

AUXILIARY

BOARD MEETING

In lieu of a twenty-third annual convention, the Board of Directors of the Auxiliary to the Medical Society of the State of North Carolina held an all-day session in Raleigh on April 25 at the home of Dr. and Mrs. M. D. Hill.

After the meeting was called to order by the President, Mrs. John T. Saunders, memorial services were conducted by Mrs. Joseph Elliott for the seven members who have passed away during the year.

Mrs. Saunders and her executive board then gave their reports of the year's work, and the awards were announced. The Davis Cup, given by Dr. Rachel Davis, of Kinston, for achievement and excellence, went to the Eighth District, with the Sixth District receiving honorable mention. The county prizes were won by Hoke, reporting the first 100 per cent membership; to Buncombe, for the largest contribution to the Stevens bed at Black Mountain; and to Guilford and New Hanover, for the largest contributions to the McCain Endowment Fund.

Mrs. E. C. Judd announced that bonds have been purchased for the upkeep of beds in the state sanatoriums, and that the bed at the Eastern North Carolina Sanatorium, in Wilson, has been named for Dr. George Marion Cooper, Assistant State Health Officer.

The Board was delighted to have as its guest speaker Dr. Paul Whitaker, President of the State Medical Society, who gave a most informative talk on legislative measures concerning the Medical Society, public health, and welfare.

At 1 o'clock Mrs. Hill entertained the thirty-one visitors at a lovely luncheon in her home.

During the afternoon session Mrs. P. P. McCain, Chairman of Past Presidents, installed the following newly elected officers:

President—Mrs. G. Erick Bell, Wilson
President-Elect—Mrs. Frederick Taylor, High Point
First Vice President—Mrs. J. T. Saunders, Asheville
Second Vice President—Mrs. J. C. Knox, Wilmington
Corresponding Secretary—Mrs. H. F. Easom, Wilson
Recording Secretary—Mrs. C. H. Gay, Charlotte
Treasurer—Mrs. E. C. Judd, Raleigh

* * *

The Auxiliary is very much pleased that Governor Cherry, working in cooperation with the Golden Rule Foundation, has honored our own Mrs. McCain by naming her the typical North Carolina mother for the year 1945. Mrs. McCain, who is active in religious, educational, patriotic, and social work, was our organizing president and has always been a loyal member and guiding spirit in the Auxiliary.

* * *

In naming a bed at the Eastern North Carolina Sanatorium for Dr. G. M. Cooper, the Auxiliary is honoring a man who for thirty continuous years has worked untiringly and selflessly to better the health of the citizens of North Carolina.

Dr. Cooper was a pioneer in typhoid control, being the first physician in the state to experiment with typhoid vaccination on a civil population. As Director of Preventive Medicine and as head of school health work, he conceived and put into effect the systems of free dental work and of club operations for the removal of tonsils and adenoids of school children. He has been instrumental in improving the health of North Carolina children and in saving the lives of many of our population.

Recognizing his great work in health education, the University of North Carolina conferred upon him one of its highest honors, the degree of Doctor of Laws.

It is with appreciation of his service to the state that the Medical Auxiliary names this bed in honor of Dr. Cooper.

* * *

The Orange-Durham Counties Auxiliary entertained the wives of the Medical Officers of Camp Butner and of the Pre-Flight School at the University of North Carolina with a lovely tea during the month.

MRS. R. L. FIKE, Wilson
Press and Publicity Chairman

Morbidity from tuberculosis in adolescence and early adult life is more frequently the result of household exposure after childhood than before, indicating that in early adult life infection from the environment is of greater importance than the breakdown of lesions acquired in childhood. Harold L. Israel, M.D. and Horace DeLien, M.D., Amer. Jour. of Pub. Health, Oct., 1942.

BOOK REVIEWS

Internal Medicine. Edited by John H. Musser, M.D., Professor of Medicine in the Tulane University School of Medicine. Ed. 4. 1518 pages. Price, $10.00. Philadelphia: Lea & Febiger, 1945.

This book is one of the best text and reference books on internal medicine available. It is thoroughly up to date. The sections on infectious diseases are uniformly good. They include short discussions of the prevention of each disease as well as of its recognition and treatment. Malaria and the tropical diseases are well covered. The section on contagious diseases of childhood is an important addition to a book of this type. A well written section on fungus diseases has been included. In the section on gastrointestinal diseases, short illustrative case histories are given. The sections on the therapy of gastrointestinal diseases tend to leave the reader with a sense of futility. In most cases space is allotted to various subjects in proportion to their importance. The section on subacute bacterial endocarditis might be longer, however—especially in view of the recent advances in chemotherapy; the possibilities of preventing this disease are not even mentioned.

The references are few in number, good, and up to date. The illustrations are few and uniformly excellent. This book is strongly recommended.

Clinical Heart Disease. By Samuel A. Levine, M.D., F.A.C.P., Assistant Professor of Medicine, Harvard Medical School; Physician, the Peter Bent Brigham Hospital, Boston; Consultant Cardiologist, Newton Hospital; Physician, New England Baptist Hospital, Boston. Ed. 3, revised and reset. 462 pages with 157 illustrations. Price, $6.00. Philadelphia and London: W. B. Saunders Company, 1945.

Dr. Levine possesses the art of clinical observation to a degree that would have delighted the soul of Hippocrates. He also has the gift of putting his observations into words so clear and simple that anyone with an average intelligence quotient can understand them. These two talents have enabled him to produce one of the best—if not the best—of the books on the heart yet published. The third edition is a worthy successor of the first two. As the author says in the preface, it "continues to be a simple discussion of the common problems of heart disease, constantly bearing in mind the viewpoint of the general practitioner."

The fact that each chapter is complete in itself makes the book more valuable for ready reference. The keen observations of the author, drawn from his own rich experience, add greatly to the teaching value of the book. Without minimizing the electrocardiograph or other laboratory aids, Dr. Levine places chief emphasis upon actual bedside findings. For example, in discussing the differential diagnosis of subacute bacterial endocarditis, he points out that the absence of a heart murmur will enable one to rule out this condition with far more certainty than will a negative blood culture. Such a simple procedure as taking the blood pressure is discussed in detail, and possible errors are pointed out.

One feature that appeals to this reviewer is that the author does not hesitate to give his own opinion, even if it is contrary to the general view. For example: "The current opinion is that those with high diastolic pressures are the most prone to cerebral accidents. I have had the suspicion that the reverse is true . . . May not the high pulse pressure be the more important factor in causing rupture of a large cerebral vessel?" The reader has the feeling that Dr. Levine is actually talking to him, as if in consultation over the case under discussion.

Every chapter in the book is good, but of special merit are the discussions of thyroid heart disease, hypertensive heart disease, bacterial endocarditis, the clinical significance of the systolic murmur, and the nature and treatment of congestive heart failure. The last third of the book is devoted to a very practical consideration of clinical electrocardiography.

The latest advances in cardiology—such as the use of massive doses of penicillin in bacterial endocarditis—are to be found in this third edition of Levine. It can be recommended unreservedly to students and practitioners for constant study and reference.

Principles and Practice of Surgery. By W. Wayne Babcock, M.D., Emeritus Professor of Surgery, Temple University; Acting Consultant, Philadelphia General Hospital. 1331 pages. Price, $12.00. Philadelphia: Lea and Febiger, 1944.

The compilation of so much of the detailed knowledge concerning the diagnosis and treatment of both common and rare surgical conditions in a single textbook was without question an enormous task and one that required the extreme skill of a writer, surgeon, and teacher.

The book is exceptionally well organized in four parts: (1) General Surgery, (2) Surgical Technique, (3) The Surgery of the Systems, (4) Regional Surgery. Part I begins with a discussion of the pathology and physiology of inflammation and repair, a problem ever present with the surgeon. The second part, dealing with surgical technique, is particularly well done, for the author is a master in this field. An excellent discussion of anesthesia, especially local and regional anesthesia, is included in this section.

In Part III the chapter on fractures has been brought up to date. The chapter dealing with the surgery of the nervous system is fairly adequate for a one-volume text and would give students some insight into the surgical problems of this system. However, much is omitted and many obsolete procedures are shown, such as the old Cushing crossbow skin incision formerly used in suboccipital craniectomy, the old methods of nerve suture, and the jack-knifing of a patient during spinal puncture.

Considerable material is also omitted from the chapter in Part IV dealing with the surgical diseases of the chest, pleura, and lungs—probably because the science of thoracic surgery has expanded beyond the limits where much pertinent information could be included in a textbook of this kind. The chapter dealing with the surgery of the alimentary tract could not be improved upon in a one-volume book. There is omitted in this edition a chapter dealing with the management of surgical conditions common to children. This field of surgery in the past few years has become almost a specialty within itself.

I do not think that a medical student can find a better organized and illustrated single-volume text to guide him through his clinical years of surgery. The illustrations are in part diagramatic for the purpose of clarification, but there are also many photographs and several color plates. The section on surgical technique is particularly well illustrated. The printing of this book is especially commendable.

I would recommend this text most highly for all medical students and house officers, but for postgraduate students in surgery and practicing surgeons I would recommend a monographic system of surgery or other books to supplement it.

Penicillin Therapy. By John A. Kolmer, M.D., Professor of Medicine, Temple University. 302 pages. Price, $5.00. New York: D. Appleton-Century Co., 1945.

This small volume compiles and condenses the literature on penicillin and other antibiotic agents. The laboratory methods for the detection, assay, and **in vitro** determinations of susceptibility are covered in detail. The clinical chapters are arranged according to the etiologic agents. Under each bacterium, the types of diseases produced by it—such as septicemia, osteomyelitis, and meningitis—are discussed. One section is devoted to the treatment of wounds and burns and one to miscellaneous diseases. A section on tyrothricin, streptothricin, chlorophyll, and other antibiotic substances is included. Numerous references are given at the end of each chapter; it is unfortunate that the titles of papers are omitted, so that the usefulness of the bibliography is greatly reduced. The illustrations are largely reproduced from other publications.

Penicillin and Other Antibiotic Agents. By Wallace E. Herrell, M.D., M.S., F.A.C.P., Assistant Professor of Medicine, the Mayo Foundation, University of Minnesota; Consultant in Medicine, Mayo Clinic, Rochester, Minnesota. 348 pages with 45 illustrations. Price, $5.00. Philadelphia and London: W. B. Saunders Company, 1945.

The author is admirably qualified by his extensive research experience with antibiotic agents to summarize the present knowledge of these substances. This excellent monograph covers the background of the development of penicillin, the animal experiments, the preparation of the drug, its distribution in the body, and its standardization. The second and third parts of the book are concerned with the clinical use of penicillin and its effectiveness in the treatment of individual cases. Infectious processes involving certain systems are first considered, and individual diseases are then discussed. In the fourth part, other antibiotic substances such as tyrothricin, streptothricin, and streptomycin are discussed.

The book is well arranged and excellently printed, and contains helpful charts illustrating the clinical effectiveness of the drug. The illustrations are uniformly excellent and many are strikingly reproduced in color. An excellent bibliography is appended to each chapter. This book is highly recommended for day-to-day use by the practicing physician, as well as for the student.

Medical Uses of Soap. A Symposium edited by Morris Fishbein, M.D., Editor of the Journal of the American Medical Association. 182 pages. Price, $3.00. Philadelphia: J. B. Lippincott Co., 1945.

This small volume is unique. The chemistry and manufacture of various kinds of soaps are discussed, and their mode of action is described. A section is devoted to the care of the normal skin, hair and beard, and the uses and contraindications for various types of detergent materials are discussed. The bacteriostatic action of soap, which has been long recognized by physicians, is attributed largely to the mechanical removal of bacteria rather than to its bactericidal effect. Sensitization is believed to be due more to specific organic materials in the soap than to the amount of free alkali present.

The style of this book is very readable. Adequate illustrations printed on glossy paper are included. A usable bibliography is appended to the section covering medical uses.

Peripheral Nerve Injuries. By Webb Haymaker, Capt., M.C., A.U.S., Neuropathologist, The Army Institute of Pathology, Washington, D. C. (on leave of absence from the University of California, San Francisco and Berkeley); and Barnes Woodhall, Maj., M.C., A.U.S., Chief, Neurosurgical Section, Walter Reed General Hospital, Washington, D. C. (on leave of absence from Duke University, Durham, North Carolina). 227 pages with 225 illustrations. Price, $4.50. Philadelphia and London: W. B. Saunders Company, 1945.

The authors are to be congratulated upon their compilation and arrangement of so much valuable material in this very practical manual on the principles of diagnosis of peripheral nerve injuries. Most of the important methods of testing peripheral nerve functions are included, and emphasis is placed on the most simple and practical methods of examination. The book is especially well illustrated with diagramatic illustrations, supplemented in many instances by actual photographs.

This book certainly fulfills the authors' purpose in almost every detail. It will be of greatest use to medical students and to those physicians in the armed forces who have not had extensive training in neurology and who are confronted with patients having peripheral nerve lesions for analysis and evaluation. A more comprehensive treatise would better suit the needs of civilian physicians, who may wish to know something concerning the treatment and prognosis in peripheral nerve injuries, in addition to the principles of diagnosis. However, this manual would be a good adjunct to the libraries of such physicians.

Duodenal and Jejunal Peptic Ulcer. Technic of Resection. By Rudolf Nissen, M.D., Attending Surgeon, Jewish Hospital of Brooklyn; formerly Professor of Surgery and Head of Department of Surgery, University of Istanbul, and Associate Professor of Surgery, University of Berlin. Foreword by O. H. Wangensteen, M.D., Ph.D., Professor of Surgery; University of Minnesota. 143 pages. Price, $4.75. New York: Grune & Stratton, Inc., 1945.

This monograph deals with some of the special problems of peptic ulcer—chiefly, as is suggested by the title, the technique of resection. A generous portion of the book is given to the technique of dealing with the duodenal stump. This technique is amply illustrated with remarkably clear drawings. The important anatomic relations are discussed. The author's technique of gastric resection, as well as that of other recognized gastric surgeons, is illustrated through all of its stages. Methods of dealing with marginal ulcers complicating both gastroenterostomy and gastric resection are shown. Finally there is a brief discussion of the technical management of gastrojejunocolic fistulas.

When a nation goes to war, physical fitness of the young men of the country is a vital matter. Fortunately or unfortunately, fitness in our modern civilization, though desirable, is not so essential. Whether a man can chin himself seven times, or jump two feet, is not so important, but maintenance of good health is important. We can recollect many examples of individuals who would be rejected for military service but have been outstanding in business, the professions and the arts. These men and women have triumphed in spite of physical disabilities. Ed., Minn. Med., Dec. 1944.

To those who wonder why we need still bigger War Loans

IN THE 7th War Loan, you're being asked to lend 7 billion dollars—4 billion in E Bonds alone.

That's the biggest quota for individuals to date.

Maybe you've wondered why, when we've apparently got the Nazis pretty well cleaned up, Uncle Sam asks you to lend more money than ever before.

If you have, here are some of the answers:

This war isn't getting any cheaper

No matter what happens to Germany—or when—the cost of the war won't decrease this year.

We're building up a whole new air force of jet-propelled planes and bigger bombers.

We're now building—even with announced reductions—enough new ships to make a fair-sized navy.

At the time this is written, our casualties are nearing the million mark in dead, missing, and wounded. Wounded men are arriving in this country at the rate of over 30,000 a month. The cost of caring for these men at the battle fronts, transporting them home, and rehabilitating them when they get here, is mounting daily.

No—this war isn't getting any cheaper. And won't for some time.

This year—2 instead of 3

We need as much War Bond money this year as we did last. But there will be only 2 War Loans this year—instead of the 3 we had in 1944.

Each of us, therefore, must lend as much in two chunks this year as we did last year in three. That's another reason why your quota in the 7th is bigger than before.

The 7th War Loan is a challenge to every American. The goal for individuals is the highest for any war loan to date. The same goes for the E Bond goal. Find your personal quota—and make it!



THE MIGHTY 7th WAR LOAN

ALL OUT FOR THE MIGHTY 7th WAR LOAN

In cooperation with the 7th War Loan, the NORTH CAROLINA MEDICAL JOURNAL contributes this page to present this message.

This is an official U.S. Treasury advertisement—prepared under auspices of Treasury Department and War Advertising Council

BULLETIN BOARD

(CONTINUED FROM PAGE 301)

Edgecombe-Nash Counties Medical Society

The Edgecombe-Nash Counties Society held its monthly meeting in Rocky Mount on May 9. Dr. Robert L. McGee of Raleigh was guest speaker and presented a discussion of "Sympathetic Injection Treatment of Thrombophlebitis."

News Notes

Dr. E. C. Powell, Jr., of Rocky Mount, has been awarded the Bronze Star for meritorious service in action.

* * *

Dr. John Sinclair Denholm of Burlington has recently been promoted from the rank of lieutenant colonel to that of colonel.

* * *

The following doctors from North Carolina have recently been promoted from the rank of major to that of lieutenant colonel:

Robert Neil Brown, Asheville
William Schulze, Durham
William Camp Sealy, Durham
Joseph B. Stevens, Greensboro.

Dr. Edgar G. Ballenger

Dr. Edgar G. Ballenger, Atlanta, President of the Southern Medical Association, died on June 1.

Dr. E. Vernon Mastin, St. Louis, Missouri, elected Vice-President of the Southern Medical Association at the last annual meeting, became President of the Association upon the death of Dr. Ballenger.

Surgeon General Outlines Personnel Release Policy

Substantial releases of Army Medical Department personnel will not take place before the latter part of this year, Surgeon General Norman T. Kirk said in announcing a policy on discharges in conformity with War Department procedures. This is due to the fact that the peak of the Medical Department's activities will not be reached until fall.

In formulating the policy consideration was given to civilian needs for professional medical, dental and veterinary care without weakening military needs. Other factors considered were the length of time necessary for personnel to complete their work in the Mediterranean and European Theaters and return to the United States; replacement of Medical Department personnel in active theaters by those who have not had overseas duty; necessity for the maintenance of a high standard of medical care; the heavy load of patients in the United States; evacuation of the sick and wounded from Europe in the next ninety days and continuing medical service in the Pacific.

The policy applies with equal effect to Army medical officers assigned to the Veteran's Administration and other agencies.

It reads:

Medical Corps

a. Officers whose services are essential to military necessity will not be separated from the service.

b. Officers above 50 years of age whose specialist qualifications are not needed within the Army will receive a high preferential priority for release from active duty.

United States Department of Agriculture
Agriculture Research Administration

A new itch remedy, Circa 42, developed by scientists of the U. S. Department of Agriculture's Research Administration, relieves skin irritations caused by bites or stings of insects, such as chiggers, mosquitoes, spiders, wasps, and others, or by fungus infections, poison ivy, and "unknown" causes. Limited tests on persons in this country and in tropical areas have indicated Circa 42 to be a promising remedy for the relief of itching skin for all but a few of those who have tried it.

Apparently, Circa 42 is not a universal remedy. A small percentage of persons do not respond and it does not relieve itching skin under all conditions. In recent tests of 32 persons who used this remedy for chigger bites, only two failed to obtain relief. For most of those who have tried it, relief from itching skin was obtained within 30 minutes. According to results reported so far, duration of relief from one application varies with individuals. Most of those who have used Circa 42 have had relief for 5 to 8 hours or more. For over a third of those tested, relief was permanent.

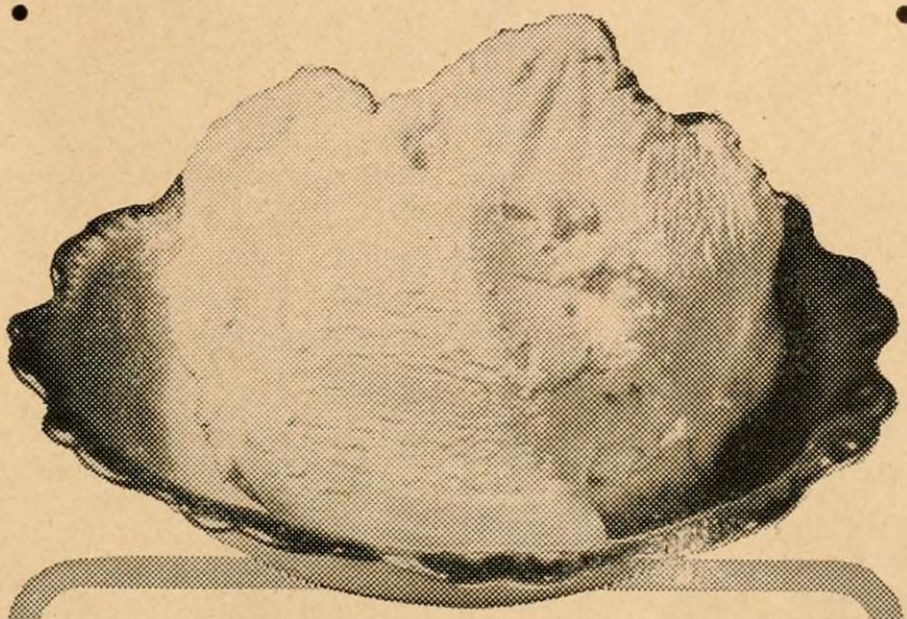
This remedy can be prepared by any druggist who has the ingredients, from the formula developed by Dr. J. Franklin Yeager and Charles S. Wilson, entomologists at Agriculture's Research Center at Beltsville, Md. Circa 42 is a doughy non-greasy cake-like material, which is applied by hand in a thick layer over the itching regions, but not rubbed in. It is made of five materials. two of which produce a local skin anesthesia, without harm to the skin.

The formula for Circa 42 is as follows:

n-butyl-p-aminobenzoate	100 gm.
benzyl alcohol	170 cc.
anhydrous lanolin (melted)	20 cc.
cornstarch	640 gm.
Sodium lauryl sulfonate	64 gm.

More benzyl alcohol is added in mixing the other ingredients, according to the following directions provided by Yeager and Wilson.

1. Warm the benzyl alcohol, and dissolve in it the n-butyl-p-aminobenzoate making an approximately saturated solution.
2. Add melted lanolin, keeping the mixture warm and stirred until as much of the lanolin as will dissolve is in solution.
3. Mix well the cornstarch and sodium lauryl sulfonate, and add slowly to this powder, a little at a time, the warm liquid prepared in step 2. Knead this mixture to distribute the liquid evenly through the powder.
4. Add benzyl alcohol—about a tenth of that already used—to produce a doughy, non-greasy, cakelike ointment that can be packed in oint-



Nourishment

IN ITS MOST DELICIOUS FORM



Yes, Sealtest Ice Cream is not only delicious but nourishing as well—for Sealtest Ice Cream in addition to supplying Vitamin A and calcium, also supplies all of the other milk vitamins, minerals and protein needed regularly in the diets of both adults and children.

Southern Dairies

Sealtest ICE CREAM

NATIONAL DAIRY Sealtest PRODUCTS CORP.

Division of National Dairy Products Corporation

INDEX TO ADVERTISERS

AR-EX Cosmetics, Inc. XXXII
Banner Elk Rest Home XXXII
Broadoaks Sanatorium XXX
Burroughs Wellcome & Co. ..... VI - XX
S. H. Camp Co. XV
Charlotte Eye, Ear, and Throat Hospital XXVIII
Cheplin Laboratories XXIV
Commercial Casualty Co. XVII
Commercial Solvents Corp. XXIII
Cook County Graduate School of Medicine XXXI
Charles C. Haskell and Company V
Glenwood Park Sanitarium XXIX
Dairy Councils VII
Hoffman-La Roche, Inc. XXVII
Holland-Rantos Co., Inc. XXII
Inter-Ocean Casualty Co. XXXI
Eli Lilly and Company ..... Insert and XVIII
M & R Laboratories XXVI
Mead Johnson & Company XXXVI
Parke, Davis and Company ..... XXXIV - XXXV
William Perske XXXIII
Philip Morris & Co., Ltd., Inc. XIII
Physicians Casualty Association
Physicians Health Association XXXII
Pinebluff Sanitarium III
Powers and Anderson, Inc. VII
R. J. Reynolds Tobacco Co. IX
Saint Albans Sanatorium XXXIII
Schenley Laboratory XXV
Schieffelin & Co. XXXI
Julius Schmid, Inc. X
G. T. Searle & Co. XIX
Smith, Klein & French VIII
Southern Dairies 307
E. R. Squibb & Sons XII
Stuart Circle Hospital XXX
Thompson Homestead School XXXII
Tucker Hospital XXIX
Upjohn Co. XI
Wachtel's, Inc. XXXII
Wander Co. XXIX
Westbrook Sanatorium XXVIII
White Laboratory XXII
Winchester Surgical Supply Co.
Winchester-Ritch Surgical Co. III
Winthrop Chemical Co., Inc. XIV
World Insurance Co. IX
John Wyeth ..... II - XXI

BULLETIN BOARD

(CONTINUED FROM PAGE 306)

The National Foundation for Infantile Paralysis, Inc.

On the eve of infantile paralysis summer outbreaks, a recapitulation of the figures available show that the number of poliomyelitis cases in the country is running about fifty per cent ahead of a year ago, it was announced by Dr. Don W. Gudakunst, Medical Director of The National Foundation for Infantile Paralysis, Inc. As of mid-May, the number of new cases this year was 642 as compared with 424 cases for the same period in 1944.

Sharp increases have been reported in the New England states, Middle Atlantic states, South Atlantic area, and the East South Central states. In the Pacific Coast and West South Central areas, which have been hard hit during the past two years, there has been a noticeable drop in the number of new cases. The remainder of the country is running about the same as last year.

Fall Refresher Course in Laryngology, Rhinology and Otology at University of Illinois College of Medicine

The University of Illinois College of Medicine announces its sixth semi-annual Refresher Course in Laryngology, Rhinology and Otology, September 24 through September 29, 1945, at the College, in Chicago. The course is intensive and largely didactic, but some clinical instruction is also provided.

It is especially suited to specialists unable to devote a longer period for advanced instruction and to others seeking a comprehensive review of the field of otorhinolaryngology. The number of registrants will be limited. It is therefore desirable to apply for registration immediately. The fee is $50. When applying, give full details as to school and year of graduation, postgraduate training, college degrees, etc. Write to Dr. A. R. Hollender, Chairman, Refresher Course Committee, Department of Otolaryngology, University of Illinois College of Medicine, 1853 West Polk Street, Chicago 12, Illinois.

OPPORTUNITY

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NORTH CAROLINA MEDICAL JOURNAL

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PRESIDENT'S MESSAGE

PAUL F. WHITAKER, M.D.
KINSTON

Thirteen months of continuing world conflict have passed since the last meeting of the Medical Society of the State of North Carolina. During that period many matters have presented themselves for consideration to the officers of the Society. The services and sacrifices of the medical profession of the nation, including the doctors of North Carolina, have continued on a high level, both on the battle front and on the home front. These services were specifically referred to in the address of the president-elect in May of 1944[1]. They need no reiteration here.

Because of circumstances with which all are familiar the annual meeting of the Society could not be held this year, and there is at present no certainty as to when a meeting can be called. The Executive Committee was kind enough to suggest that the president, along with the other officers of the Society, continue in office until an annual meeting can be held. After mature consideration of this suggestion, I believe that the best interest of the Society, to say nothing of personal considerations, dictates the decision to resign and allow the distinguished president-elect, Dr. Oren Moore, to assume the presidency.

The following report is submitted in an effort to supplement the reports that have appeared in the JOURNAL from time to time, since the last meeting of the Society, and to summarize the activities of some of your committees and officers during the thirteen months since the 1944 meeting. The various committee chairmen will make detailed reports to the House of Delegates concerning the work of their committees when the next regular meeting is permitted. In the meantime, the following general summary and recommendations are presented for your information and consideration:

I have attended seven of the ten district society meetings. Illness prevented my being present at one other, which was attended by Secretary McMillan, and no invitation was received from the two remaining districts. I received and accepted an invitation to address the annual meeting of the North Carolina Nurses Association, and also represented the Medical Society at the seventy-fifth anniversary meeting of the Raleigh Academy of Medicine. The vice president, Dr. William H. Smith, represented the Society at the annual meeting of the North Carolina Public Health Association. Many invitations were received to discuss the medical care proposals of the Broughton administration before civic clubs throughout the state. A number of these were accepted. A fairly large number of county medical society meetings were attended by either Secretary McMillan or myself during the year, and I delivered the commencement address at the graduating exercises of two of the training schools for nurses in the state. I addressed the Board of the Auxiliary to the Medical Society at their spring meeting, and spoke at the meeting of the Seaboard Medical Association last fall. At the request of the president and membership of the Eye, Nose and Throat Society and officers of the State Blind Commission, the president, secretary and Executive Committee of the Medical Society met with them to discuss attacks

Report delivered to the members of the Executive Committee at their meeting in Raleigh on June 3, 1945, and through them to the House of Delegates and the membership at large.

1. Whitaker, Paul F.: Address of the President-Elect: Ex-

Commission for the Blind. An answer to these attacks was prepared after consultation with the attorney of the Medical Society, and published in the newspapers from which the attacks emanated.

The best attended district meetings were those of the Eighth, Fourth and Second Districts, and the best and most diversified program was that of the Eighth District under the leadership of Councilor F. M. Patterson. The best attended county meetings were those of the Durham-Orange, Mecklenburg, Forsyth and Pitt County Societies. Considering the heavy burdens that every physician is called upon to carry and the unusual demands being made upon his time, the attendance at meetings has been excellent, and the keen interest demonstrated in the problems that beset us is both healthy and commendable.

The Proposals for the Extension of Medical and Hospital Care

Naturally, the most important matter with which the present administration has had to deal has been the extension of medical and hospital care proposed by former Governor Broughton during the administration of President J. W. Vernon, and finally submitted in concrete form by the Poe Commission. Organized medicine was liberally represented on the Poe Commission, and a large committee from the Medical Society, under the chairmanship of Dr. Hamilton McKay, actively collaborated with the physicians on the Commission in working out the final details of the report. It is difficult to estimate the time and effort expended by Dr. McKay and his committee and by the physician members of the Commission in attempting to meet the popular demands for more adequate and economical distribution of medical care, and at the same time protect the integrity and freedom of the medical profession. Space will not permit naming all of these men. You know who they are. The profession is profoundly indebted to them for their fine efforts, and in behalf of the medical profession, I extend to them profound thanks.

Some of the recommendations of the Hospital and Medical Care Commission were controversial. Every effort was made to present both sides of the question through the medium of the JOURNAL and by discussions at meetings of various county and district societies. In the democratic way, each county medical society was asked to pass upon the recommendations of the Commission and each local secretary was requested to secure and record the opinion of our absent colleagues serving with the armed forces. A large majority of the county societies approved—and, it is believed by this administration, wisely so — the full recommendations of the Commission. By so doing they demonstrated to the public their interest in the problem and their efforts toward a solution. At times the opposing points of view were forcibly and heatedly expressed, but it is hoped and believed that through all the fight the respect and affection of both sides for each other have been maintained.

For reasons too numerous to discuss adequately here, Governor Cherry and the recently adjourned General Assembly did not see fit to enact into law the comprehensive program recommended by the Poe Commission. Frankness compels the statement here that the forces in the state opposing this program were materially aided by the opposition that developed within the Medical Society. It was repeatedly called to the attention of your representatives fighting the battle that "many of the doctors were opposed to the program." Organized medicine will do well to give serious consideration to the next step it should take in supporting these proposals. A groundwork has been established. Do you propose to stop here or do you propose to go forward? You have three representatives on the new Commission. You should instruct them as to your views and should give them your unqualified and enthusiastic support.

It is again respectfully called to your attention that we are facing a demand for the expansion of medical and hospital services which will not and should not be denied. The activities of our national government to meet this demand are daily becoming more manifest. These activities will continue until a solution of the problem is evolved. In their final analysis, they arise from the ideas and increasingly expressed thoughts of the people with whom we live and work and whom we serve. Although our opportunity is fast running out, constructive action by the states can even yet meet the demand and prevent federal control of medical practice with all of its deleterious sequelae. The Poe Commission, with the aid of organized medicine, developed a plan for North Carolina—admittedly not perfect, but nevertheless a great



PAUL F. WHITAKER, M.D.

step forward toward the ultimate solution of the problem. An aroused and united profession can yet use its tremendous influence to solve an admitted problem in our state by acquainting the next legislature with what it believes our people should have, through its representatives on the new Commission. Again it is respectfully called to your attention that it is our responsibility to direct the solution of this problem, too long delayed, and that if we fail in this responsibility, and the national government directs the solution, we have only ourselves to blame. Unless the Society can develop a better program, it is urgently recommended by this administration that the Society place its individual and collective influence behind this plan to erect an adequate structure of more insurance, more educational facilities and the construction of more hospitals and health centers on the foundation already laid. It is urgently recommended by this administration that a representative committee from the Medical Society be appointed to collaborate with the new Hospital and Medical Care Commission as soon as it is completed.

Mental Institutions

With a few exceptions, organized medicine has been singularly inarticulate and lacking in leadership to insist on better care for our mentally sick. This lack of interest and leadership is partly responsible for the unfortunate piece of legislation establishing dual control of the institutions which was enacted by the recent General Assembly. The situation is admirably and adequately covered editorially in the April issue of the JOURNAL[2]. It is urgently requested that each county medical society, through its local press, secure widespread publicity for this editorial, and that the Medical Society use its influence in the next legislature to effect any changes in the law which experience may prove to be necessary. In the meantime, the Governor has appointed a committee of doctors to act in an advisory capacity to the Hospitals Board of Control, and it is hoped that this committee can work out a program of lasting benefit to the mentally unfortunate of our state.

In this connection, I recommend that every North Carolina doctor read the recent excellent article by Dr. Maurice Greenhill, of Duke University, on the status of mental hygiene in the state at the present time[3]. I also recommend that consideration be given by the next administration to the creation of a section of neuropsychiatry for the Medical Society, in order that more interest in this branch of medicine may be created and maintained. It is further recommended that the Medical Society more militantly concern itself with the various institutions of the state dealing with the health of its citizens.

Committees

The Insurance Committee, under the chairmanship of Dr. Forest Houser, has had many matters brought to their attention. They will, when the opportunity presents, bring you a complete report. As was recommended by this administration, they have, insofar as possible, attempted to pursue their main purpose of aiding the Society members and our Hospital Saving Association to spread the coverage of our Blue Cross plans to larger groups of people. Let us again call to the attention of every physician in North Carolina the necessity for assuming responsibility to educate his patients and friends to the value of prepaying medical care through the Blue Cross plans. These plans offer an effective way to make medical care more widely available and more economical, and in the lean years which will inevitably come again, they will redound to the benefit of physicians in increased collections. The Insurance Committee has also approved plans to make additional life insurance and accident and health insurance available to members of the Society. This administration recommends that the work of the Insurance Committee, in furthering the Blue Cross plans, be continued.

Legislative Committee. Your Legislative Committee has experienced a difficult and busy year. The Society is indebted to the membership of this committee, and particularly to the untiring and efficient leadership of its chairman, Dr. Hubert Haywood. It is difficult to estimate the contribution Dr. Haywood has made to organized medicine. Legislation designed to give the osteopaths the right to practice medicine was defeated. A nursing bill, designed to give the nursing profession, among other things, control of the Standardization Board, was successfully opposed, after the Nurses Association did not avail itself of an offer by the Medical

2. Politics and Mental Hygiene in North Carolina. Editorial, North Carolina M. J. 6:207-209 (April) 1945.

3. Greenhill, Maurice H.: The Present Status of Mental Health in North Carolina, North Carolina M. J. 6:7-22 (Jan.) 1945.

Society to compromise certain differences in the bill. The introduction of a basic science law in the 1945 legislature was strongly considered by the Executive and Legislative Committees. It was finally decided to wait until the next legislature to introduce this law and, in the meantime, to give it detailed and careful consideration. We cannot continue to take merely an obstructive attitude every time osteopathic legislation is introduced. A basic science law will protect the public welfare in a manner fair to anyone desiring to practice the healing art, and I specifically recommend that such a law be introduced at the next meeting of the legislature.

Cancer Committee. The Cancer Committee and the Legislative Committee, carrying out the instructions of the Executive Committee, finally, after much difficulty, secured the enactment of a cancer law to be administered by the State Board of Health, with a Cancer Committee from the Medical Society, consisting of a representative from each Congressional District, acting in an advisory capacity. This Committee will, when the opportunity arises, render a report of their activities to the Society, indicating the developments leading up to the present law. Laboring faithfully and well, they secured the best law possible under the circumstances. A law meeting the more enthusiastic approval of the Committee could perhaps have been secured if we had begun some years ago to approach the problem of cancer control effectively. In behalf of the Society, I extend thanks to every member of the Cancer Committee, and in particular to Chairman Griffith and Dr. Ivan Procter, who worked so faithfully on this problem. It is hoped and believed that all agencies working together can proceed deliberately and effectively to institute a program of cancer control in North Carolina. The new Advisory Committee from the Medical Society should, under the present set-up, be a potent influence in shaping this effort.

Post-War Planning Committee. Conscious of its duty to our absent colleagues who, at great personal sacrifice and with much hardship and frustration, have served and are continuing to serve with the armed forces of our nation, and with profound appreciation of their sacrifices and efforts, the Medical Society, through its Post-War Planning Committee, has sent a letter to every member of service. In letters from the committee and the president, our colleagues have been advised of the plans being made to afford further postgraduate training to those who desire it, and have been requested to advise Secretary McMillan about any matters that concern them and to tell us how we may best be of service to them. I commend and thank the Post-War Planning Committee and its chairman, Dr. Wilburt Davison, for its work in this connection. The letters that are beginning to come in from our colleagues in the service are hereby acknowledged and sincere thanks are extended for the expressions that they contain.

Procurement and Assignment. The work of the Procurement and Assignment Service, under the chairmanship of Dr. Haywood, continues heavy. Many requests for the release of doctors from the armed forces have been received. Dr. Haywood states that his office receives on an average of forty letters weekly. Among the continuing duties of this board are the certification of residents and interns, rechecks on men declared essential by their local boards, and attention to requests from communities which are without the services of a physician. Demobilization of medical officers will also be the concern of this board. Dr. Haywood will need, and requests, a continuation of the help of local Procurement and Assignment Boards in making decisions in the important work that the state agency is doing, and will have to continue to do. He extends his thanks to the local boards for their cooperation and support.

Committee To Revise the Industrial Fee Schedule. Your Committee To Revise the Industrial Fee Schedule has experienced a busy year and has put much time-consuming effort in this important work. Under the able and conscientious chairmanship of Dr. Harry Winkler with the assistance of his two original associates on the committee, Drs. J. F. Robertson and Glenn Frye, this committee has, under difficult circumstances, made a fine contribution. Dr. Winkler will submit a report and some important recommendations when circumstances permit[4]. I met with this committee and the Industrial Commission at one of their numerous and time-consuming meetings. This committee has obtained the adoption of a new fee schedule which the Industrial Commission has not

as yet had published. Dr. Winkler and his committee feel that the arbitrary reduction of fees by the Industrial Commission is, in most instances, entirely unwarranted. The committee is considering the possibility of making some test cases in the courts of the right of the Industrial Commission to continue this procedure. The committee feels, along with the president, that this method should not be employed without the sanction of the House of Delegates of the Society. In the meantime, I recommend that every member of the Society make it a point to familiarize himself with this situation in order that it may be intelligently handled when conditions permit. In behalf of the Society, I express profound appreciation of the services rendered by Dr. Winkler and his committee, and recommend that the committee be continued.

Board of Medical Examiners

The new Board of Medical Examiners, elected at the last annual meeting, have assumed their duties. By invitation, I attended one of their meetings. The board is well organized, with Dr. Charles W. Armstrong as president and Dr. Ivan Procter as secretary. It is operating as a state unit for the benefit of the citizens of the commonwealth and is maintaining the high standards of medical practice in our state. It is the purpose of this board to license all properly qualified and desirable applicants. It is likewise the purpose of this board to refuse unqualified and undesirable applicants who will, in their opinion, jeopardize the health of our people and lower the high standards of medical practice to which our people are accustomed. I commend the purposes and work of this board and, in behalf of the Society, express to its personnel our thanks and best wishes for an administration of usefulness and accomplishment. It is recommended that this board collaborate with the Legislative Committee in the preparation of a basic science law for introduction at the next meeting of the legislature.

Hospital Saving Association

The Hospital Saving Association has made steady progress during the past year, both in the number of people protected and in resources. Its report will be published in the NORTH CAROLINA MEDICAL JOURNAL[5]. Further cooperation of members of the Medical Society, individually and collectively, is needed, and is recommended by this administration.

Auxiliary

The Auxiliary to the Medical Society has, through the able leadership of its President, Mrs. John T. Saunders, and its committee chairmen, carried on its useful and constructive work under difficult circumstances. A report of their activities will, when conditions permit, be submitted. For the efforts of the Auxiliary in this trying and difficult period the Society, through this administration, and its Advisory Committee chairman, Dr. Rachel Davis, extends its thanks.

State Board of Health

The North Carolina State Board of Health continues its able and efficient program. Organized medicine is appreciative of the work of the Health Department and expresses its desire to cooperate and aid the State Board of Health in all of its work for the betterment of the health of our citizens. In my message to the Society last spring[1] I outlined in some detail my ideas as to the correlation of the State Health Department with the work of organized medicine. The recommendations then made are applicable at the present time.

Numerous other committees have been at work during the year. They will, when conditions permit, submit their reports to the Society. For their efforts, this administration thanks the membership of these committees, and each individual chairman.

Conclusion

And now to you members of the Executive Committee the Society, through its president, expresses its thanks and appreciation. Circumstances have required that you meet often and for many hours. I am grateful for your fine contribution, your expressed opinions, and, above all, for your effective and loyal support in the difficult year during which we have all labored together.

Secretary McMillan has been a constant source of inspiration and comfort to us all. I express to him, for the Society and for its officers, genuine appreciation for his untiring energy, his real efficiency, and his fine consideration and understanding. He will make his own report to you[6], embracing the

5. Page 344.

6. The report and the minutes of the Executive Committee meeting are published in this issues, on pages 338 and 336.

report of the Finance Committee and the continued fine performance of the NORTH CAROLINA MEDICAL JOURNAL under the editorship of the able and beloved Wingate Johnson.

I wish to pay my own personal tribute to Secretary McMillan. During the thirteen months of close association I have leaned heavily on his advice and counsel. His knowledge of the affairs of the Society, his sound common sense, the cheer and warmth of his character, his constant willingness to be of help, particularly when the going was tough, his fine consideration of the Society as a whole, and his continued efforts to obtain the viewpoint of all of its members cannot be commended too highly. One cannot help but marvel at what he accomplishes for the Society, while at the same time carrying a busy and demanding practice. For all this, I am profoundly grateful to Secretary McMillan, and I express to him again my affection, respect and abiding friendship.

And now in conclusion will you pardon a personal word? To me the year has been one of happy occupation and, I hope, a measure of useful accomplishment. I am deeply grateful for the honor and the opportunity it has afforded, and am happy for new friendships formed and old friendships renewed. So little can be accomplished in the short period of a year. Many problems and questions have presented themselves during this time to the officers of your Society. This administration, we know, has not always found the right answers, but the Society can rest assured that we have honestly and with deep humility attempted to realize the existence of the problems and, in the same manner, endeavored always to ask ourselves the right questions. Furthermore, I have tried to discharge the duties of this office in a manner to commend the profession and its organization to the citizens of the commonwealth. Time will tell whether or not I have succeeded. I hope that we leave behind us a situation which common sense can deal with successfully and that those who succeed us will continue to be cognizant of the problems as they exist, will continue to ask themselves the right questions, and will eventually find the right answers. In such a spirit, I again express to you my appreciation and friendship and wish for you and the Society Godspeed.

ROENTGENOLOGICAL AIDS IN THE DIFFERENTIAL DIAGNOSIS OF ACUTE ABDOMINAL CONDITIONS

J. P. ROUSSEAU, M.D.
and
L. M. MORRIS, M.D.
WINSTON-SALEM

Roentgenologists are aware of the value of the roentgen examination in the preoperative diagnosis and localization of certain acute abdominal conditions. Stewart and Illick[1] have pointed out the negative as well as the positive information of value that may be obtained in many such cases by exploratory films of the abdomen made while preparations for operation are going forward. The fact should not be overlooked, however, that roentgen examination and transportation may put added strain on the patient, and every precaution should be taken to conserve his strength. The success of the examination depends largely on close cooperation between the attending physician and the roentgenologist. If best results are to be obtained, the referring physician should supply the roentgenologist with all the available clinical information which is pertinent to the case.

Drastic methods of preparation are contraindicated in all cases of suspected acute abdominal disease. No preliminary preparation, however, is necessary to carry out the simple exploratory film study of the abdomen. Such a study has been found to be of considerable value in the following acute abdominal conditions, and may be done without unnecessary delay in operation or harm to the patient.

Renal and Gallstone Colic

The frequent demonstration of a renal calculus or gallstone as the cause of acute abdominal colic is so well known that it need not be elaborated upon in this discussion. Failure to demonstrate an opaque stone on the plain film of the abdomen is of positive as well as negative value in the differential diagnosis of an acute abdominal condition.

Read before the Section on the General Practice of Medicine and Surgery, Medical Society of the State of North Carolina, Pinehurst, May 2, 1944.

From the Department of Roentgenology, the Bowman Gray School of Medicine of Wake Forest College, and the North Carolina Baptist Hospital.

1. Stewart, W. H. and Illick, H. E.: X-Ray's Contribution to the Diagnosis of "Acute Abdomen," Am. J. Digest. Dis. and Nutrition 1:185-189 (May) 1934.

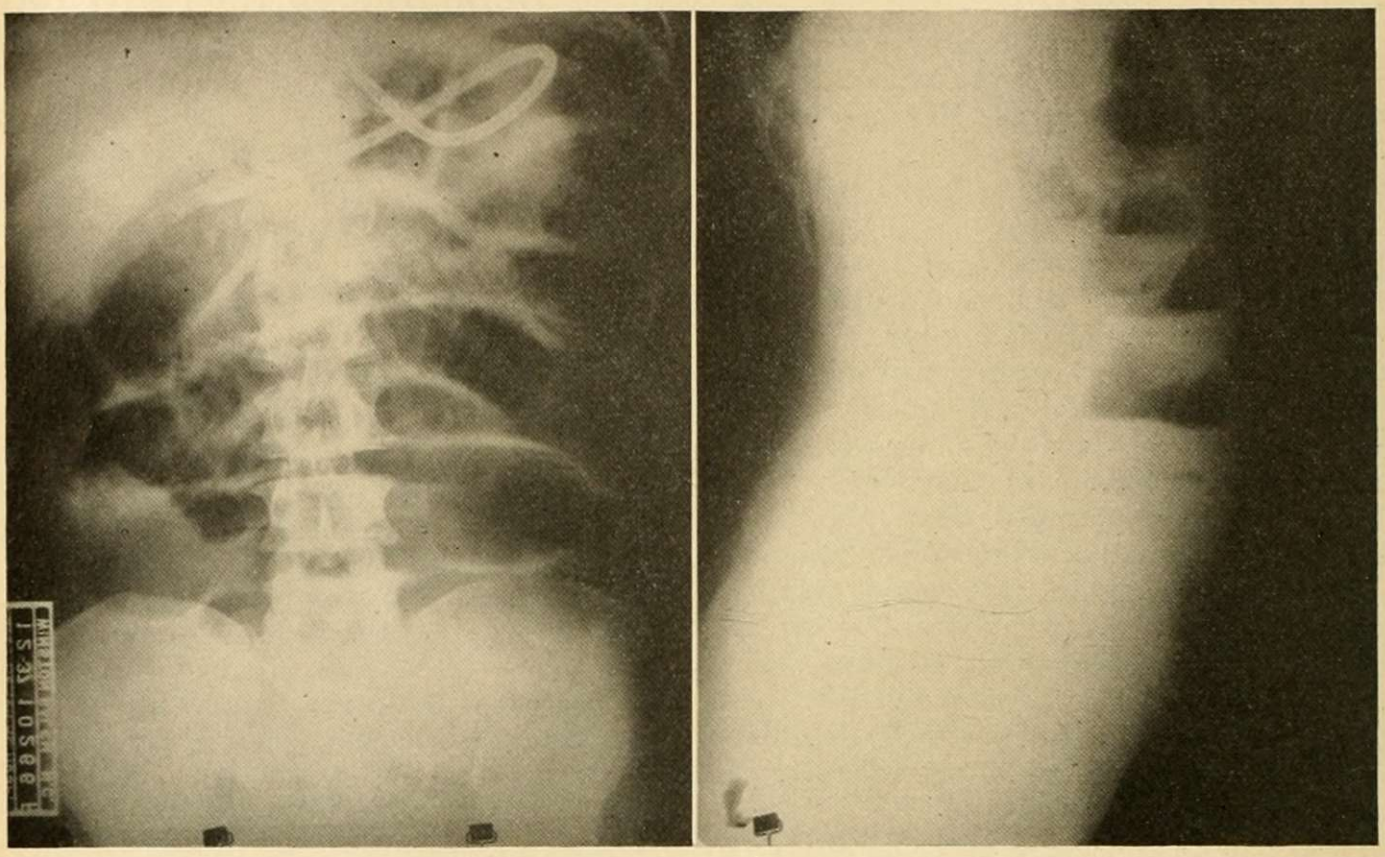


Fig. 1

Intestinal Obstruction

The roentgen diagnosis of this condition is based primarily on the demonstration of fluid levels in the gas-distended gut. These may be shown on a scout film of the abdomen made with the patient in the erect or lateral decubitus position. The immediate results of obstruction are the accumulation of intestinal contents proximal to the point of obstruction and emptying of the intestine distal to this point. Gas accumulates within a few hours, thus supplying the condition necessary for the formation of fluid levels.

The chief roentgen findings in cases of acute intestinal obstruction are dilated, gas-filled loops of bowel showing fluid levels. Because of increased peristalsis, the fluid is sometimes seen at different levels in two segments of the same coil, and on fluoroscopy the levels will be seen to rise and fall[2].

If the findings revealed on the scout film of the abdomen are correctly evaluated, the diagnosis of dynamic intestinal obstruction as well as its exact location at a definite point in the small or large bowel is possible without the administration of the opaque barium meal. The meal should not be given in the presence of mechanical obstruction unless a Miller-Abbott tube has been successfully introduced into the intestine, because the risk of making a partial obstruction complete is too great. It is often possible, without giving the meal, to locate the point of obstruction from scout films alone, and by correlation with the clinical history to arrive at a conclusion concerning its cause.

Small bowel obstruction (fig. 1)

When the obstruction is in the small bowel, the characteristic small bowel pattern — variously described as "step-ladder," "stacked-coin," or "herring-bone" pattern— will be seen, and the dilated loops of bowel will be found in the mid-abdomen. The obstructed loop or loops will often assume an inverted "U" shape because of increased tonus. The air bubble above the fluid level will be greater in width than in height, and the bowel distal to the point of obstruction will be empty, free of gas or fluid, and collapsed. If peritonitis has developed, with its associated accumulation of free fluid in the peritoneal cavity, the loops of dilated bowel will be seen to be separated farther than is normal.

Large bowel obstruction (fig. 2)

If the obstruction is in the large bowel, the dilated loops of bowel with fluid levels are

2. Hoeyer, Andreas: Roentgen Diagnosis of Intestinal Obstruction, Acta Radiol. 19:409-432 (Nov. 30) 1938.

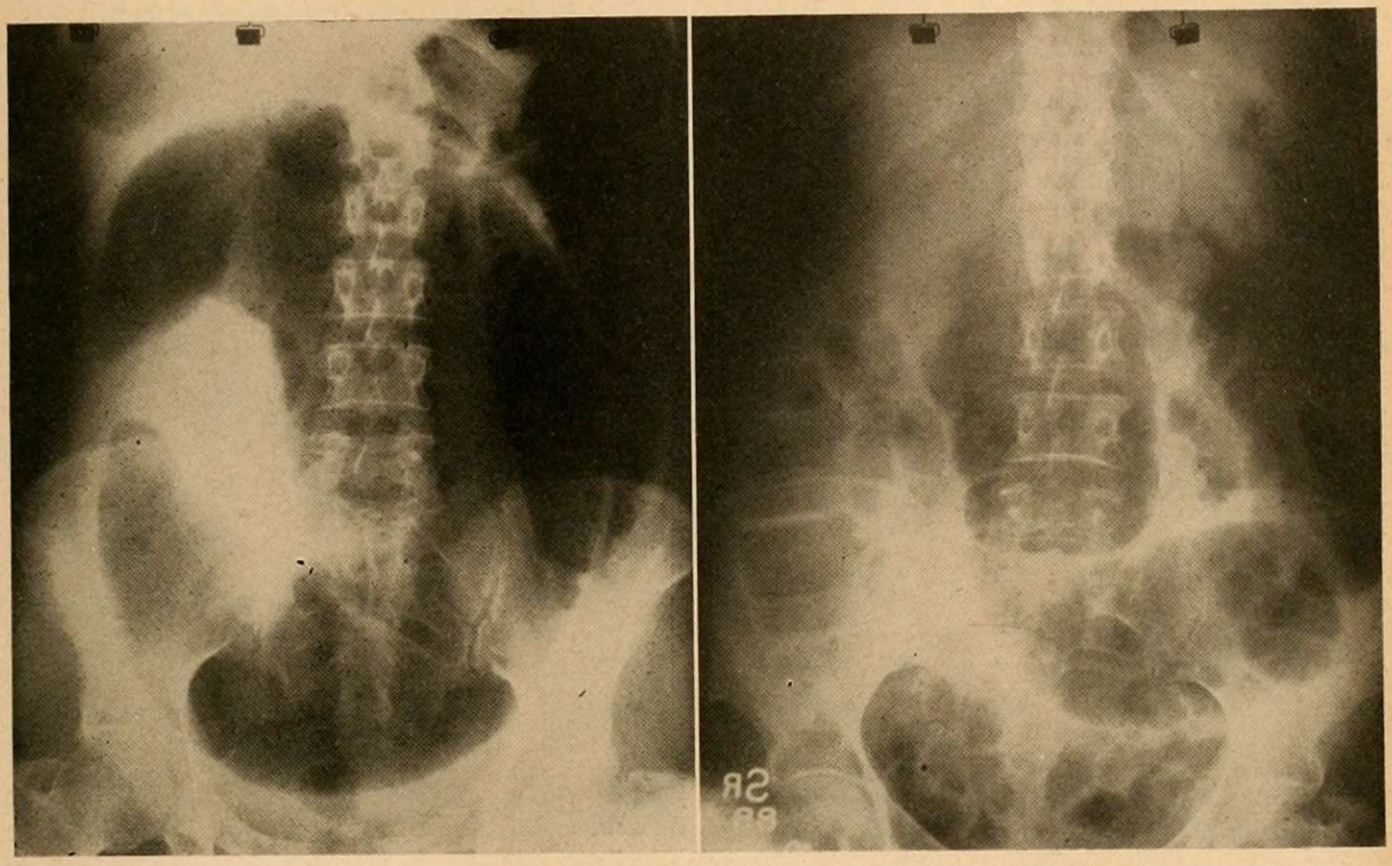


Fig. 2

seen in the peripheral lateral portion of the abdomen, the position occupied by the colon. The fluid levels are greater in height than those seen in cases of small bowel obstruction. The widely spaced thick haustral bands characteristic of the colon are seen along the margin of the dilated loops instead of the closely spaced Kerkring folds of the small bowel.

Ileus

Both small and large bowel obstruction of dynamic origin must be differentiated from paralytic ileus. Sante[3] states that in dynamic intestinal obstruction, there is a mechanical impediment to the normal passage of material through the bowel. There should, therefore, be no gas or fecal material in that portion of the bowel distal to the point of obstruction, and the rectum should be collapsed. In paralytic ileus there is no such impediment to the passage of material through the intestine. The bowel is inactive and distended with gas, and is unable to pass its contents along because of paralysis. Roentgenologically, no localized point of obstruction is seen, and gas is present throughout the bowel, the rectum being dilated equally as much as the rest of the bowel.

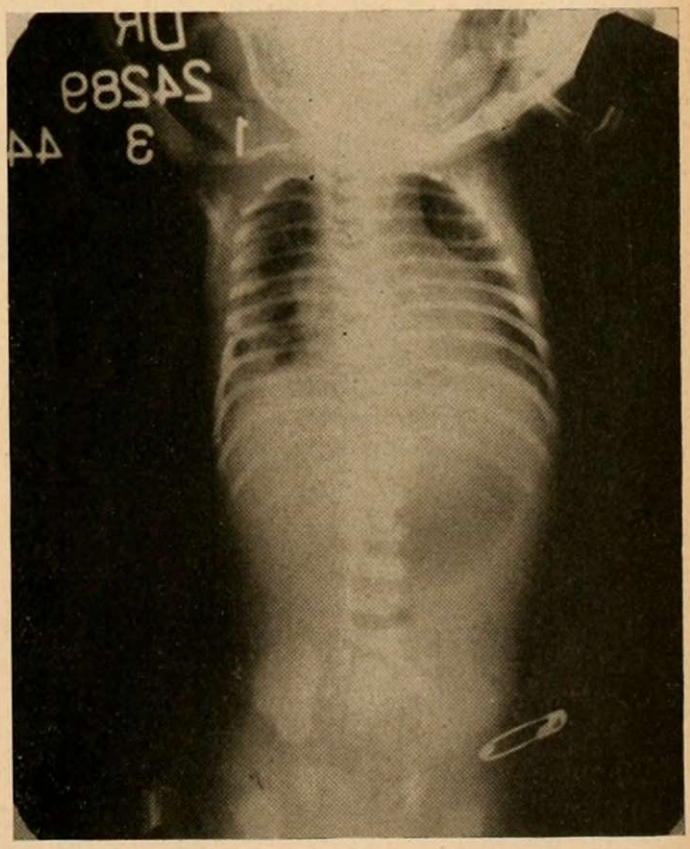


Fig. 3

3. Sante, L. R.: Principles of Roentgenological Interpretation, Ann Arbor, Mich., Edward Brothers, 1942, p. 263.

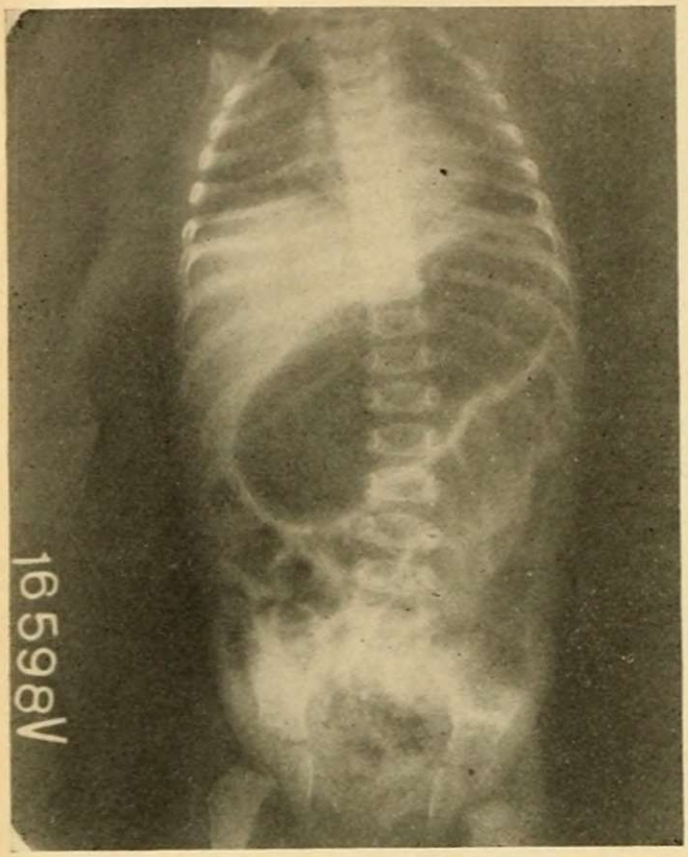


Fig. 4

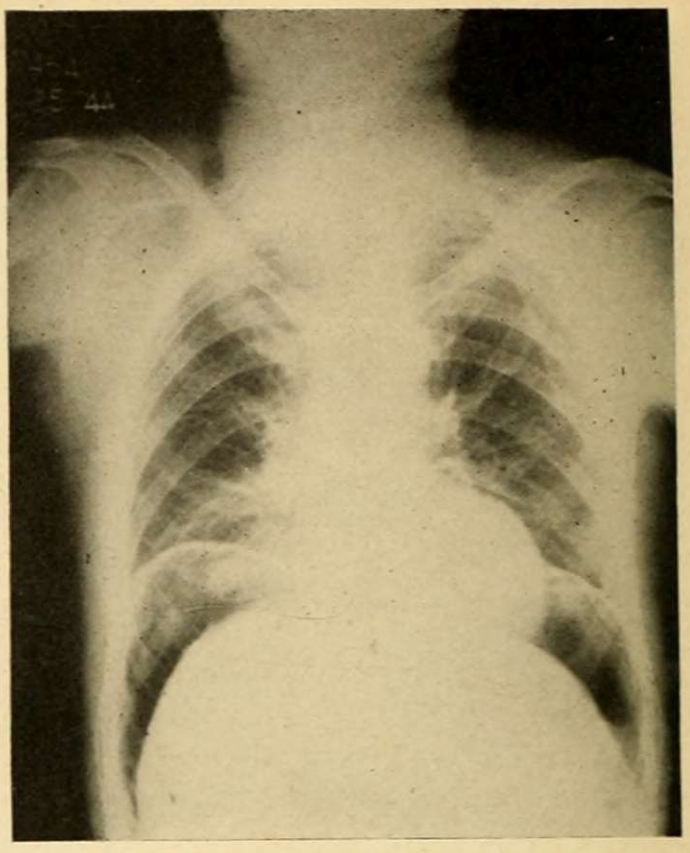


Fig. 5

Intestinal obstruction in the newborn

According to Duckett[4], intrinsic congenital obstruction results from malformation of the primitive gut in early fetal development, so that segments of the bowel are occluded by solid fibrous cords. Extrinsic obstruction of the small intestine also occurs in newborn infants as the result of abnormal bands of peritoneum constricting the lumen. Clinically, the existence of congenital intestinal obstruction is manifested chiefly by persistent vomiting of bile-stained fluid.

The roentgen examination will confirm the clinical impression, showing a gas-distended shadow of the small bowel proximal to the point of obstruction. This is most often seen high in the duodenum or jejunum. If it is in the duodenum, the stomach will be more distended with gas than is normal, and the normal gas shadows will not be seen in the small intestine and colon distal to the point of obstruction (fig. 3). The opaque meal should not be given to these infants, because of the danger of aspiration during vomiting and the possibility of interference with subsequent operative procedures by collected masses of barium. The mortality rate in these cases is high and is directly proportional to the time elapsing before operation. The sooner the diagnosis is made, the more favorable the prognosis.

4. Duckett, J. W.: Intestinal Obstruction in the Newborn, Ann. Surg. 116:321-333 (Sept.) 1942.

Hypertrophic Pyloric Stenosis

The clinical symptoms of congenital hypertrophic pyloric stenosis are well known, and the majority of cases can be diagnosed without x-ray examination. The value of the scout film of the abdomen as confirmatory objective evidence, however, is not generally recognized. In these cases x-ray examination of the abdomen will reveal marked gaseous distention of the stomach, with abrupt termination of the distended shadow at the pylorus. A small or normal amount of gas may be seen distributed throughout the small bowel and colon if the pylorostenosis is not complete. The giving of the opaque meal is not necessary in these cases, as it merely confirms a diagnosis already evident from the plain film study (fig. 4).

Perforation of a Hollow Viscus

The clinical picture of a perforated abdominal viscus may at times be a perplexing diagnostic problem. It must be differentiated from acute diaphragmatic pleurisy associated with lower lobe pneumonia, and from acute appendicitis, acute intestinal obstruction, biliary and renal colic, coronary throm-

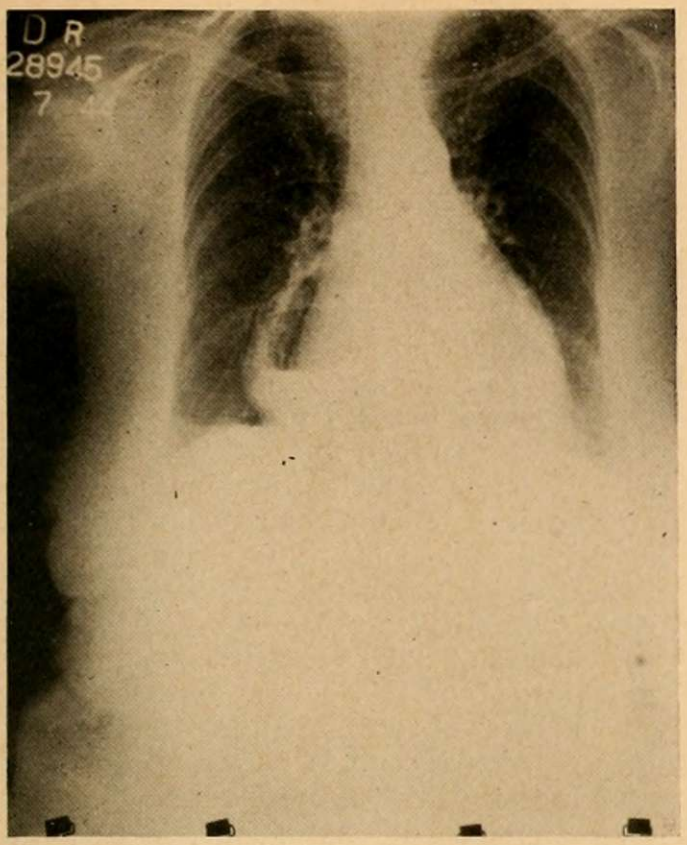


Fig. 6

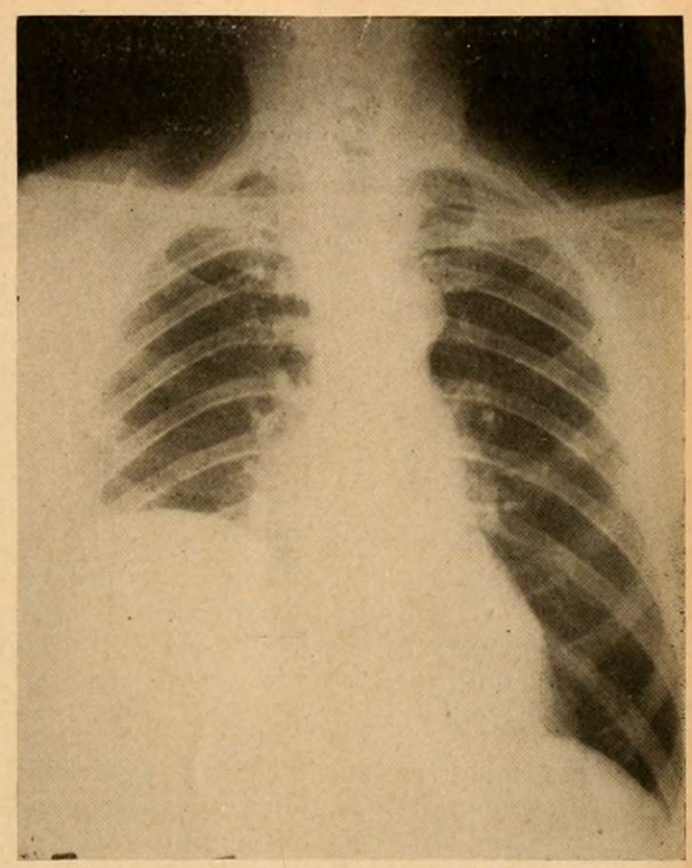


Fig. 7

bosis with predominant gastro-intestinal symptoms, and acute mesenteric thrombosis.

Free gas is present in the abdominal cavity in 85 to 90 per cent of the cases of perforation due to gastric or duodenal ulcer. Skarby[5] states that the absence of free gas in the remaining cases probably depends upon (1) the position assumed by the patient at the time of the perforation or after the perforation, (2) the degree of fullness of the stomach at the time of perforation, (3) the size of the perforation, (4) the location of the perforation, and (5) the time interval between the perforation and the x-ray examination. Thus, the failure to demonstrate a gas shadow in the peritoneal cavity does not rule out perforation of a gastric or duodenal ulcer. If free gas is seen it clinches the diagnosis, but if it is not seen the negative finding must be viewed with a certain degree of skepticism.

Hulten[6] found the most common cause of pneumo-peritoneum to be perforation of a peptic ulcer. Other causes of pneumoperitoneum, which must be differentiated from ruptured ulcer chiefly by clinical findings, are (1) perforation of the intestine by gunshot wounds, (2) perforation of the intestine in cases of obstruction, (3) ruptured appendix, (4) the Ruben test for pregnancy, (5) laparotomy, (6) peritonitis due to gas-forming organisms, and (7) injuries to the thorax causing pneumothorax and laceration of the diaphragm, through which air may pass from the thorax into the peritoneal cavity.

The best method of demonstrating free gas in the abdominal cavity is by a plain film of the abdomen made with the patient in the erect position or lying on his side. The free gas will be seen as a strip of transparency beneath the dome or domes of the diaphragm or along the lateral abdominal gutter (fig. 5).

Traumatic Lesions

Trauma to the thorax and abdomen with serious pleuro-pulmonary, diaphragmatic, and abdominal complications is not unusual. In these accidents the correct diagnosis is often difficult and in many instances impossible without the aid of scout films of the abdomen and fluoroscopic or plate examination of the chest.

Rupture of the diaphragm

In traumatic rupture of the diaphragm there may be herniation of the abdominal viscera or of a single viscus into the thorax. Dense opacities in the lower lung fields lat-

5. Skarby, H. G.: Freies Gas in der Bauchhoehle als Zeichen von Perforation, Acta Radiol. 21:263-273 (June) 1940.
6. Hulten, O.: Ueber den Nutzen von Roentgendiagnostik bei akuten Bauchfaellen, Acta Radiol. 21:471-482 (Oct.) 1940.

eral to the heart borders, plus gas and a fluid level, almost certainly mean herniation of the stomach (fig. 6). In other cases the characteristic loops of bowel may be seen, or homogeneous opacities due to herniated omentum, liver, spleen, or kidney are at times identified. Additional information of value is obtained in doubtful cases by giving the patient a swallow of the opaque barium mixture, which will positively identify the position of the stomach and the small and large bowel.

Subphrenic hematoma

In traumatic subphrenic hematoma the roentgen examination will show elevation and fixation of the diaphragm on the affected side (fig. 7). The diagnosis depends on an accurate history of the injury, as well as on the x-ray findings.

Rupture of the kidney (fig. 8)

In suspected traumatic rupture of the kidney, films should be made of the entire urinary tract, the ribs, the spine, and the pelvis. On these one may see fractures of the ribs, spine, or pelvic bones, with displaced fragments in close proximity to the kidneys or bladder. If the kidney is injured, its shadow will be larger than normal, indistinct in outline, or blurred completely. There will also be loss of the psoas muscle outline on the affected side. The intravenous or retrograde pyelogram will show spilling of the opaque media into the kidney substance or into the perirenal spaces.

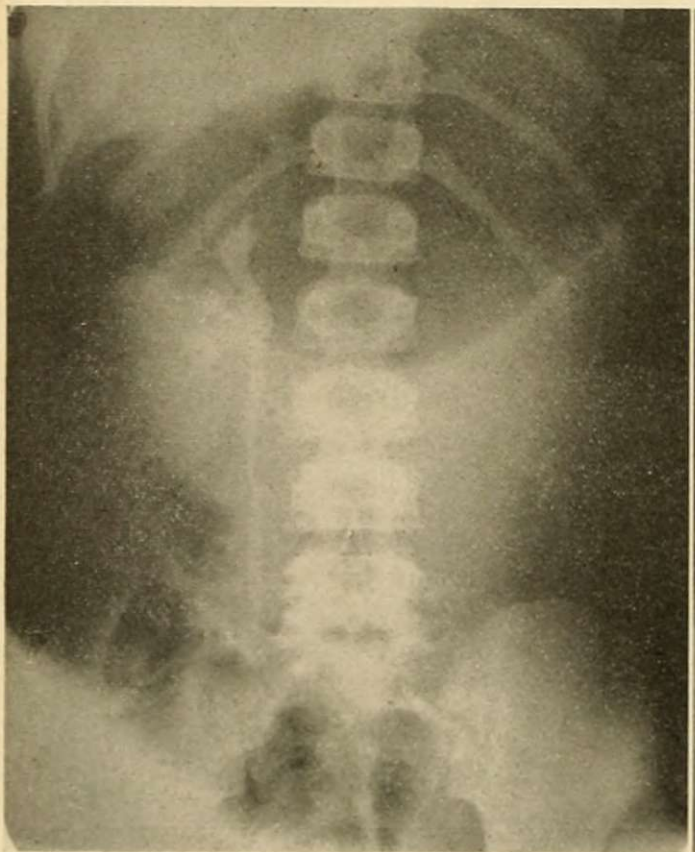
Lacerated spleen (fig. 9)

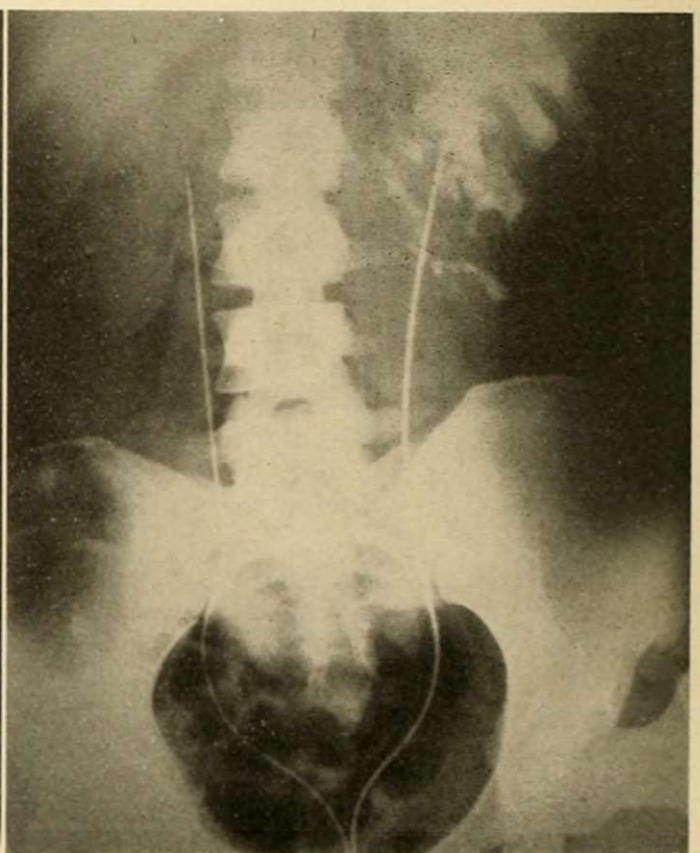
Laceration of the spleen may be evident on plain films of the abdomen within a few hours after the accident. Solis-Cohen and Levine[7] described the typical roentgen changes in patients with lacerated spleens and reported 3 cases proved by operation. The chief roentgen finding is an enlarged splenic shadow which is indistinct in outline or lost entirely as a result of intracapsular splenic or perisplenic hemorrhage. The blood passes along the gastrosplenic ligament in close proximity to the greater curvature of the stomach, and causes irregular nodular indentations of this border of the stomach. The stomach shows more dilatation with gas than is normal, and is displaced downward and to the right. The displacement and deformation are directly proportional to the degree of hemorrhage.

Inflammations

Most observers have found the roentgen examination to be of great value in the diag-

7. Solis-Cohen, L. and Levine, S.: Roentgen Diagnosis of Lacerated Spleen, Radiology 39:707-710 (Dec.) 1942.





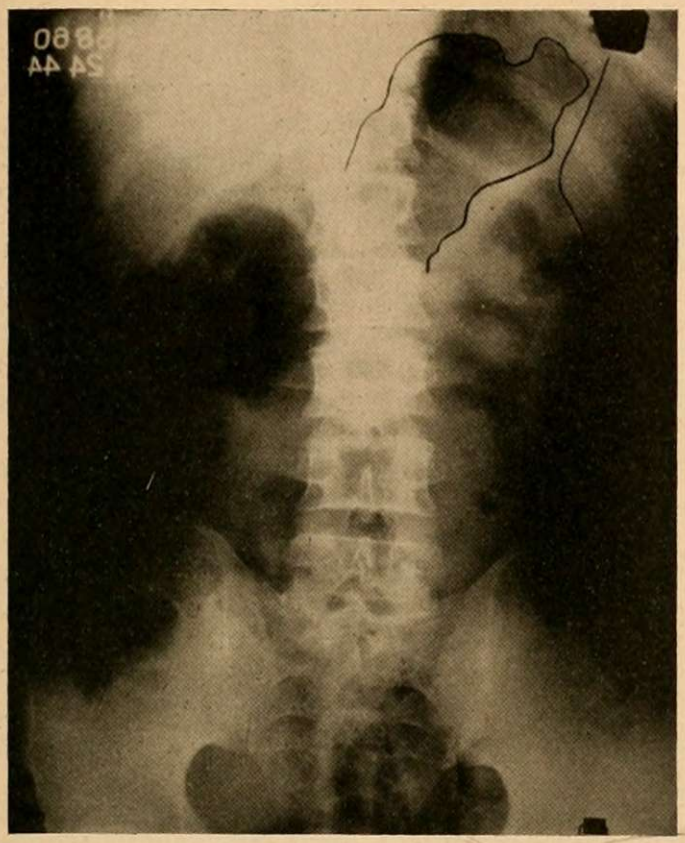


Fig. 9

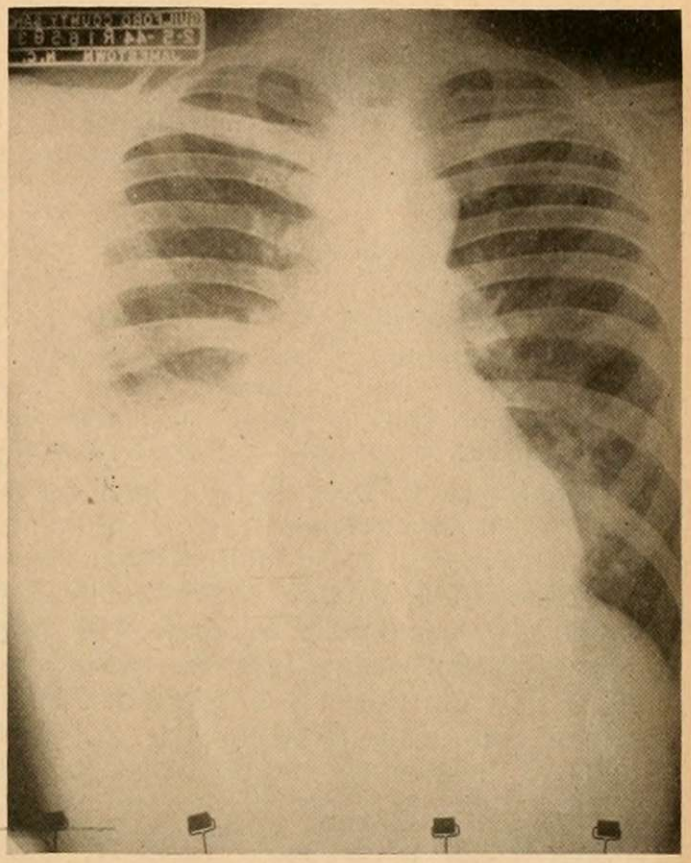
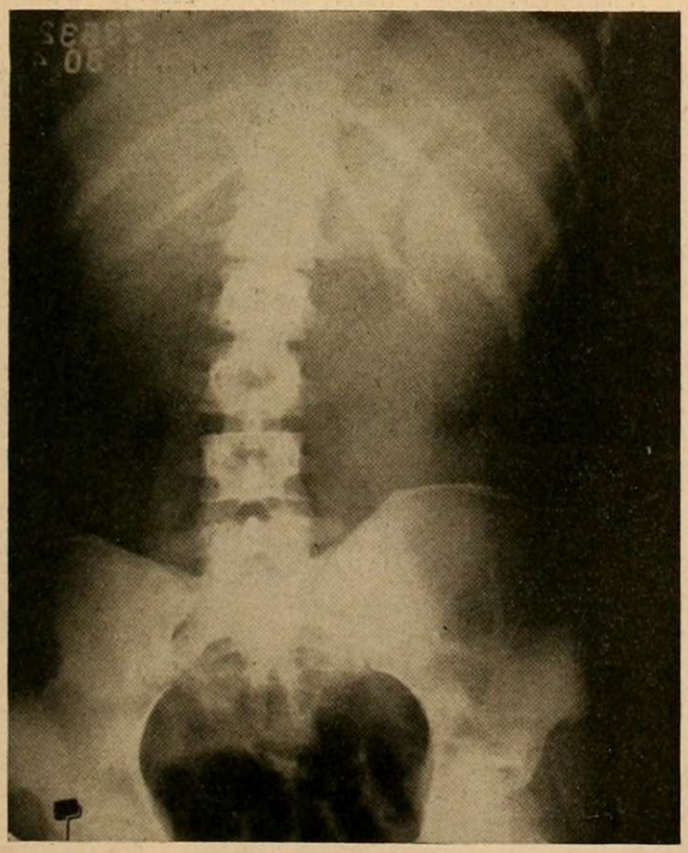
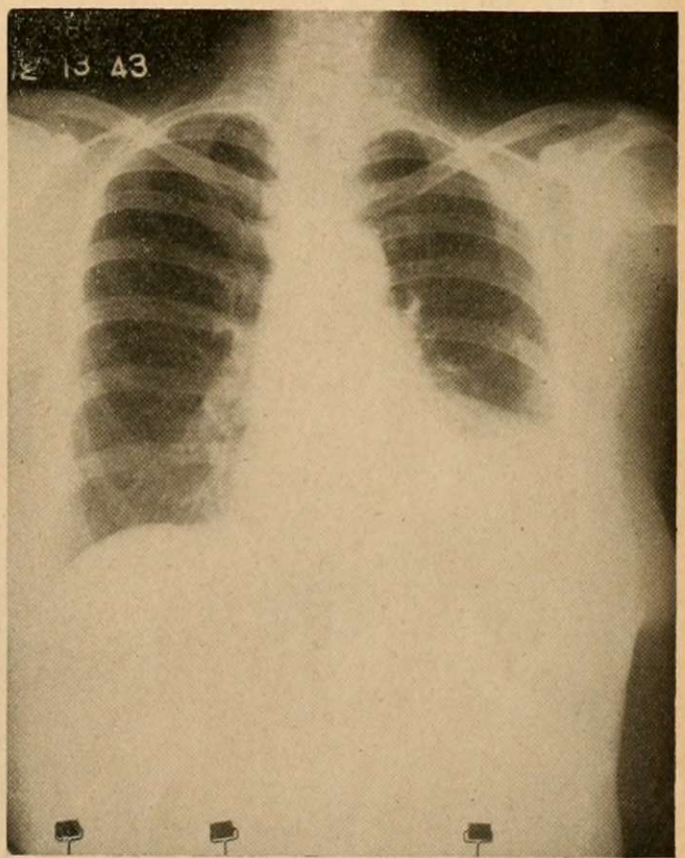


Fig. 10





nosis of acute inflammatory diseases within the abdomen. The lower lung fields and diaphragmatic outlines must be included on the films, and it is often necessary to supplement the films by fluoroscopic examination in order to note the diaphragmatic excursions.

Subphrenic abscess

Neuhof and Schlossmann[8] have found that the roentgen findings in patients with subphrenic abscesses are often distinctive and pathognomonic. There will be elevation and fixation of the diaphragm on the side of the lesion. It is generally accepted that fixation of the diaphragm is more significant than is elevation. Most patients have irregular mottled areas of non-specific pneumonitis and transverse bands of focal atelectasis in the lower lung field above the diaphragm, and 25 to 30 per cent of the cases will show pleural effusion (fig. 10). An additional finding, if the abscess is on the left side, is an increased space between the gas-filled fundus of the stomach and the under surface of the diaphragm. This is due to a subphrenic collection of fluid, which displaces the stomach downward.

Perinephritic abscess

Perinephritic abscess (fig. 11) is indicated on the scout film of the abdomen by an unusual amount of gas in the stomach or colon; the latter is seen to be displaced downward and laterally away from the abscess in about half the cases. Approximately 70 per cent of the patients will show scoliosis of the lumbar spine, with the concavity of the curve toward the lesion. The kidney shadow on the affected side will be too large, indistinct, or lost completely, and the psoas muscle shadow on the same side will be indistinct or obliterated. Diminished renal function and anterior displacement of the kidney pelvis and the upper end of the ureter will be demonstrated on the intravenous urogram. One will also find pneumonitis, atelectasis, pleural effusion, and elevation of the diaphragm, with fixation, on the affected side in about 16 per cent of the patients with perirenal suppuration. Shane and Harris[9] conclude that, while these findings are not pathognomonic, they are of relatively great value when correlated with the clinical manifestations.

Pancreatitis

Acute pancreatitis or pancreatic abscess may be revealed by the presence of an abnormal soft tissue shadow in the mid-abdomen. This shadow is seen to be lateral to the up-

8. Neuhof, H. and Schlossmann, N. C.: Left Subphrenic Abscess, Surg., Gynec., & Obst. 75:751-758 (Dec.) 1942.

9. Shane, J. H. and Harris, M.: Roentgenologic Diagnosis of Perinephritic Abscess, J. Urol. 32:19-26 (July) 1934.

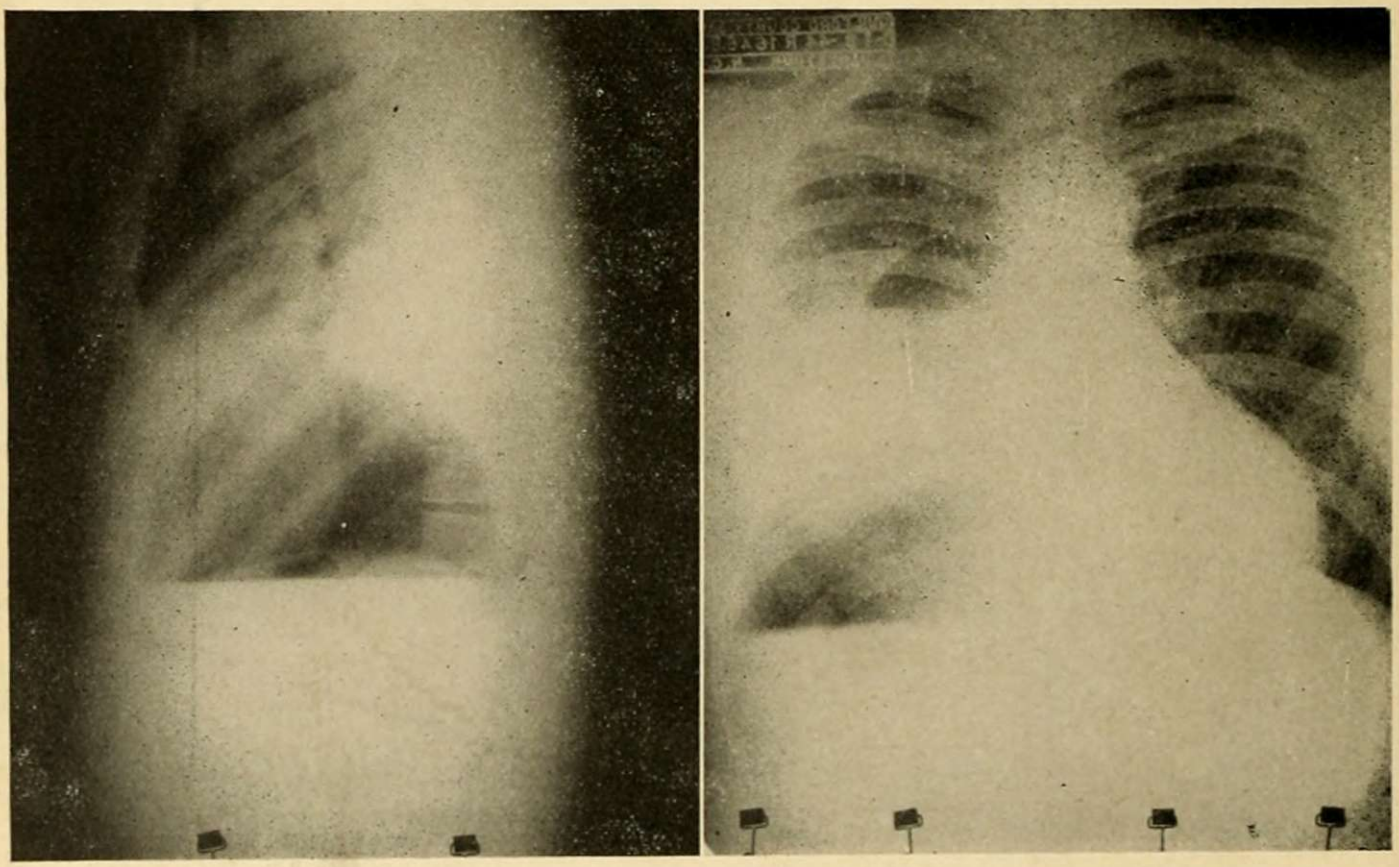


Fig. 13

per lumbar vertebrae and is separable from the shadows of the liver, kidneys, and spleen. Borak[10] found that elevation of the diaphragm, with limited diaphragmatic excursion, pneumonitis, atelectasis, and pleural effusion on the left side (fig. 12), is probably due to neoplasm or inflammatory tumefaction of the pancreas, if renal and perirenal disease can be ruled out by additional clinical findings.

Other intra-abdominal abscesses

Appendiceal, hepatic or pelvic abscesses may be diagnosed with a considerable degree of accuracy. If sufficiently large, the abscess will be seen as an abnormal soft tissue shadow displacing the bowel or stomach away from the lesion. If the film is made with the patient in the erect position, the finding of air and a fluid level will help locate the abscess (fig. 13). Air and a fluid level in the right lower quadrant strongly suggest appendiceal abscess. Beck, Koucky, and Baker[11] feel that it is possible to show on the film whether the abscess is lateral or medial to the cecum. This point is of extreme importance in the decision as to whether an extraperitoneal approach can be made without contamination of the uninvolved bowel and peritoneum.

Conclusions

(1) Exploratory films of the abdomen are often of great value in the differential diagnosis of the acute intra-abdominal conditions.

(2) Negative or doubtful findings should not be accepted as final evidence against the presence of a serious intra-abdominal condition requiring immediate operation.

(3) In suspected cases of intestinal obstruction the scout film should always precede the administration of barium by mouth. In most cases the scout film will reveal the presence or absence of obstruction, as well as the approximate location of the obstruction.

(4) The fluoroscopic or film examination of the chest, with particular reference to the lower lung fields and diaphragm, is an important part of the examination. Pathological changes in these structures are often the first and only roentgen evidence of serious intra-abdominal disease.

(5) With care, roentgen examination can be carried out without undue discomfort to the patient or delay in the operation.

10. Borak, J.: Roentgen Examination of Pancreatic Tumors, Radiology 41:170-180 (Aug.) 1943.
11. Beck, W. C., Koucky, J. D., and Baker, M.: Diagnosis and Localization of Intra-Abdominal Abscesses by Roentgenological Methods, Am. J. Surg. 55:113-117 (Jan.) 1942.

A REVIEW OF RECENT IDEAS CONCERNIING DIARRHEA IN INFANTS

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During the past ten years, marked advances have been made in the prevention and treatment of diarrhea in infancy. In spite of these, diarrhea and enteritis still rank third in North Carolina as the cause of death in children under 5 years of age[1]. We therefore feel it important to review and summarize briefly the more recent ideas on this subject.

Classification

As the term diarrhea is only a name for a symptom, a brief etiologic classification of the diarrheas (modified from Cook[2]) is given below as a basis for this discussion.

I. **Parenteral diarrhea.** This is quite frequent and may result from any parenteral infection or from fever or excessive external heat. These conditions cause a decrease in stomach acidity, thus allowing invasion of the upper duodenum and stomach by Escherichia coli and other related organisms.

II. **Enteral diarrheas.** These result from various agents acting directly on the gastrointestinal tract and may be subdivided as follows:
   A. Irritative—due to improper feedings, improper food, medicines, and so forth.
   B. Toxic—due to contamination of food by saprophytic organisms. This is a true food poisoning.
   C. Specific—due to infection with various organisms such as dysentery bacilli, Endamoeba histolytica, typhoid and paratyphoid bacilli, and the Salmonella group.
   D. Non-specific—probably due to infection with miscellaneous organisms which are as yet poorly defined.
   E. Epidemic diarrhea of the newborn—etiology not yet established.
   F. Allergic—due to ingestion of some substance to which the patient is allergic.

Prevention

The forms of diarrhea most frequently seen in infants during hot weather are parenteral diarrhea and specific or non-specific infectious, enteral diarrhea[3]. For the last

1. Personal communication from N. C. State Department of Vital Statistics, June, 1944.
2. Cook, M. M.: Diarrheal Diseases in the Newborn Infant, J. Missouri M. A. 40:64-67 (March) 1943.
3. Hormaeche, E., Surraco, N. L., Peluffo, C. A., and Aleppo, P. L.: Causes of Infantile Summer Diarrhea, Am. J. Dis. Child. 66:539-551 (Nov.) 1943.

two types of diarrheas, effective preventive measures are available. These include such general hygienic measures as[4]:

1. The protection of food and milk from contamination and spoiling by adequate screening and refrigeration.

2. A high fluid intake, especially during very hot weather.

3. The avoidance of overfeeding, especially during hot weather.

4. The use of frequent baths during hot weather to prevent overheating.

4. Sterilization of all water not known to be safe for drinking by boiling.

Specific preventive measures against typhoid fever are available, in the form of typhoid vaccine. Children over 1 year of age should be encouraged to take this immunization, especially if they live in suburban or rural areas.

Lactic acid milk is of great value. Lactic acid may be added to either whole or evaporated milk formulas, in the proportion of one teaspoonful of U.S.P. lactic acid to one quart of whole cow's milk. The advantages of this milk are many[4]. Growth of many of the saprophytic organisms which normally contaminate fresh milk is checked by the acid content. The curds of the acid milk are finer and more easily digested, and the acidity shortens the emptying time of the stomach. Plain cow's milk has a buffering action three times greater than that of breast milk, and decreases the stomach acidity by buffering the hydrochloric acid in the stomach. At the height of digestion, the stomach acidity of a breast-fed infant has an average *p*H 3.6, while in a child fed on plain cow's milk the acidity will usually not exceed *p*H 5.3. Acidifying cow's milk prevents this buffering action and, by keeping the contents of the stomach and upper duodenum acid, prevents the bacteria of the lower duodenum from migrating upward. Another most practical point is that lactic acid milk does not have to be kept on ice[5], as does plain milk. Lactic acid evaporated milk may be kept in an open dish at room temperature for three days before molds appear and for five days before bacteria appear.

Treatment

The treatment of diarrhea varies somewhat according to the individual case. There is, however, a certain chain of events which occurs in any case of diarrhea regardless of the etiology. This chain must be broken if the patient is to survive. The sequence of events has been described before[6] but may be summarized briefly here.

With the onset of the diarrhea there is an increased loss of fluid from the intestinal tract, usually coupled with a diminution in fluid intake. These factors lead to loss of water from the blood plasma, anhydremia, and finally to loss of intracellular fluid and dehydration. The decreased blood volume and increased blood viscosity decrease the efficiency of the circulation. With diminished blood supply to the kidneys, renal function is decreased and there is a consequent retention of waste products such as urea, sulfates, and phosphates. As base is lost through gastrointestinal secretions and acid is retained in the body, the bicarbonate to carbonic acid ratio of 20:1 is reduced and acidosis results. In severe cases acid may be combined with ammonia in the kidney and excreted. This compensation is limited, and when it fails there will be an actual drop in the blood *p*H.

In addition, there is the factor of starvation. With no food being ingested, the body tissues are broken down rapidly. Depletion of the body glycogen furthers the production of ketone bodies, so that ketosis is present in addition to the acidosis. Frequently the serum proteins become markedly depleted and the number of red blood corpuscles is reduced; but the marked anhydremia may completely mask these signs until after adequate fluid is administered, when edema and anemia will be evident.

The treatment must therefore be aimed at at (a) restoration of the normal fluid and electrolyte balance, (b) eradication of the cause of the diarrhea, and (c) establishment of a good feeding schedule.

4. Marriott, W. McK. and Jeans, P. C.: Infant Nutrition, St. Louis, The C. V. Mosby Co., 1941, chap. 9.
5. Taylor, H. G. and Roberts, R. W., Jr.: Whole Lactic Acid Evaporated Milk Does Not Require a Refrigerator, J. Pediat 23:307-309 (Sept.) 1943.
6. (a) Marriott, W. McK., Hartmann, A. F., and Senn, M. J. E.: Observations on the Nature and Treatment of Diarrhea and the Associated Systemic Disturbances, J. Pediat. 3:181-191 (July) 1933.
   (b) Hartmann, A. F.: Acidosis, Alkalosis, and Ketosis, in Brennemann, Joseph: Practice of Pediatrics, Hagerstown, Md., W. F. Prior, 1944, vol. 1, ch. 24.
   (c) Darrow, D. C.: The Treatment of Dehydration, Acidosis and Alkalosis, J.A.M.A. 114:655-660 (Feb. 24) 1940.
   (d) Hartmann, A. F., and Elman, R.: The Effects of Loss of Gastric and Pancreatic Secretions and the Methods for Restoration of Normal Conditions in the Body, J. Exper. Med. 50:387-405 (Sept.) 1929.
   (e) Hartmann, A. F.: Chemical Changes Occurring in the Body as the Result of Certain Diseases, Am. J. Dis. Child. 35:557-575 (April) 1928.
   (f) Hartmann, A. F.: Acidosis, Alkalosis, and Dehydration, Colorado Med. 26:373-386 (Nov.) 1929.
   (g) Hartmann, A. F.: The Prevention and Treatment of Severe Disturbances in Water and Electrolyte Balance, J. Iowa M. Soc. 27:451-457 (Sept.) 1937.

(a) *Fluid therapy*

The immediate administration of proper fluids[7] is by far the most important consideration. Three different schedules for the first injection may be used, according to the degree of dehydration and acidosis:

1. Mild: Carbon dioxide combining power not lower than 40 volumes per cent.
   Intravenous—5 per cent or 10 per cent glucose, 20 cc. per kilogram of body weight.
   Subcutaneous—30 cc. of sixth molar sodium lactate solution, plus 40 cc. of Ringer's solution, per kilogram of body weight.
2. Moderate: Carbon dioxide combining power 20 to 40 volumes per cent.
   Intravenous—30 cc. of sixth molar sodium lactate solution per kilogram of body weight.
   Subcutaneous—30 cc. of sixth molar sodium lactate solution, plus 40 cc. of Ringer's solution, per kilogram of body weight.
3. Severe: Carbon dioxide combining power lower than 20 volumes per cent.
   Intravenous—30 cc. of sixth molar sodium lactate solution per kilogram of body weight.
   Subcutaneous—60 cc. of sixth molar sodium lactate solution, plus 40 cc. of Ringer's solution, per kilogram of body weight.

The dehydration and acidosis are usually readily corrected in this manner[8], but following the initial injection, optimum fluid intake must be maintained with daily injections of glucose, saline, or sodium lactate solution, depending on the condition of the patient, the duration of acidosis, and so forth. Whole blood or plasma should be used when indicated *after* the dehydration has been relieved.

In the most severe cases, with persistent cyanosis and circulatory collapse, oxygen therapy and continuous intravenous therapy are often life-saving measures. For the latter purpose, an equal mixture of 10 per cent glucose and lactate-Ringer's solution[9] is excellent, once the acidosis has been corrected. In cases of severe starvation with lowered plasma proteins, plasma may be included in this mixture, using equal proportions of all three constituents. The rate of injection should not exceed 10 to 15 cc. per kilogram of body weight in an hour[7e].

7. (a) Glaser, K., and Bruce, J. W.: Treatment of Epidemic Diarrheas and Dysenteries in Infants and Young Children, J. Pediat. 24:53-61 (Jan.) 1944.
   (b) Hartmann, A. F.: Therapy of the St. Louis Children's Hospital. II. Treatment of Severe Diarrhea in Infants and Children, Washington Univ. M. Alumni Quart. 6: 45-48 (Oct.) 1942.
   (c) Hartmann, A. F. and others: Further Observations on the Metabolism and the Clinical Uses of Sodium Lactate, J. Pediat. 13: 692-723 (Nov.) 1938.
   (d) Hartmann, A. F.: Treatment of Severe Diabetic Acidosis, Arch. Int. Med. 56:413-434 (Sept.) 1935.
   (e) Davison, W. C.: The Compleat Pediatrician, ed. 4, Durham, Duke University Press, 1943.
8. Sixty cubic centimeters of sixth molar sodium lactate solution per kilogram of body weight will raise the carbon dioxide combining power of the blood approximately 35 volumes per cent within four hours after administration.
9. Lactate-Ringer's solution consists of molar sodium lactate solution and Ringer's solution in the proportion of 1:40.

Hartmann and his co-workers[10] have recently presented a most interesting development in the field of parenteral feedings. They have found that, by the use of an amino acid preparation, "amigen," which contains all of the "essential" amino acids, it is possible "to prevent or reduce the loss of body protein in children who cannot maintain adequate nutrition from natural foods taken by mouth." This preparation will be of particular value in chronic, debilitating diseases, especially persistent diarrheas.

The solution they recommend for intravenous use contained 3 1/3 per cent "amigen," 3 1/3 per cent glucose, and one-third Ringer's or lactate-Ringer's solution. Subcutaneously a solution containing 5 per cent "amigen" and 5 per cent glucose is well tolerated. Too rapid intravenous injection, or the subcutaneous use of too concentrated solutions must be avoided.

(b) *Eradication of infection.*

We have seen that the underlying cause of most of the diarrheas, both enteral and parenteral, is infection. It is important to be certain about this point, to locate the site of infection, and if possible to determine the causative organism.

Sulfaguanidine and succinylsulfathiazole (sulfasuxidine)[11] have the advantage of possessing marked local bacteriostatic action on most of the bacteria in the gastrointestinal tract. They are poorly absorbed (sulfasuxidine less than sulfaguanidine), and for that reason the incidence of toxic reactions is less. They of course are of bene-

10. Hartmann, A. F., Lawler, H. J., and Meeker, C. S.: Studies of Amino Acid Administration. II Clinical Uses of an Enzymatic Digest of Casein, J. Pediat. 24:371-386 (April) 1944.
11. (a) Eisenoff, H. M., and Goldstein, H.: The Control of an Outbreak of Bacillary Dysentery with Sulfonamides, J.A.M.A. 123:624-626 (Nov. 6) 1943.
    (b) Hardy, A. V., Burns, W., and De Capito, T.: Studies of the Acute Diarrheal Diseases, Pub. Health Rep. 58:689-693 (April 30) 1943.
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    (e) Henderson, J. L.: Sulphaguanidine in Neonatal Epidemic Gastro-Enteritis, Brit. M. J. 1:410-413 (April 3) 1943.
    (f) Brewer, Angus E.: The Use of Sulphaguanidine in Bacillary Dysentery, Brit. M. J. 1:36-40 (Jan. 9) 1943.
    (g) Marshall, E. K., Jr., Bratton, A. C., Edwards, L. B., and Walker, Ethel: Sulfanilylguanidine in the Treatment of Acute Bacillary Dysentery in Children, Bull. Johns Hopkins Hosp. 68:94-111 (Jan.) 1941.
    (h) Smyth, C. J., Gould, S. E., Finkelstein, M. B.: Treatment of Acute Bacillary Dysentery (Flexner) with Sulfaguanidine and Succinylsulfathiazole, J. A. M. A. 121:1244-1245 (April 10) 1943.
    (i) Smyth, C. J. and others: Acute Bacillary Dysentery (Flexner); Treatment with Sulfaguanidine and Succinylsulfathiazole, J.A.M.A. 121:1325-1330 (April 24) 1943.
    (j) Roberts, T. L., Daniels, W. B.: Succinylsulfathiazole in the Treatment of Bacillary Dysentery, J.A.M.A. 122: 651-653 (July 3) 1943.

fit only in cases where the infection is limited to the gastrointestinal tract. An initial dose of 0.1 Gm. per kilogram (¾ grain per pound) may be given, followed by 0.25 Gm. per kilogram (2 grains per pound) daily, divided into equal doses administered every four to six hours.

For parenteral infections, as well as the enteral infections, sulfadiazine or sulfapyrazine[12] may be used. Sulfathiazole is also effective[13], except that it is poorly absorbed into the cerebrospinal fluid and offers little protection against central nervous system infections. It is felt that in general these last three sulfonamides have a greater bacteriostatic action against the dysentery and salmonella groups of organisms than does sulfaguanidine or sulfasuxidine[11b,c;13a,b]. The initial dose of 0.1 Gm. per kilogram (¾ grain per pound) may be followed by 0.13 to 0.2 Gm. per kilogram (1 to 1½ grains per pound) daily, divided into six equal doses administered every four hours. Because of the increased solubility of some of the sulfonamides[14] in alkaline urine, we feel it advisable to give equal doses of sodium bicarbonate with these drugs. It should be kept in mind that these sulfonamides may be administered both intravenously and subcutaneously[15], as well as orally. The sodium salt is used for parenteral administration. For intravenous use a 5 per cent solution in distilled water is preferable. A 1 per cent solution in sixth molar sodium lactate or lactate-Ringer's solution may safely be given subcutaneously.

(c) *Establishment of a good feeding schedule.*

As the gastrointestinal tract is extremely hyperirritable in patients with diarrhea, every effort must be made to avoid additional irritation. An initial starvation period of twelve to forty-eight hours or more is very important. Nothing should be given by mouth except water or Ringer's solution, thus allowing the gastrointestinal tract to rest. Paregoric may be used symptomatically for marked restlessness and tenesmus; the dosage[7e] is 5 to 10 minims after each stool, depending on the size and age of the child (the total dose per day should not exceed 4 to 8 cc.). After this initial starvation period, the following lactic acid formula may be begun:

Evaporated milk 1 part
Boiled water 2 parts
Lactic acid (U.S.P.) 6 drops for each ounce of evaporated milk.

Feedings should be begun with 15 to 30 cc. of this formula. If the stools remain very loose and liquid, 5 per cent casec or protein milk may be added to the formula. The feedings are increased in quantity as rapidly as the patient's condition permits. The water may gradually be cut down until one part of water is being given to one part of evaporated milk, and for infants under 4 months carbohydrate may be added cautiously up to 7½ per cent or until the child is receiving the usual formula for his age. Cultured lactic acid milk or buttermilk may also be used. For older infants cereal and vegetables should be added to the diet cautiously and gradually until they are on a full infant diet. The diet should be increased carefully in order to avoid a recurrence of the diarrhea.

Summary

The etiology, prevention, and treatment of the diarrheas are discussed.

The importance of restoring the normal fluid and electrolyte balance is emphasized.

12. (a) Marangoni, B. A. and D'Agati, V. C.: Treatment of 134 Cases of Meningococcic Infection with Massive Doses of Sulfadiazine, Am. J. M. Sc. 207:67-71 (Jan.) 1944.
(b) Barnett, H. L., Perley, A. M., Forbes, G. B., and Goldring, D.: The Use of Sulfapyrazine in Infants and Children, Am. J. M. Sc. 206:599-610 (Nov.) 1943.
(c) Tudor, R. B.: The Chemotherapy of Infantile Diarrheas: A Comparison of Sulfadiazine and Sulfapyrazine, J. Pediat. 22:652-654 (June) 1943.
(d) Winters, K. J. and Janney, F. R.: Sulfadiazine: Review of Its Use in Treatment of Children, Am. J. Dis. Child. 65:702-711 (May) 1943.
(e) Siegel, M.: Studies on Control of Acute Infections of Respiratory Tract: II Oral Administration of Sulfadiazine at the Onset of Acute Respiratory Illnesses, Am. J. Dis. Child. 66:114-120 (Aug.) 1943.
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15. (a) Lyons, J. J. A., Climenko, D. R., and Gorham, L. W.: The Subcutaneous Administration of Sodium Sulfathiazole in Various Clinical Conditions, Am. J. M. Sc. 205:703-708 (May) 1943.
(b) Jorgensen, G. M., and Greeley, D. McL.: Subcutaneous Administration of Sodium Sulfadiazine, J. Pediat. 21: 325 (Sept.) 1942.

The use of the sulfonamides in eradicating infections is discussed.

A feeding schedule, to be employed after the initial period of starvation, is suggested.

VAGITUS UTERINUS DURING CONTINUOUS CAUDAL ANALGESIA

ADAM T. THORP, M.D.

ROCKY MOUNT

Probably every busy obstetrician has one or more cases of vagitus uterinus—crying of the child in the uterus—during his lifetime, but few take the trouble of reporting such cases. Ryder[1] stated that the case which he reported in 1943 brought the total number of authentic cases to 123. Since that time Mitchell has reported another case[2]. So far as I know, no case occurring during continuous caudal analgesia has been reported.

Case Report

Mrs. ———'s fourth pregnancy was normal, and her membranes ruptured spontaneously at approximately the estimated date of confinement. Twelve hours later uterine contractions began. When the cervix was dilated 2 cm. and the pains were coming at five-minute intervals, continuous caudal analgesia was started. Within two hours after the first labor pains were felt, the cervix was completely dilated and the patient was taken to the delivery room. The fetus was found to be in the right occiput posterior position. In order to confirm this finding I palpated the ear, and when my hand was withdrawn there was a distinct fetal cry. In an effort to save the baby, a manual rotation was done and application of forceps was attempted. Since the application was not entirely satisfactory, the forceps were removed. At this time the baby cried again. While the forceps were being re-applied there was a third cry. A period of at least ten minutes elapsed between the first and third cries. While the first cry was distinct enough to be heard by both a nurse and myself, neither of us mentioned the fact. The second and third cries, however, were so loud that they were noted by the mother and by two other nurses.

A normal male infant weighing 7½ pounds was delivered by forceps. He required no resuscitation, and in fact cried lustily as the head emerged from the vulva.

Comment

According to Kitzmiller and Mitchell[3], three conditions are essential to the occurrence of crying *in utero*: (1) rupture of the membranes, (2) some operative manipulation to stimulate the infant, (3) entrance of air into the uterus.

When this phenomenon occurs for the first time, the doctor usually tries to save the baby by getting it out of the uterus as soon as possible. This effort may be warranted, provided the cervix is fully dilated and the method of delivery is compatible with good obstetrics. Rucker[4] has concluded, however, that the fetal mortality in cases of vagitus uterinus, while not excessive, is due largely to efforts to save the baby from asphyxia by rapid delivery. Ryder[1] states that operative delivery was employed in more than 80 per cent of the 123 cases of vagitus uterinus reported in the literature. The total mortality in the 112 cases in which the outcome was reported was 18.8 per cent. Harrison[5] cites a case of vagitus uterinus in which a high forceps delivery was attempted unsuccessfully and the patient was subsequently delivered of a living 10 pound infant by cesarean section.

It would be interesting to know just what the fetal mortality in these cases would be if we disregarded the crying *in utero* and allowed labor to proceed in its normal course. Even if there were no reduction in fetal mortality, there would be less trauma to the mother's cervix and soft parts and fewer intracranial hemorrhages.

Submitted for publication November 10, 1944.

1. Ryder, George H.: Vagitus Uterinus, Am. J. Obst. & Gynec. 46:867-872 (Dec.) 1943.
2. Mitchell, Arthur M.: Vagitus Uterinus with Prolapse of the Umbilical Cord, Am. J. Obst. & Gynec. 48:547-549 (Oct.) 1944.
3. Kitzmiller, J. L. and Mitchell, W. B.: Vagitus Uterinus, West. J. Surg. 50:620-621 (Dec.) 1942.
4. Rucker, M. P.: Vagitus Uterinus, Virginia M. Monthly 57:26-31 (April) 1930.
5. Harrison, C. M.: Child Crying in Utero, Ohio State M. J. 20:700 (Nov.) 1924.

Modifying human food habits in the direction of better health and efficiency may come through necessity or dictation. It will probably not stay put except through understanding via the long and strenuous road of education. In the matter of education in health to the extent that our health depends on food I think there is much yet to be done in our grade schools, high schools and colleges. In a not too distant past the teaching of health in our schools did not significantly transcend the toothbrush, alcoholism, sex and social diseases. Even today in many of our schools we find inadequate teaching of the fundamentals of health and nutrition. As if the matter of foods was a concern for women students alone and the matter of general health a concern only of the physicians. We have scarcely begun to realize that the modern sciences of chemistry and physics are so rapidly changing our environment and mode of life that proceeding today by the ignorance of our forebears we may travel into tragedy. Urbanization and industrialization renders it well-nigh impossible for modern man to have access to the natural unprocessed foods available to our forebears of a thousand years ago.—Carlson, A. J.: Some Obstacles in the Path Towards an Optimum Diet, Science 97:388 (April 30) 1943.

THUMBNAIL SKETCHES OF EMINENT PHYSICIANS

JOSIAH C. TRENT, M.D., *Editor*

DURHAM

THE EVOLUTION OF THE ASEPTIC PRINCIPLE IN SURGERY

VII

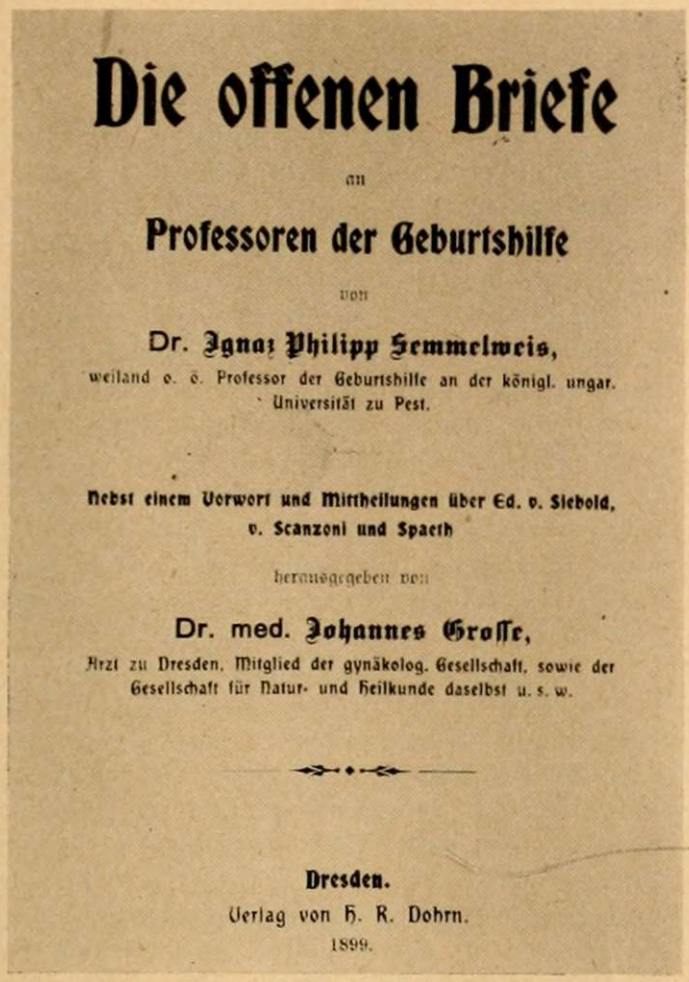
IGNAZ PHILIPP SEMMELWEIS (1818-1865) AND HIS CONTRIBUTION FROM OBSTETRICS

In February, 1846, about two years after receiving his degree from the University of Vienna, Dr. Ignaz Philipp Semmelweis, at the age of 28, was appointed Assistant in the First Obstetrical Division of the Vienna General Hospital. Earlier he had made an unsuccessful attempt to secure an Assistantship in Medicine. While awaiting another opportunity, he had worked enthusiastically at pathological anatomy, under Rokitansky. He had also done some work in surgery, where the high mortality (infection killed nine out of ten patients) caused him to exclaim: "Everything they are trying to do here seems to me quite futile; deaths follow one another with regularity. They go on operating, however, without seeking to find out why one patient succumbs rather than another in identical circumstances."[1] He had been appointed master surgeon in November, 1845, but no position was open and his funds were getting low. The Assistantship in Obstetrics was available, and with two months of special study he qualified for it.

His first duty was registering the admission of pregnant women. Only the destitute and outcast of the city, who had no other choice, came to the hospital; for puerperal fever raged continually in the hospital, but occurred only occasionally outside it. A strict schedule governed the admission of patients to the hospital. Those who entered during one twenty-four hour period were assigned to the First Division, where medical students received instruction in obstetrics. Those admitted during the next twenty-four hours were sent to the Second Division, where the pupil midwives were taught. This schedule was known to the public. Also well known was the fact that deaths from puerperal fever were many times more frequent in the First Division than in the Second. Women begged in tears to be admitted to the midwives' division, and timed their arrivals as nearly as possible to this end. The Second Division was frequently filled to overflowing. Faced with the prospect of admission to the First Division, some women fled in terror and, unattended, gave birth to their babies in the street. Deeply disturbed and puzzled, Semmelweis set out in a frenzied effort to discover the cause of this tragic state of affairs.

The current theories about puerperal fever made no sense. Semmelweis proved them wrong with impressive statistics. His tireless investigations meant nothing, however, until he recognized, at an autopsy performed on his friend, Kolletschka, the same disease processes which occur in puerperal fever: lymphangitis, phlebitis, pleurisy, and peritonitis. In this case the source of infection was known—a puncture wound of the finger "poisoned" in performing an autopsy! This event occurred in March, 1847. By May of that year Semmelweis was requiring that the medical students, who did many autopsies, wash their hands in a disinfecting solution of chlorinated lime to remove adherent "cadaveric particles" before examining patients in labor. Here was the answer. There followed a drop in mortality in the First Division from 12 per cent to 3 per cent. Semmelweis had realized that the placental site and the frequently traumatized birth canal were essentially wounds and made ideal "absorptive surfaces" for the "poison" from the students' and doctors' fingers. As other sources of the infecting or poisoning material carried by examining fingers, he recognized in October, 1847, the foul discharge from a cancer of the cervix uteri, and, in November, 1847, a "carious knee joint." By the fall of 1847, therefore, his concept of the etiology of puerperal fever was essentially complete and amounted to this: "That puerperal fever was caused by decomposed animal organic matter conveyed by contact to the pregnant, parturient or puerperal woman, without regard to its origin, whether from the cadaver or from a living person

1. Destouches, Louis Ferdinand: Mea Culpa; and, The Life and Work of Semmelweis, translated by Robert Allerton Parker, Boston, Little, Brown and Co., 1937, p. 79.



Die offenen Briefe

an

Professoren der Geburtshilfe

von

Dr. Ignaz Philipp Semmelweis,

weiland o. ö. Professor der Geburtshilfe an der königl. ungar. Universität zu Pest.

Nebst einem Vorwort und Mittheilungen über Ed. v. Siebold, v. Scanzoni und Spaeth

herausgegeben von

Dr. med. Johannes Grosse,

Arzt zu Dresden, Mitglied der gynäkolog. Gesellschaft, sowie der Gesellschaft für Natur- und Heilkunde daselbst u. s. w.

Dresden.

Verlag von H. R. Dohrn.

1899.

Fig. 1. Title page of the first collected edition of Die offenen Briefe an Professoren der Geburtshilfe, edited by Dr. Johannes Grosse and published in Dresden in 1899. (Editor's collection)

affected with a disease which produced decomposed animal organic matter."[2] By this time, also, he had outlined and put into practice an effective system of prophylaxis.

The rest of the story is an anti-climax. Semmelweis seems to have been impatient and clumsy in many important personal relationships. While trying to change the *status quo* of puerperal fever, he made dozens of enemies. During his service in the First Division he antagonized and then openly defied the influential chief, Professor Klein. In March, 1849, his appointment as Assistant was not renewed. Furthermore, Professor Klein succeeded in influencing the majority of his colleagues against the Semmelweis doctrine. Their influence, in turn, spread over most of Europe. A few friends —Rokitansky, Hebra, Haller, Helm, and Skoda—took up the fight on the side of Semmelweis and attempted to spread news of his discovery, chiefly by letters. The first article published on this subject was an editorial by Hebra in the journal of the Medical Society of Vienna in December, 1847. Semmelweis first officially presented his own doctrine in an address before the Vienna Medical Society in May, 1850. Not until 1861 did he publish his book, *The Etiology, the Concept and the Prophylaxis of Childbed Fever*[3]. He finally produced the work, in spite of "an inborn dislike for everything that can be called writing," in the hope of silencing some of his enemies and bringing about a wider acceptance of his doctrine. Unfortunately, the book was long and badly organized, controversial material being mixed in with the exposition. The antagonism continued unabated, and Semmelweis carried on his side of the argument in the abusive *Open Letters*, published in 1861 and 1862; the first collected edition of these letters appeared in 1899 (fig. 1).

After leaving Vienna in 1850, Semmelweis returned to his native Budapest. There he continued his work, which included some gynecology; it is of the greatest significance that in his operative work he followed the same principles of antisepsis that he had introduced into obstetrics.

Disappointment at the fact that his work had failed of acceptance clouded his last years. His outbursts against his enemies increased in violence, culminating in insanity. He died in 1864, from the very disease that had given the clue to his great discovery—systemic infection resulting from an infected finger.

—Eleanor Beamer Easley, M.D.

2. Sinclair, Sir William J.: Semmelweis, His Life and His Doctrine, Manchester, University Press, 1909, p. 61.

3. Medical Classics, 5:339-773, Baltimore, Williams and Wilkins Co., 1941.

Drinking Unnecessary Water. In these days when many physicians and dietitians are exhorting everyone to drink large amounts of unneeded water, I find it helpful occasionally to ask the patient if he has been following the present-day fad and trying to drown himself from the inside out. I have seen several persons with heart and kidney disease who got themselves into serious trouble in this way, and I have seen the drinking of excess water produce puzzling insomnia, diarrhea, polyuria, edema of the ankles, and indigestion. I remember a woman with a diarrhea that no one had been able to stop. It stopped overnight when I got her to give up her three extra quarts of water a day!

Actually, physiologists cannot see the reason for our taking more water than our body calls for or needs. Its handling and excretion only means more work for heart and kidneys. Fortunately, the body's need for water is exactly determined by the individual's thirst.—Alvarez, Walter C.: Nervousness, Indigestion, and Pain, New York, Paul B. Hoeber, Inc., 1943, p. 50.

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JULY, 1945

A REVISED FEE TABLE FOR COMPENSATION CASES

One of the most important committees that our Society has had in some years is the one headed by Dr. Harry Winkler which was selected to confer with the North Carolina Industrial Commission, with a view to revising the rules and regulations and the fee schedule established by the North Carolina Workmen's Compensation Act. There have been so much misunderstanding and so many accusations and recriminations between the medical profession of North Carolina and the Industrial Commission that it was high time to come to a mutual understanding. Apparently the conferences just held between representatives of the State Society and the Industrial Commission have achieved most satisfactory results. Dr. Winkler and the members of his committee and Mr. Wilson, chairman, and the other members of the Industrial Commission are to be congratulated upon the manner in which they set about their mutual task.

We are glad to publish on page 343 the report of Dr. Winkler's committee, together with a statement from Mr. Wilson*.

A booklet containing the revised rules and regulations and the new fee schedule has been mailed to all the doctors in North Carolina. Every doctor who does any work whatever for the Industrial Commission is urged to read this booklet carefully, and file it away for future reference. Those who may have misplaced it can obtain another copy from Mr. T. A. Wilson, Chairman of the North Carolina Industrial Commission, Raleigh, or Dr. Harry Winkler, Charlotte.

The NORTH CAROLINA MEDICAL JOURNAL, speaking for the doctors of North Carolina, extends its heartiest congratulations to Dr. Winkler and his committee and to the members of the Industrial Commission for the fine spirit of cooperation they have shown, and for the painstaking work which they have done in formulating this revised fee table.

* Unfortunately Mr. Wilson's statement was not received before the JOURNAL went to press, and its publication will have to be postponed until next month.

* * * *

"A MATTER OF THE UTMOST URGENCY AND IMPORTANCE"

The Executive Committee of the Indiana State Medical Association has recently prepared a statement urging the release of all Indiana physicians in the armed forces who are not absolutely essential for the care of service men and women. Copies of the statement were sent to President Truman, to the Surgeons General of the Army and Navy, to the Air Surgeon, to Procurement and Assignment officials, and to Indiana members of Congress.

This resolution expresses so well the feeling of the North Carolina medical profession that it is hereby published in full. If "North Carolina" is substituted wherever "Indiana" occurs, the statement will apply exactly to our state.

Now that V-E Day is passed and we are expecting the release from service of part of our Armed Forces, immediate consideration should be given to the release of as many of the doctors as is consistent with the best interest of the Armed Forces and

of the civilian population. Promptness in reducing the size of the Medical Corps should be the positive aim of everyone having responsibility in this field. There should never be a time when any doctor is being kept in the military service with nothing for him to do professionally in connection with his military status. He should not be kept in the service to do things which could as well be done by those not trained as physicians. Many persons have delayed obtaining the medical care they should have had until their regular physicians get back from the war.

The doctors in the service have written a glorious chapter in the history of American medicine. We point with particular pride to the record of the Indiana physicians who volunteered. Indiana was among the first states to fill its quota of medical officers. It never has lagged in filling any additional demands made upon the profession by the military authorities. The outstanding service rendered by these medical officers has merited rewards in every combat area where American troops have served and are serving. The Army, Navy, and Air Force should not incur the criticism of the public or of the physicians in those services by holding any physician in military service a day longer than the interest of the country requires.

The medical profession of Indiana was determined at the outbreak of the war that no one in the Armed Services of the United States should ever lack medical care, no matter how urgent and severe an emergency the Armed Forces might be called upon to face. Some of the public may have felt that this obligation of medicine to the Armed Forces was overemphasized, to the disadvantage of the civilian population. A severe epidemic would have presented a real medical problem, and it is fortunate that this has not occurred, for many doctors who did not enter the service have carried professional burdens beyond their strength.

The Executive Committee of the Indiana State Medical Association urges that those in authority look upon the early and prompt release of physicians, when they can be spared, as a matter of the utmost urgency and importance,—and when we say "when they can be spared," we must be understood to mean that every soldier, sailor, marine, nurse, WAC, WAVE, or SPAR, or anyone else who needs medical care in connection with military services will have it, even without the physicians who are to be dismissed. But after all the Armed Services are taken care of, any delay in releasing a physician should be avoided as an injustice to the public, an unnecessary burden on the treasury, a source of criticism of those in authority, and unfair treatment of the physician who is serving his country.

* * * *

TESTS FOR DRUNKENNESS

In 1938 the State Medical Society adopted a presidential recommendation that we urge "the passage of a law requiring (or allowing) any individual charged with drunkenness to have the alcohol content of his blood tested as a measure of intoxication."[1] At that time no state in the Union had such a law. Another recommendation favoring "a law requiring a negative serological report from a reputable laboratory before a marriage license can be issued" was also adopted by the Society. The legislature of 1939 passed the second law suggested, but declined to legalize a scientific test for drunkenness to replace the time-honored method of smelling the breath or noting the response to tapping a comatose individual's shoe soles with a policeman's club.

Now, according to the *Journal of the American Medical Association*[2],

> "The blood test is considered to give an accurate picture of intoxication because the alcohol in the blood is responsible for the distribution of alcohol to the brain and all body fluids . . .
>
> "All persons harboring 0.15 per cent or more of alcohol in their blood are to be considered 'under the influence,' since they have lost, at least to some extent, some of that clearness of intellect and self control that they would otherwise possess. Laws embodying this interpretation have been passed by Indiana, Maine and New York, and the tests have been admitted as evidence in almost every state in the Union."

Although the 1939 legislature missed the opportunity to make North Carolina the pioneer in recognizing this sensible and scientific test, it is not too late for the next legislature to be among the first to adopt such a law.

1. Tr. M. Soc. North Carolina, 1938, p. 9.
2. Queries and Minor Notes, J.A.M.A. 128:625 (June 23) 1945.

* * * *

"PSEUDODOXIA PEDIATRICA"

While unwarranted criticism is always to be deplored, there is no profession in which the critical faculty, rightly used, is more important than in medicine. It is well that every new theory and every new remedy proposed should be scrutinized closely before being accepted. The critical faculty may also be put to valuable use in an occasional analysis of certain current medical practices, to determine their soundness. "Advances in medicine are made not only by the discovery of new principles, new information and new technics but as well by the discarding of false teachings and practices."[1]

A survey of the field of pediatrics was made by Dr. Harry Bakwin, and the fruits thereof presented to the American Pediatric Society in September, 1944[1]. The title of Dr. Bakwin's paper was suggested by Sir Thomas Browne's treatise entitled "Pseudodoxia Epidemica or Enquiries into very many received Tenents and commonly Presumed Truths." In this work Sir Thomas dissected many fallacies masquerading as truths and showed their absurdity.

1. Bakwin, Harry: Pseudodoxia Pediatrica, New England J. Med. 232:691-697 (June 14) 1945.

Dr. Bakwin, who is the Associate Professor of Pediatrics in the New York University College of Medicine, gives as the purpose of his paper "to inquire into some of the current pediatric errors and to analyze the reasons why they persist."

The first erroneous practice which is condemned is indiscriminate tonsillectomy. Dr. Bakwin shows that the mortality from this operation is not to be ignored; that such complications as lung abscess, hemorrhage, and sepsis are not infrequent; and "that the operation may be an exciting factor in the anxiety neurosis of children."

In a survey of 1000 11 year old children from the New York City public schools made by the American Child Health Association[2] several years ago, it was found that 610 had had their tonsils removed. A group of physicians examined the remaining 390 and selected 45 per cent for tonsillectomy. Further screening by a second and a third group left only 65 of the original 1000 with theoretically sound tonsils. "These subjects were not further examined because the supply of examining physicians ran out." The justifiable conclusion was reached that "the chance of a child's being recommended for operation depended principally on the physician rather than on the child's health status."

The next practice condemned is indiscriminate opening of the ear drum and excessive manipulation of the ear canal. Even before the sulfonamide drugs came into use, the incidence of purulent otitis media and mastoiditis was reduced from 23.3 per cent to 8.9 per cent in Bellevue Hospital "simply by limiting otoscopic examinations and by laying down stringent criteria for myringotomy."

Another iconoclastic section of the paper questions the wisdom of "indiscriminate hospitalization for delivery." The unequivocal statement is made that "Hospitals are unsuited for the care of the newborn." The separation of mother and baby is condemned as "unnatural and unphysiologic" and as responsible largely for the failure of so many mothers to nurse their offspring. Even the increased safety to the mother afforded by hospital delivery is questioned. Dr. Bakwin cites the experience of the Frontier Nursing Service of Kentucky[3], in which deliveries were done chiefly in poor homes by midwives. The maternal mortality reported by this Service was only 0.75 per 1000 births, as contrasted with "5.6 for the white population of the United States at the same time and 5.2 for the white population of Kentucky."

Pediatricians are criticized for neglecting the psychologic care of children, and for failing to recognize and discuss with parents the dangers of overanxiety and overprotection. The dietary fads and fancies come in for their share of comment, and Dr. Bakwin quotes Ogden Nash's observation[4]:

> Our daily diet grows odder and odder—
> It's a wise child that knows his fodder.

Doubtless many will agree with the author's conclusion that "Eating should mean roasts, sauces, puddings, pies—not calories, vitamins, minerals . . . As between chef and dietitian, I choose the chef without reservation."

There is much food for thought in Dr. Bakwin's comments on the education of the pediatrician:

> "A major error in pediatric education is the failure to prepare students properly for practice in the home. Whether or not by intention, the impression is given that the management of disease in the home requires elaborate and expensive procedures . . . The medical student and intern should know that the various laboratory procedures are used in hospitals primarily for purposes of teaching and study, and that he is exposed to them in the hospital so that he may learn to dispense with them in the home except when there are specific indications."

A volume of wisdom is compressed into these words:

> "A prominent source of pseudodoxia pediatrica is the tendency to do too much. The physician, eager to justify his function, is rarely content to tell the parent of a child who comes for a health examination that the child has no defects that require correction."

While Dr. Bakwin's remarks were directed chiefly at those who practice his own specialty of pediatrics, they may be read with profit by general practitioners and specialists alike. Whether one agrees or not, it does no harm to have one's complacency shaken occasionally.

"If the cap fit, pray wear it a bit." If not, there's no harm in trying it on.

3. Steele, E. S.: Report on the Fourth Thousand Confinements of the Frontier Nursing Service, Inc., Quart. Bull.

CASE REPORTS

CASE REPORTS FROM THE TUMOR CLINIC

North Carolina Baptist Hospital

Case 5

Mr. M., a 60 year old sawmill worker, was admitted to the hospital with the chief complaint of moderately severe diarrhea of six weeks' duration. His stools were yellow and watery in character. There was no history of a tarry stool, but he frequently had stools containing streaks of bright red blood. He attributed this blood to hemorrhoids, which had bothered him for twenty-five years. In the past six weeks he had lost 10 pounds. There were no other symptoms referable to the gastro-intestinal tract. He had, however, experienced dysuria, frequency, and urgency during this six weeks' interval. His family physician had treated his urinary symptoms with methylene blue, with some improvement. The diarrhea persisted, however, and the patient was sent to the hospital.

The patient's past history contained no information referable to his present illness. His father had died of carcinoma of the stomach.

On physical examination, the patient appeared chronically ill but showed little sign of wasting or weight loss. He was in no apparent discomfort. His temperature was 99.8 F., his pulse 90, his respiration 20, and his blood pressure 164 systolic, 88 diastolic. His lungs were normal. His heart was of normal size and the rhythm was regular; the aortic second sound was slightly increased in intensity.

The abdomen was scaphoid. The spleen and kidneys were not palpable, but the liver edge was felt just below the right costal margin on deep inspiration. No mass or tenderness was found on examination.

Extreme phimosis, large external hemorrhoids and a grade three prostatic enlargement were present.

Accessory clinical findings were as follows: Red blood cells, 6,380,000; hemoglobin, 16 Gm.; white blood cells, 10,650, with a normal differential. Urinalysis showed a specific gravity of 1.020, an acid reaction, no albumin or sugar; microscopic examination revealed 8-10 white blood cells per high power field, an occasional red blood cell, and 1-2 hyaline and finely granular casts. Stool examination revealed no blood or other abnormalities. Gastric analysis showed no free hydrochloric acid and a total acidity of 6 clinical units. After histamine injection there was still no free hydrochloric acid, and only 10 clinical units of total acid were present. A capillary fragility test was normal. The tuberculin and Kahn tests were negative.

A barium enema was done and the findings were inconclusive. A second barium enema was administered, and in addition, a complete x-ray study of the stomach and duodenum was made. The impression of the radiologists was: "A normal colon, hypertrophic gastritis, and a questionable tumor at the pylorus of the stomach." A chest plate was normal.

Gastroscopy was performed and the report was as follows: "Gastric ulcer of the greater curvature of the stomach with no visible evidence suggesting that the lesion is malignant; there is a possibility of an extragastric mass compressing the stomach."

Circumcision was performed to relieve the extreme phimosis, and supplementary hydrochloric acid was given. The diarrhea subsided on this regimen. Because of the stomach lesion, presentation at the Tumor Clinic was recommended.

Tumor Clinic Discussion

RADIOLOGIST: A barium enema showed no intrinsic lesions in the colon. The sigmoid appeared normal. The esophagus was normal. The mucosal folds throughout the stomach were thickened. There was an area about 2½ cm. proximal to the pylorus on the greater curvature of the stomach which never filled well. The wall of the stomach in this region was rigid. The duodenum appeared normal. In this patient pylorospasm, elongation of the pylorus, and a lesion located on the posterior wall of the stomach near the greater curvature were the outstanding x-ray findings. On the basis of x-ray findings alone, I would hesitate to recommend an operation, but the patient's age and the history of weight loss seem to justify exploration. The gastroscopic examination leaves no doubt as to the presence of a lesion.

SURGEON: The safest thing to do is to perform an exploratory laparotomy on this man immediately. The history of weight loss and diarrhea, and the findings of achlorhydria and a demonstrable lesion of the stomach are sufficient indication. If we are ever to cure

carcinoma of the stomach, operation must be performed in the early stages, before a mass is present and the diagnosis is unquestionable.

Tumor Clinic Opinion

Recommendation: Exploratory laparotomy.

Prognosis: Opinion delayed until operation.

Follow-Up Note

This patient was subjected to a laparotomy. The stomach was found to be grossly normal, except for a very slight area of induration on the greater curvature, just at the pylorus. Antrotomy revealed no break in the mucous membrane in this area. Frozen sections were taken, however, and malignant tumor cells were found scattered throughout an otherwise normal musculature. A generous subtotal resection of the stomach was done. Further sections through the area of the lesion contained no better defined carcinoma than that in the frozen sections. There was no doubt about the presence of malignant cells, but it was felt that the lesion was so early that there had not yet been an attempt at gland formation.

When Mr. M. returned for a check-up at the end of six weeks, his improvement was striking. He had gained 20 pounds and had no complaints. He could eat a normal diet and had become strong enough to resume his former occupation.

Prognosis: Excellent.

Credit: 1. Thorough medical examination.

2. Sound judgment in the management of an obscure illness, with further search for the etiological basis after symptomatic relief was obtained.

TUBERCULOSIS ABSTRACTS

A Review for Physicians

ISSUED MONTHLY BY THE NATIONAL TUBERCULOSIS ASSOCIATION

VOL. XVIII JULY, 1945 No. 7

THAT diabetics are prone to acquire tuberculosis is not a new observation, but present-day circumstances have given it a new importance. If the opportunity for effective treatment of tuberculosis is not to be lost, this sinister association must be kept in mind by the doctors. The way to safety lies in considering the possibility that tuberculosis may be now, or at any time may become, a complicating factor with every case of diabetes.

DIABETES AND TUBERCULOSIS

The significance of the association of diabetes and tuberculosis is accentuated by the continued rise in the frequency of diabetes and the increase in the incidence of pulmonary tuberculosis in persons with diabetes in spite of the decline in the tuberculosis mortality rate in the general population.

Reports from American clinicians made over a period of years indicate that tuberculosis occurs four times as frequently in diabetic persons as in the general population. The age of the diabetic patient is important. One study in Massachusetts showed that tuberculosis was more than 13 times as frequent among those who acquired diabetes before the age of 15 as it was among a corresponding group of school children, while among adolescent diabetic patients the incidence was 16 times as great as in a corresponding high school group.

Several theories have been proposed to account for the predisposition of diabetic persons to tuberculosis. Of these the one which the evidence seems to favor is that Vitamin A deficiency plays a part. Since a Vitamin A deficiency usually occurs in the presence of diabetes, this lack may explain in a large measure the increased susceptibility of diabetic patients to tuberculosis. Lack of Vitamin A causes specific pathologic changes in the mucosa of the respiratory system which favor the invasion of bacteria into the lung and bronchial tissues.

A wide discrepancy exists between the estimated number of cases of diabetes associated with tuberculosis and the number of

such patients who are admitted to tuberculosis hospitals. Failure to hospitalize these patients in specialized institutions carries serious implications relating to the welfare of the patient and to the public health. The reasons for this failure may be (1) lack of diagnostic consciousness, (2) improper interpretation of symptoms, (3) incomplete diagnostic investigation, (4) asymptomatic forms of pulmonary tuberculosis. The higher recovery rate of persons with early tuberculosis as compared to those with advanced tuberculosis justifies a plea for an early diagnosis of this condition in diabetic patients.

Experience has shown that the best attitude is to anticipate the possibility of tuberculosis as a complication. A tuberculin test should be given to all persons with diabetes. This test should be repeated annually as long as it is negative. For those who react positively to tuberculin there should be a chest roentgenogram every year at least. Examination of the sputum should be carried out for all patients with a productive cough and if the roentgenogram of the chest indicates reason for suspicion, fasting stomach contents should be aspirated five successive times and examined by culture or by the inoculation of guinea pigs.

The percentage of diabetic patients entering the tuberculosis hospitals with minimal tuberculosis seems to be unduly low and may be attributed to a lack of diagnostic suspicion on the part of the physician treating the diabetes. The emphasis formerly placed on the lack of subjective symptoms of diabetic patients with active pulmonary tuberculosis is no longer valid since mass X-ray surveys have revealed that asymptomatic tuberculosis also exists among nondiabetics. Several authors have observed that cavitation is frequent when pulmonary tuberculosis is complicated by the presence of diabetes. Other complications except that of spontaneous pneumothorax occur less frequently than they do in nondiabetic patients with tuberculosis.

The management of diabetes in the presence of tuberculosis has evolved with the trend in diabetic treatment. In the authors' experience it was found that in patients, who were given a well planned diet and adequate amounts of insulin, slight glycosuria and hyperglycemia not exceeding 200 mg. per hundred cubic centimeters are compatible with favorable therapeutic response as far provement in the pulmonary condition of patients belonging to this group compares favorably with that recorded for tuberculous patients whose blood sugar was kept on a practically normal level.

Although it may appear heretical in the treatment of tuberculosis the authors are of the opinion that reducing the diet for overweight diabetic patients with pulmonary tuberculosis is as justifiable and practicable as for nontuberculous obese persons with diabetes. The administration of massive doses of Vitamin A from 150 thousand to 200 thousand U.S.P. units daily may serve as a useful adjunct in the management of diabetes mellitus complicated by pulmonary tuberculosis.

The indications and contraindications for collapse therapy are the same for diabetic as for nondiabetic tuberculous patients. Because of the frequency with which empyema complicates artificial pneumothorax in persons with predominantly exudative and caseous tuberculous lesions of recent origin, the use of this measure is rather limited for tuberculous diabetic patients.

An analysis of the reports of ten American clinicians based on the observations of 17,358 cases of diabetes indicates a higher incidence of tuberculosis in diabetic persons than in the general population of the United States.

The fact that an unusually high percentage of diabetic patients who acquire tuberculosis are not adequately treated for their pulmonary disease before it reaches the far advanced stage calls for an urgent revision of the diagnostic approach to this problem.

During the period covered by this study 115 tuberculous diabetic patients were discharged from Muirdale Sanatorium. On discharge eight of the 17 persons with moderately advanced pulmonary tuberculosis were classified as apparently arrested, quiescent or improved, and nine were unimproved or had died. Of the 96 persons in the far advanced group 14 reached the stage where their disease was apparently arrested, quiescent or improved, while 82 individuals remained unimproved or died. These therapeutic results are less favorable than those recorded for nondiabetic patients with moderately advanced and far advanced pulmonary tuberculosis.

Diabetes and Tuberculosis (with a review of the literature), Andrew L. Banyai, M.D., and Anthony V. Cadden, M.D., Archives of

MEDICOLEGAL ABSTRACT

J. F. OWEN, M.D., L.L.B.

RALEIGH

STATUTE OF LIMITATIONS: *The time during which actions may be brought against persons is limited by law, but in certain instances the limit is subject to variations.*

The law looks with disfavor upon holding a sword over the head of a person or corporation against whom a cause of action has accrued. Consequently, it has set a definite time limit for the prosecution of an action. There are instances, however, when these limits are extended. Among the acceptable reasons for granting an extension of time are the various causes of disability such as infancy, insanity, and being out of jurisdiction. In courts of equity the time limit may be shortened as well as extended. This prerogative is observed especially in cases where the plaintiff is found to be "sleeping on his rights" and waits purposely until the defendant is handicapped in securing witnesses. In the following case where the cause of action continues, the statute begins to run at the termination of the act or acts which produced the right to sue or prosecute the case in the first place.

In this case a physician was sued because of alleged negligence in leaving a foreign body in the abdomen of a patient upon whom he had operated. The suit was brought seven years after the foreign body was discovered at a subsequent operation. The statute of limitations for such actions in the state where the case was tried was three years. The defendant evidently pled the statute, and was given a favorable decision in the lower court. The plaintiff, upon appeal to the Supreme Court, urged that the cause of action was continuous, and it was so held by the court. It was the opinion of this tribunal that the physician was duty bound to inform the defendant of any injury inflicted, and the surgeon was charged with the knowledge of such injury to the patient. The possibility that the surgeon in this case did not know of the presence of the injurious agent was not sufficient to release him from liability, inasmuch as it was his duty to know how the operation was performed and if injury occurred. Until he informed the patient of the presence of the foreign body, he could not plead the statute of limitations as a bar to recovery, since his failure to give the information which he was charged with knowing was a continuation of the act of negligence. (V. 70 S.W. (2nd) p. 503, Arkansas Supreme Court, Spring term, 1934.)

BULLETIN BOARD

Minutes of Executive Committee
Medical Society of the State of North Carolina
Raleigh, June 3, 1945

The Executive Committee of the Medical Society of the State of North Carolina held a called meeting on June 3, 1945, in the Hotel Sir Walter, Raleigh, beginning at 2 p.m.

The following members of the Committee were present:

Officers

Paul F. Whitaker, M.D., Kinston, President
Oren Moore, M.D., Charlotte, President-Elect
Zack D. Owens, M.D., Elizabeth City, Second Vice President
Roscoe D. McMillan, M.D., Red Springs, Secretary-Treasurer

Councilors

J. G. Matheson, M.D., Ahoskie, First District
John Cotten Tayloe, M.D., Washington, Second District
F. L. Knight, M.D., Sanford, Fifth District
M. D. Hill, M.D., Raleigh, Sixth District
Joseph A. Elliott, M.D., Charlotte, Seventh District
Fred M. Patterson, M.D., Greensboro, Eighth District
I. E. Shafer, M.D., Salisbury, Ninth District
C. C. Orr, M.D., Asheville, Tenth District

The Councilor of the Third District was represented by Dr. McMillan as proxy, and the Councilor of the Fourth District by Dr. Tayloe as proxy.

Dr. Hubert B. Haywood, Raleigh, Chairman of the Legislative Committee, and Dr. I. M. Procter, Raleigh, Secretary of the State Board of Medical Examiners, were also present.

President Whitaker, after calling the meeting to order, asked the Secretary-Treasurer for his report.

Secretary-Treasurer McMillan read his report*, which, on motion made by Dr. Orr and seconded by Dr. Hill, was accepted.

Dr. McMillan then brought up for discussion the advisability of the Society's retaining an attorney on an annual basis or the retaining of an attorney on such a basis jointly by the Society and the State Board of Medical Examiners. He explained that heretofore the Society has had occasion to use legal services only during sessions of the General Assembly, which makes it necessary for its attorney to register as a lobbyist. Dr. McMillan read a letter from Mr. Willis Smith, of the firm of Smith, Leach, and Anderson, who has been representing the Society as counsel, in which Mr. Smith suggested an annual fee of $500. The secretary then asked for suggestions from the members of the Committee.

Dr. Haywood, chairman of the Legislative Committee, spoke of the value of the services rendered by Mr. Smith and his firm during the last several sessions of the legislature, particularly that of 1945,

* Published on page 338.

and discussed the matter of legal fees in general. He suggested that a retainer of $500 in legislative years and $250 in the off years might be acceptable.

Dr. Procter, Secretary of the State Board of Medical Examiners, agreed with Dr. Haywood's suggestion as to the fee and said that he would bring up before the Board of Medical Examiners at its meeting two weeks hence the matter of joint employment of counsel by the Board and the Society.

President Whitaker spoke of the service rendered by Mr. Smith recently when the medical profession was attacked by optometrists in the eastern part of the state, and suggested the possibility that the North Carolina Eye, Ear, Nose, and Throat Society might be willing to bear part of the expense of retaining counsel on an annual basis.

On motion of Dr. Elliott, seconded by Dr. Moore, the following resolution was adopted:

RESOLVED, that the Medical Society of the State of North Carolina employ a high-class legal firm on an annual basis and that the financial arrangements be worked out by Dr. Haywood, chairman of the Legislative Committee, Dr. Procter, secretary of the State Board of Medical Examiners, and Secretary McMillan.

In the absence of the Committee on Insurance, Secretary McMillan reported that the plans for insurance of the medical profession had been studied very carefully by the committee, the president, and himself, and that an accident-and-health-insurance policy and a life-insurance policy had been recommended. He said that dissatisfaction had been expressed by some physicians, however, concerning restrictions in the policies about which they had not been informed when purchasing the insurance. The secretary made no recommendation. After general discussion of the matter, Dr. Elliott offered the following motion:

RESOLVED, that the State Medical Society's Committee on Insurance get expert advice to review the policies offered by the companies which have been considered by the Insurance Committee of the Society, and also to consider the policies of other companies, before decision is made to continue the present indorsement.

The motion to adopt the resolution was seconded by Dr. Patterson and carried.

The secretary read a communication from Dr. E. M. Carr, Secretary of the Buncombe County Medical Society, in regard to the establishment of associate membership in that body for doctors serving with various veterans' facilities, asking whether such a membership would be in line with the policy of the State Society. After some discussion Dr. Tayloe offered the following motion, which was seconded by Dr. Knight and was adopted:

RESOLVED, that the Buncombe County Medical Society be permitted to establish a membership for associate members who are serving with veterans' facilities.

At this point Dr. Zack D. Owens, second vice president, took the chair, at the request of the president.

President Whitaker called to the attention of the Executive Committee some information received from Dr. Frank Sharpe, a past member of the Board of Medical Examiners, to the effect that at each meeting of the Board it is called upon to rescind the licenses of a number of physicians who are addicted to alcohol or narcotics. Dr. Whitaker said he wished to convey to the incoming administration Dr. Sharpe's suggestion that a committee might be appointed and funds secured to work with these men and rehabilitate them, giving them a chance to reestablish themselves in their communities.

President Whitaker then mentioned that the amount provided by the Society for its president's expenses is quite inadequate and that during some years, when there is a great deal of activity, the president may be personally unable to bear the expense and the situation may become embarrassing to him. Dr. Whitaker expressed the opinion that, in such event, if the president kept an account of his expenditures and presented it to the Society he should be reimbursed.

Dr. Whitaker then read his report* as president and submitted his resignation.

Secretary McMillan moved that the resignation of Dr. Whitaker, under the circumstances, be accepted; and this motion was seconded by Dr. Orr. After some discussion the motion was put to vote and was carried.

On motion of Dr. McMillan, the following committee was appointed by Vice President Owens to consider the president's report: Dr. James W. Vernon, Morganton, Chairman; Dr. M. D. Hill, Raleigh; and Dr. Reece Berryhill, Chapel Hill.

President Whitaker then resumed the chair.

President Whitaker stated that the only other matter to come up was whether to elect a president-elect. Dr. Tayloe moved that the Executive Committee defer action on the election of a president-elect until the Medical Society can hold a meeting, at which time both a president and a president-elect can be chosen. This motion, which was seconded by Dr. Matheson, was adopted.

Dr. Owens suggested submitting his resignation as second vice president, but was asked by President Whitaker and Dr. Moore to continue serving in that capacity.

In behalf of the Executive Committee and the Society, Dr. Whitaker then turned the gavel over to Dr. Moore†.

President Moore expressed his deep appreciation of the honor conferred upon him in his election to the presidency. He asked that the committee appointed to consider President Whitaker's address consider also the two matters brought up by Dr. Whitaker before he read his report. Any program or plan of activity he might develop during his incumbency, he said, would probably relate to his own specialty of obstetrics. He suggested the need for a thorough investigation of every maternal death and called attention to the establishment of the National Council of Obstetrical Agencies. He also stated that he would probably appoint a Committee on State Institutions for Mental Diseases, in line with Dr. Whitaker's concept, to keep the Society informed about conditions in the various institutions.

Dr. Tayloe then proposed the adoption of the following resolution:

RESOLVED, that the members of the Executive Committee of the Medical Society of the State of North Carolina go on record as thanking Dr. Whitaker for the extremely valuable work done by him during his term as president, for his faithfulness in attending meetings, and for his devotion to duty.

This motion was seconded by Dr. Patterson and was adopted by a rising vote.

No further business appearing, a motion to adjourn was offered and the meeting adjourned at 4 p.m.

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* Published on page 309.

† Dr. Moore's inaugural remarks are published on page 348.

Report of Secretary-Treasurer*

The long desired victory in Europe has come, but the exigencies of war are still upon us. Therefore, we are prohibited from holding the annual meeting of the House of Delegates, and for that reason this report is presented to you.

In spite of the fact that the Ninety-Second Annual Session has been canceled, my office for the past thirteen months has been extremely busy with a great deal of correspondence, legislative activities, and so forth.

The past year has been a banner year so far as membership is concerned. The total membership was 2030, representing 367 honorary fellows, 434 fellows in service, and 1229 active fellows. This is a net gain of 74 members over 1943. Of this number 45 were new members, 6 of whom went directly into the armed forces. In all, 18 members entered the service and 10 were discharged.

Fifty-six physicians have died during this year. Thirty-nine of this number were members of the Medical Society of the State of North Carolina. One of our members was killed in action and one is a prisoner of war in the Pacific area. Two other North Carolina physicians, not members of the Medical Society, were also killed in action.

There are still four or five hundred doctors who should affiliate themselves with organized medicine in North Carolina. Each county medical society in the state should have as its goal a 100 per cent membership of all doctors within its boundaries. To obtain this, every member should contact all eligible non-members asking them to join the society. The need is reciprocal; the backbone of the society is its membership, and certainly each doctor needs the support of organized medicine.

The following counties had a 100 per cent membership for 1944:

Alamance-Caswell, Anson, Avery, Bertie, Bladen, Buncombe, Caldwell, Chatham, Chowan-Perquimans, Cleveland, Columbus, Cumberland, Davidson, Duplin, Durham-Orange, Edgecombe-Nash, Forsyth, Franklin, Gates, Granville, Greene, Guilford, Haywood, Henderson, Hertford, Hoke, Johnston, Lee, Lenoir, Lincoln, Macon-Clay, Madison, Martin-Washington-Tyrrell, Mecklenburg, Mitchell-Yancey, Montgomery, Onslow, Pamlico, Person, Pitt, Polk, Randolph, Richmond, Robeson, Rockingham, Sampson, Scotland, Stanly, Transylvania, Wilson.

For the year ending December 31, 1944, we again have added to our financial surplus. The auditor's report as of December 31, 1944, is hereto attached and will be published in the July issue of the **North Carolina Medical Journal.** For your information I will say that the auditor's report, as well as the report of the Finance Committee (also attached), shows your Society to be in excellent financial condition. The revenue receipts for 1944 exceeded the expense disbursements by $3,656.88. The cash balance in the Scottish Bank of Red Springs was $1,840.85.

We purchased $5,000 of U. S. War Bonds as an investment, making the total par value of our bonds at maturity $25,100.00; the total cost value of our bonds at date of acquisition was $21,564.00.

The auditor's report and the budget for 1945 in the amount of $20,200.00 have been approved by the Finance Committee, composed of Dr. Ross S. McElwee, Dr. B. O. Edwards, and Dr. W. H. Sprunt.

Your president and secretary have probably visited more county societies in the past year than in a great many years. This was done primarily to stimulate more interest in organized medicine. Some of the smaller county societies—and I might say a few of the district societies—have been rather indifferent. You can realize that this attitude makes a weak link in the State Society. We have made desperate efforts to get the local societies to take more interest at this critical time. We emphatically urge that all county and district medical societies hold their meetings regularly.

The **North Carolina Medical Journal** continues a successful career. In spite of the shortage of paper and the curtailment of help, the **Journal** has increased in size and circulation. To judge from various comments, not only in North Carolina but throughout the country, our **Journal** is maintaining its high standard. Our advertising for 1944 showed an increase of $1,697.12 over 1943. The **Journal** has been proud to do its part in advertising war bonds. A number of pages in our advertising section, as well as the front page of the May, 1945, issue, have been contributed gladly.

As business manager of the **Journal,** I submit the following statement of income and expenditures:

January 1, 1944—December 31, 1944

Receipts:		
Society's appropriation	$9,075.00	
Advertising, etc.	8,815.01	
		$17,890.01
Expenditures:		
Editor's salary	$1,900.00	
Asst. Editor's salary	1,575.00	
Rent	325.00	
Printing of **Journal**	6,387.93	
		10,187.93
Excess of receipts over expenditures		$ 7,702.08

Your secretary has kept in close touch with the various committees. While some of them have been rather inactive, the majority have rendered invaluable service.

I especially want to compliment the Legislative Committee for the valuable work it did, under the guidance of Dr. Hubert B. Haywood, during the 1945 meeting of the General Assembly. Its report will be given you, so I will not go into details.

Under the chairmanship of Dr. Hamilton McKay of Charlotte, the committee to advise with members of the Governor's Commission To Extend Medical and Hospital Care in North Carolina and Increase the Facilities for the Education of Medical Personnel at the University, has done excellent work.

The committee to revise the Industrial Fee Schedule, under the chairmanship of Dr. Harry Winkler of Charlotte, has rendered inestimable service. Within the next few days the revised fee schedule will be mailed to every physician in the state.

You are probably aware that the American Medical Association has a Committee on Postwar Medical Service, of which Dr. Ernest E. Irons of Chicago is chairman. Each state has been requested to set up a Postwar Planning Committee for the purpose of giving consideration to the many medical problems which will arise as a result of the war and the demobilization which will follow. Of particular interest to the committee at the moment are the provisions of public law 346, Seventy-Eighth Congress (G. I. Bill of Rights), as they may affect the entire field of medical education. The governor

tutions in his state which are qualified to give acceptable courses of education and training in each of many categories. President Whitaker has appointed Dr. Wilburt C. Davison as chairman of the Postwar Planning Committee for North Carolina. Under his leadership the committee is rendering practical aid to demobilized medical officers upon their return to civilian practice. Postgraduate training for returning doctors is being offered by the medical schools and hospitals of the state.

In this connection I might say that one of the questions uppermost in our minds is how many of the six hundred and fifty-odd North Carolina physicians in service will be released and how soon they will get back to civilian practice, now that V-E Day has come and gone. As the vast program for transferring fighting men from Europe to the Pacific gets under way, some of the problems are:

1. How will the redeployment program affect medical officers?
2. Will the reduction of the number of medical officers be in the same proportion as that of line personnel?
3. Will medical officers be discharged to return to civilian practice in communities needing medical care?
4. Will they be transferred to the Veterans Administration?

Vigorous protest against such assignment of medical officers to the Veterans Administration comes from the committee on Postwar Medical Service which met recently in Chicago. So far, army and navy higher-ups have given no definite information on these questions. Until definite word is received it must be assumed that medical officers will continue to be discharged for disabilities, perhaps a bit more rapidly than in the past, but that no great mass of discharges will be forthcoming. The return of a few doctors who are certified as holding key teaching positions in medical schools may be anticipated.

Within the past few weeks a new program of "cradle to the grave" security, sponsored by Senators Wagner and Murray and Representative Dingell, has been introduced in Congress. This program, said to be supported by President Truman, is not far different from an earlier program supported by President Roosevelt. It becomes what might be called Postwar Plan No. 2. This bill is introduced to expand the social security act, and includes the following provisions:

1. The establishment of a national social insurance system, consisting of (1) prepaid personal health service; (2) unemployment and temporary disability insurance benefits up to $30.00 a week on a uniform, national basis; (3) retirement, survivors, and total disability insurance with more liberal benefits than under the existing law.
2. Authorization of a 10-year, $950,000,000 program of federal grants and loans for construction and expansion of hospitals and health centers.
3. The provision of grants to states for expansion of health services, maternal and child health and welfare services, and for public assistance to needy individuals, such as the aged, blind, and dependent children.
4. The extension of the social insurance system to cover farm and domestic workers, employees of non-profit institutions, independent farmers, professional persons, and small business men.
5. Provision for a national system of public employment offices.

This bill outlines the trend of official thinking, and part of that trend will be translated into reality late in 1945 or some time in 1946. This bill may not be passed by the present session of Congress. It may never be passed in the form in which it has been presented, but the objectives of this bill will surely be reached in one form or another. It is only a question of time—and a short time at that—before the measures of security sought in the bill are sure to come. I feel that the passage of the bill on a national scale will be demanded by the people.

Respectfully submitted,
ROSCOE D. McMILLAN, M.D.

Report of the Finance Committee

To the Executive Committee,
Medical Society of the State of North Carolina

Your finance committee has received an audit from S. Preston Douglas of Lumberton, and an estimated budget for 1945 from the Secretary-Treasurer.

These reports have been gone over carefully by your committee and we find there are no criticisms to be made.

It is apparent that the Society is in excellent financial condition. The excess assets in the amount of $5,000.00 have been invested in War Bonds, leaving a cash balance of $1,840.85 in the Scottish Bank of Red Springs, N. C. This balance has been checked with the bank, as have the bonds.

This annual report will be sent to Dr. McMillan, secretary and treasurer of the Society, and he will have it published in our **Journal** so that each member may read it.

ROSS S. McELWEE, M.D.
B. O. EDWARDS, M.D.
W. H. SPRUNT, M.D.

Proposed Budget for 1945

Receipts		
Current and back dues	$	12,000.00
Advertising		8,000.00
Other sources		200.00
Total Receipts	$	20,200.00
Expenditures		
Secretary's Office		
Salary	$	2,400.00
Clerical assistance		1,500.00
Stationery and stamps		600.00
Rent		300.00
Travel expense		400.00
Auditing		80.00
Miscellaneous and emergency		600.00
Total Secretary's Office	$	5,880.00
North Carolina Medical Journal		
Editor's salary	$	1,800.00
Asst. Editor's salary		1,500.00
Rent		300.00
Printing **Journal**		8,000.00
Total **N. C. Medical Journal**	$	11,600.00
All Offices Except Secretary's		
Stationery and miscellaneous	$	270.00
Councilors' travel expense		250.00
President's travel expense		400.00
Executive Committee		400.00
Legislative Committee and attorney's fee		700.00
Other committees		700.00
Total Other Offices	$	2,720.00
Total 1945 Expenditures	$	20,200.00

	Appropriated for 1944	*Actual Receipts or Disbursements*	*Under/***Over**	*Estimated for 1945*
Receipts				
Current and back dues	$11,325.00	$12,901.00	**$ 1,576.00**	$12,000.00
Advertising	6,000.00	8,815.01	**2,815.01**	8,000.00
Other sources	200.00	240.00	**40.00**	200.00
Total Receipts	$17,525.00	$21,956.01	**$ 4,431.01**	$20,200.00
Expenditures				
Secretary's Office:				
Salary	$ 2,600.00	$ 2,600.00	.. .. ..	$ 2,400.00
Clerical assistance	1,500.00	1,625.00	**125.00**	1,500.00
Stationery and stamps	300.00	323.17	**23.17**	600.00
Rent	300.00	325.00	**25.00**	300.00
Travel expense	400.00	400.00	.. .. ..	400.00
Auditing	60.00	60.00	.. .. ..	80.00
Miscellaneous and emergency	600.00	385.31	214.69	600.00
Total Secretary's Office	$ 5,760.00	$ 5,718.48	$ 41.52	$ 5,880.00
North Carolina Medical Journal:				
Editor's salary	$ 1,900.00	$ 1,900.00	.. .. ..	$ 1,800.00
Assistant Editor's salary	1,575.00	1,575.00	.. .. ..	1,500.00
Rent	300.00	325.00	**25.00**	300.00
Printing **Journal**	5,300.00	6,387.93	**1,087.93**	8,000.00
Total **N. C. Medical Journal**	$ 9,075.00	$10,187.93	**$ 1,112.93**	$11,600.00
All Offices Except Secretary's:				
Stationery and miscellaneous	$ 140.00	$ 116.56	$ 23.44	$ 270.00
Councilors' travel expense	250.00	225.00	25.00	250.00
President's travel expense	400.00	400.00	.. .. ..	400.00
Executive Committee	300.00	299.96	.04	400.00
Legislative Committee	.. .. ..	.. .. ..	.. .. ..	700.00
Other committees	600.00	345.72	254.28	700.00
State Meeting reporting	475.00	495.48	**20.48**	.. .. ..
A. M. A. Delegates	200.00	200.00	.. .. ..	.. .. ..
Guest Speaker	100.00	100.00	.. .. ..	.. .. ..
Constitution and By-Laws	225.00	210.00	15.00	.. .. ..
	$ 2,690.00	$ 2,392.72	$ 297.27	$ 2,720.00
Total Expenditures	$17,525.00	$18,299.13	**$ 744.13**	$20,200.00

Total excess of receipts over disbursements — $3,656.88

AUDIT REPORT

January 1, 1944 to December 31, 1944

February 12, 1945

Chairman and Members of the Finance Committee
Medical Society of the State of North Carolina, Inc.
Red Springs, North Carolina

Gentlemen:

Pursuant to engagement, we have made an audit and examination of the Cash Receipt and Disbursement records of Dr. Roscoe D. McMillan, Secretary-Treasurer of the Medical Society of the State of North Carolina, Inc., Red Springs, N. C., for the year ended at December 31, 1944.

A report of such audit and examination, consisting of three Exhibits and two Schedules, enumerated as follows, is submitted herewith, and is subject to the comment contained herein:

Exhibit A Balance Sheet
Exhibit B Budget Comparison—Receipts and Expenditures
Exhibit C Cash Receipts and Disbursements
Schedule 1 Reconciliation of Cash
Schedule 2 Investment in United States Defense Bonds

Scope of Audit

The scope of the audit consisted of a detailed examination of the Cash Book, which is used as a record of original entry for receipts and disbursements. The receipts as shown therein were accepted as being correct without further audit. All paid and cancelled bank checks and supporting vouchers were examined for the purpose of verifying the correctness of the disbursements. The Assets were verified to the extent set forth hereinafter.

Balance Sheet—Exhibit A

A Balance Sheet, which is designated herein as Exhibit A, has been prepared to show the Assets, Liabilities and Net Worth of the Medical Society at December 31, 1944. The only recorded Liability of the Medical Society was an item representing the amount of income tax withheld from the salaries of the Secretary-Treasurer and other employees of the Society, which was remitted to the Collector of Internal Revenue during January, 1945. This Balance Sheet has been divided into two sections. One section contains the Current Operating Fund, which shows an unencumbered and unappropriated balance of $23,229.65, while the other fund has been designated as a Capital or Non-Operating Fund and contains the office equipment owned and used by the Medical Society at estimated values established in a prior year. There were no outstanding Liabilities of record of the Capital Fund. The Balance Sheet shows the Net Worth of the two funds to be $23,229.65 and $989.41, respectively.

The cash in the Scottish Bank, Red Springs, N. C., in the amount of $1,840.85, was verified through a reconciliation of the balances as shown by the records of the Secretary-Treasurer of the Medical Society with a statement which was obtained independently from the depository. This reconciliation is shown in detail in Schedule 1 of the report.

The investment in United States Defense Bonds has been shown at cost value of $21,564.00, in the Balance Sheet, and in detail in Schedule 2 of this report. These bonds were examined by us.

The office equipment, which has been shown in detail in the Balance Sheet under the heading of Capital or Non-Operating Fund, was brought forward from an estimate made in a prior year and adjusted for purchases made during the year under review. The items shown herein represent equipment of the Medical Society, now located in the office of Dr. McMillan. As there were no Liabilities outstanding against the office equipment, we have shown the entire amount as Net Worth of the Medical Society under an appropriate heading in the Balance Sheet.

Budget Comparison—Receipts and Expenditures

Exhibit B

A statement showing a comparison of the Cash Receipts and Disbursements for the current year operations of the Medical Society has been shown in Exhibit B. This statement is in effect a statement of operations, and by examination it will be seen that the Revenue Receipts exceeded the Expense Disbursements by $3,656.88, for the current year. This amount represents an operating surplus and has been added to the unexpended balance of the Current Fund and shown in the Net Worth section of the Balance Sheet.

Cash Receipts and Disbursements—Exhibit C

A statement showing in detail the Cash Receipt and Disbursement of funds passing through the hands of Dr. Roscoe D. McMillan, Secretary-Treasurer of the Medical Society during the year under review, has been shown in Exhibit C, which may be summarized as follows:

Cash Balance at January 1, 1944		$ 3,151.52
Cash Receipts during Year (Including Refunds)		22,076.01
Total Cash Available		$25,227.53
Less—Disbursements During Current Year:		
For Operations (Including Refunds)	$18,148.93	
Non-Operating Items	237.75	
Purchase of U. S. A. Defense Bonds as an Investment	5,000.00	23,386.68
Cash Balance at December 31, 1944		$ 1,840.85

General Comment

It should be understood that this report has been prepared on a strictly Cash Receipts and Disbursements basis; therefore, the expense of salaries, rents and other items for the month of December, 1943, which were paid during January, 1944, have been included in this report for the year 1944. In the audit report of the prior year, recommendation was made that all expense of each month be paid on the last day of the month, and this practice was put into effect. In doing so, it increased the expense for the year 1944 to some extent, but at the same time sets up the accounts in such a manner that no expense will be deferred from month to month and therefore assures accuracy of your annual report by the inclusion of all expense of the year, when the report is made on a cash basis. Provision was made in the 1944 Budget, to a large extent, for the increased expense due to the current method of paying all salaries and invoices on the last day of each month.

A surety bond covering faithful performance of the Secretary-Treasurer of the Medical Society was examined by us and appears as follows:

Dr. Roscoe D. McMillan, Secretary-Treasurer
Maryland Casualty Company
Dated 6-15-41—Term Continuous
Premium paid to 6-15-45
Principal Sum — $20,000.00

An insurance policy was also examined which covers fire loss in the amount of $1,500.00, on office equipment, books and records in the office of the Secretary-Treasurer. This policy is dated June 10, 1944 and expires June 10, 1947.

As will be observed by examination of the statement of U. S. Defense Bonds held, the Medical Society made an investment during the year under review, in Series "G" bonds, having a cost value of $5,000.00.

We are glad to inform you that the financial records as maintained by the Secretary-Treasurer, were found, upon examination by us, to have been well kept and in an excellent condition.

In conclusion, we wish to express our appreciation for the courtesies and cooperation shown us during the course of the audit.

Respectfully submitted,

S. Preston Douglas
Certified Public Accountant

EXHIBIT A—BALANCE SHEET

December 31, 1944

ASSETS

CURRENT OPERATING FUND		
Cash: (Schedule 1)		
The Scottish Bank, Red Springs, N. C.		$ 1,840.85
Investment in U. S. A. Defense Bonds		21,564.00
TOTAL ASSETS—Current Operating Fund		$23,404.85
CAPITAL OR NON-OPERATING FUND		
Underwood Typewriter	$ 115.00	
Wooden File Case (Letter-size)	21.66	
Typewriter Desk	25.00	
Steel Office Safe	150.00	
Burroughs Adding Machine	200.00	
Checkwriter (Paymaster)	40.00	
Electric Mimeograph Machine	300.00	
Steel File Case—Letter-size	20.00	
Four Steel Card Files	20.00	
Office Chairs	35.20	
One Desk	62.55	989.41
TOTAL ASSETS		$24,394.26

LIABILITIES AND NET WORTH

LIABILITIES		
Federal Withholding Tax (4th quarter 1944)		$ 175.20
TOTAL LIABILITIES		$ 175.20
NET WORTH		
Current Operating Fund:		
Balance January 1, 1944	$19,635.32	
Plus—Net Increase during year per Budget Comparison Statement (Exhibit B)	3,656.88	
	$23,292.20	
Less—Expenditure made for Capital Addition	62.55	23,229.65
Capital Fund—Non-Operating:		
Balance January 1, 1944	$ 926.86	
Plus—Purchases during Year from Current Funds	62.55	989.41
TOTAL LIABILITIES AND NET WORTH		$24,394.26

EXHIBIT B—BUDGET COMPARISON RECEIPTS AND EXPENDITURES

January 1, 1944 to December 31, 1944

	Budget Provisions	*Actual Receipts or Disbursements*	*Under (*) Realized Receipts or Over (*) Expended*
RECEIPTS			
Membership Dues—Current and Prior Years (Less Refunds of $77.00)	$11,325.00	$12,901.00	$ 1,576.00
Medical Journal—Advertising	6,000.00	8,815.01	2,815.01
Other Sources	200.00	240.00	40.00
TOTAL RECEIPTS	$17,525.00	$21,956.01	$ 4,431.01
EXPENDITURES			
Secretary's Office:			
Salary	$ 2,600.00	$ 2,600.00	$
Clerical Assistance	1,500.00	1,625.00	125.00*
Stationery and Stamps	300.00	323.17	23.17*
Rent	300.00	325.00	25.00*
Travel Expense	400.00	400.00	
Auditing	60.00	60.00	
Miscellaneous and Emergency	600.00	385.31	214.69
TOTAL—Secretary's Office	$ 5,760.00	$ 5,718.48	$ 41.52
North Carolina Medical Journal:			
Editor's Salary	$ 1,900.00	$ 1,900.00	$
Asst. Editor's Salary	1,575.00	1,575.00	
Rent	300.00	325.00	25.00*
Printing Journal	5,300.00	6,387.93	1,087.93*
TOTAL—N. C. Med. Journal	$ 9,075.00	$10,187.93	$ 1,112.93*
All Offices Except Secretary's:			
Stationery and Misc.	$ 140.00	$ 116.56	$ 23.44
Councilors' Travel Exp.	250.00	225.00	25.00
President's Travel Exp.	400.00	400.00	
Executive Committee	300.00	299.96	.04
Other Committees	600.00	345.72	254.28
State Meeting Reporting	475.00	495.48	20.48*
A. M. A. Delegates	200.00	200.00	
Guest Speaker	100.00	100.00	
Constitution and By-Laws	225.00	210.00	15.00
TOTAL — OTHERS	$ 2,690.00	$ 2,392.72	$ 297.28
TOTAL EXPENDITURES	$17,525.00	$18,299.13	$ 774.13*

SUMMARY—BUDGET POSITION

RECEIPTS—Excess of Realized over Anticipated	$ 4,431.01
DISBURSEMENTS—Increase over Appropriations	774.13*
NET REVENUE IN EXCESS OF BUDGET APPROPRIATIONS	$ 3,656.88

EXHIBIT C—CASH RECEIPTS AND DISBURSEMENTS

January 1, 1944 to December 31, 1944

RECEIPTS

Membership Dues—Current and Prior Years		$12,978.00
Medical Journal—Advertising		8,739.31
Medical Journal—Subscriptions		75.70
Interest—U. S. Savings Bonds		225.00
Refunds of Expense Vouchers		33.00
Refund for Album		15.00
Collection of Prior Year Uncollected Check		10.00
TOTAL CASH RECEIPTS DURING YEAR		$22,076.01
CASH BALANCE AT JANUARY 1, 1944		3,151.52
TOTAL CASH AVAILABLE DURING YEAR		$25,227.53

DISBURSEMENTS

CASH DISBURSEMENTS DURING YEAR

Secretary's Office:		
Salary of Secretary	$2,600.00	
Salary of Clerical Assistant	1,625.00	
Rent	325.00	
Travel	400.00	
Bonding and Insurance—Secretary and Furniture	150.70	
Stationery, Supplies and Postage	323.17	
Telephone and Telegraph	195.61	
Auditing	60.00	
Federal Old Age Benefit Tax	39.00	$ 5,718.48
North Carolina Medical Journal:		
Salary of Editor	$1,900.00	
Salary of Assistant Editor	1,575.00	
Rent	325.00	
Printing and Mailing Journal	6,387.93	10,187.93
Other Operating Expense:		
Councilors' Travel Expense	$ 250.00	
President's Travel Expense	400.00	
Guest Speaker	100.00	
Delegates to A. M. A.	200.00	
Reporting State Convention	495.48	
Executive Committee	299.96	
Medical Preparedness Committee	300.00	
Scientific Committee	45.72	
Stationery, Printing, etc.	71.74	
Printing and Mailing Constitution and By-Laws	210.00	
President's Jewel, Album, Flowers, etc.	44.82	2,417.72
TOTAL		$18,324.13
Less—Withholding Tax on Employees' Salaries		175.20
TOTAL OPERATING DISBURSEMENTS		$18,148.93
Other Disbursements—Non-Operating:		
Refund of Membership Dues	$ 85.00	
Purchase of Office Desk	62.55	
Prior Year Withholding Tax Paid	90.20	
Purchase of Defense Bonds of U. S. A.	5,000.00	5,237.75
TOTAL CASH DISBURSEMENTS DURING YEAR		$23,386.68
CASH BALANCE AT DECEMBER 31, 1944		
The Scottish Bank—Checking Account		1,840.85
TOTAL CASH DISBURSEMENTS AND BALANCE		$25,227.53

SCHEDULE 1—RECONCILIATION OF CASH

December 31, 1944

CASH ON HAND			$
THE SCOTTISH BANK—Red Springs, N. C.			
Checking Account:			
Balance per Bank Statement		$2,468.25	
Less—Outstanding Checks:			
Number	*Amount*		
287	$ 8.00		
307	16.00		
404	4.00		
560	7.80		
719	109.40		
720	171.00		
721	201.80		
722	109.40	627.40	1,840.85
TOTAL CASH AS SHOWN BY EXHIBIT A			$ 1,840.85

SCHEDULE 2—INVESTMENT IN UNITED STATES DEFENSE BONDS

December 31, 1944

	Date of Issue	*Date of Maturity*	*Par Value At Maturity*	*Cost*
DEFENSE SERIES "F"				
No. M75369F	12-1-41	12-1-53	$ 1,000.00	$ 740.00
No. M75370F	12-1-41	12-1-53	1,000.00	740.00
No. M75371F	12-1-41	12-1-53	1,000.00	740.00
No. M75372F	12-1-41	12-1-53	1,000.00	740.00
No. M75373F	12-1-41	12-1-53	1,000.00	740.00
No. M75374F	12-1-41	12-1-53	1,000.00	740.00
No. M98838F	1-1-42	1-1-54	1,000.00	740.00
No. M98837F	1-1-42	1-1-54	1,000.00	740.00
No. M98836F	1-1-42	1-1-54	1,000.00	740.00
No. M98835F	1-1-42	1-1-54	1,000.00	740.00
No. M98834F	1-1-42	1-1-54	1,000.00	740.00
No. M98833F	1-1-42	1-1-54	1,000.00	740.00
No. C89019F	12-1-41	12-1-53	100.00	74.00
No. C89020F	12-1-41	12-1-53	100.00	74.00
No. C89021F	12-1-41	12-1-53	100.00	74.00
No. C89022F	12-1-41	12-1-53	100.00	74.00
No. C89023F	12-1-41	12-1-53	100.00	74.00
No. C89024F	12-1-41	12-1-53	100.00	74.00
No. C89025F	12-1-41	12-1-53	100.00	74.00
No. C89026F	12-1-41	12-1-53	100.00	74.00
No. C89818F	1-1-42	1-1-54	100.00	74.00
No. C89819F	1-1-42	1-1-54	100.00	74.00
No. C89820F	1-1-42	1-1-54	100.00	74.00
No. C89821F	1-1-42	1-1-54	100.00	74.00
No. C89822F	1-1-42	1-1-54	100.00	74.00
No. C89823F	1-1-42	1-1-54	100.00	74.00
No. C89824F	1-1-42	1-1-54	100.00	74.00
No. C89825F	1-1-42	1-1-54	100.00	74.00
SAVINGS SERIES "G"				
Interest rate 2½% Payable Semi-Annually from date of Issue:				
No. M1186465G	12-1-42	12-1-54	1,000.00	1,000.00
No. M1186466G	12-1-42	12-1-54	1,000.00	1,000.00
No. M1376544G	4-1-43	4-1-55	1,000.00	1,000.00
No. M1376545G	4-1-43	4-1-55	1,000.00	1,000.00
No. M1376546G	4-1-43	4-1-55	1,000.00	1,000.00
No. D616518G	4-1-43	4-1-55	500.00	500.00

No. M1905733G	9-1-43	9-1-55	1,000.00	1,000.00
No. M2355967G	2-1-44	2-1-56	1,000.00	1,000.00
No. M2700601G	4-1-44	4-1-56	1,000.00	1,000.00
No. M2700600G	4-1-44	4-1-56	1,000.00	1,000.00
No. M2772895G	6-1-44	6-1-56	1,000.00	1,000.00
No. M2772896G	6-1-44	6-1-56	1,000.00	1,000.00

TOTAL PAR VALUE AT MATURITY--$25,100.00

TOTAL COST VALUE AT DATE OF ACQUISITION—EXHIBIT A ---------- $21,564.00

INAUGURAL REMARKS

OREN MOORE, M.D.

Members of the Executive Committee:

The thought of taking over the responsibilities of this position in critical war-time days, and especially as the successor to such a dynamic, efficient, and lovable predecessor as Dr. Whitaker, thoroughly appals me. I shall need, and expect, the fullest support and cooperation of this entire committee, and of all other officers, as well as of the membership. My one comforting thought is that I shall receive such support, which will be directed by that most capable of all secretaries, Dr. Roscoe McMillan.

In taking office I am surprised to discover that no official relationship exists between the State Society and the state institutions for the care of the mentally sick. It seems obvious to the professional mind that no agency in the commonwealth is as capable of judging whether adequate care is given in such institutions as is the medical profession. If a definite contact had, in the beginning, been established between the doctors of North Carolina and the state-operated institutions, it is entirely unlikely that newspaper campaigns and public notoriety would have been evoked for the correction of their management.

It also seems wise that closer attention by the Society to maternal welfare programs should be arranged. I shall endeavor to appoint suitable committees to act with the already established authorities now in charge of the mental institutions and the maternal welfare programs, with the hope that these committees may become permanent.

Unless travel restrictions and the pressure of personal practice become less than is now apparent, visits from the president to the various societies will, of necessity, be less frequent than in past years. I shall, however, hold myself in readiness to supply whatever needs may arise, in so far as my limited capacity allows.

Again, it is my earnest hope that, with your powerful assistance, this may prove another successful year in the Society's history.

REPORT BY THE COMMITTEE ON REVISION OF THE FEE SCHEDULE

Dr. Donnell Cobb, president of the State Medical Society during 1942-43, appointed a committee of three, consisting of Dr. Harry Winkler of Charlotte, Dr. J. F. Robertson of Wilmington and Dr. Glenn R. Frye of Hickory, to confer with the Industrial Commission regarding a revision of the existing fee schedule covering charges to be paid for professional services rendered injured workmen under the provisions of the State Workmen's Compensation Act. Dr. James W. Davis of Statesville was added to the above committee by appointment from Dr. Whitaker during 1944.

The committee attempted to secure information from as many sources as possible regarding changes in the fee schedule which were desired by the members of the profession. Several hundred communications were sent out asking for suggestions. The committee received many communications on phases of the administration of the Act which it felt were not within its jurisdiction. It does feel, however, that such recommendations should be brought to the attention of the State Medical Society at its annual meetings.

The committee had several conferences with the members of the Industrial Commission, who consulted with a group of representatives of the employers of the state before the present fee schedule was adopted.

Arrangements have been made with the Industrial Commission to mail a copy of the new schedule to every doctor in the state for his guidance. It is possible that much of the ill-feeling and dissatisfaction in the past may have been due to a lack of understanding of the schedule, which certainly has not been comprehensive enough, and the committee hopes that further elaboration of the schedule and more specificity as to charges will clear up many of the problems.

One of the most important changes has been to make a single and universal office visit fee of $1.50. This may work a hardship in some instances, but it was felt that it would eliminate a lot of dissatisfaction regarding "bill-cutting." It is to be noted also that hospital visits which do not come under the flat rate treatment schedules have been increased from $1.50 to $2.00.

Somewhat more liberal fees have been allowed in some of the items. In a few instances reductions have been accepted where it was felt that procedures have been simplified.

The committee wishes to point out that when any operative or corrective procedure not listed in the schedule is contemplated, a fee for this procedure should be arranged for with the responsible agency before it is undertaken. This is particularly applicable to skin grafting, plastic surgery, or unusual procedures not freqently done. In some instances the schedule specifies that such fees would be handled under this arrangement and notes them as A & A (arranged and authorized).

Rule 14 did not have the approval of this committee and was inserted by the Industrial Commission without our agreement. It is to be noted that if medical men will follow the procedure outlined in the previous paragraph there will be no need for the application of this rule.

The committee feels that the present schedule is not necessarily final and hopes that where dissatisfaction arises complaints can be handled by a permanent group in the Medical Society.

It also points out that where dissatisfaction exists concerning the Industrial Commission's allowance on a medical bill, the Industrial Commission has a Medical Advisory Committee made up of members of the Medical Society and appointed by its president, to whom appeal may be made.

It is the committee's hope that the present revision may solve most of the difficulties which have arisen in the past and that close adherence to the fees agreed upon in the schedule will result in a complete elimination of the "bill-cutting" which has been the source of so much dissatisfaction.

The committee wishes to take this opportunity to express its appreciation to the presidents of the Medical Society, Drs. Cobb, Vernon, and Whitaker, for their assistance and suggestions, and to the members of the Industrial Commission for their time, assistance and courtesy in the numerous conferences necessary to complete the new schedule, and to all of those members of the State Society who have helped out with suggestions and advice.

Harry Winkler, M.D.
J. F. Robertson, M.D.
Glenn R. Frye, M.D.
James W. Davis, M.D.

Hospital Saving Association
Annual Report to the Medical Society of the State of North Carolina

Since May of 1944 the net growth in members of the Association has been 21,911, and resources have increased by $197,879.74. The surgical program, since last May, has shown a growth of 37,634 subscribers, bringing this membership to a new high of 84,705 as of May 1.

During 1944, $970,323.72 was paid in claims, $113-205.50 of which was for surgical and obstetrical claims.

Net membership as of May 1 was 246,400, including 84,705 on the combined coverage.

Mr. Crawford reports that people are interested in the combined coverage and that many are transferring from hospitalization insurance to the combined coverage.

The Board of Trustees meets every six months now instead of once a year, and there are quarterly meetings of the Executive Committee.

Mr. Crawford met with six of the county medical societies during the year, as well as with the Auxiliary at their meeting in Sanatorium, to outline the Blue Cross program of hospitalization and professional services.

Further close cooperation of members of the Medical Society, individually and collectively, is needed.

Individual enrollment was inaugurated late in 1944, and we now have a broader base on which to acquire members. The individual rate is approximately 15 per cent higher than the group rate, and more careful underwriting is followed. There have been some paid advertising programs in some sections of the state, the principal idea being to announce the change in policy from group enrollment only to individual enrollment. Individual enrollment is too young for any definite results to be reported.

Yearly Progress
Hospitalization

Year	*Members*	*Admissions*	*Days*	*Paid*
1936	14,395	541	4,451	$ 17,886.39
1937	36,913	2,326	18,681	76,844.49
1938	83,436	8,345	64,835	267,696.49
1939	123,848	13,484	103,557	431,418.16
1940	137,761	16,087	128,880	521,197.74
1941	166,201	18,590	143,675	577,680.69
1942	181,032	20,065	154,510	635,069.76
1943	212,616	23,664	176,347	777,757.72
1944	233,010	25,437	194,110	857,118.22
Totals		128,539	989,046	$4,162,669.66

Surgery

Year	*Members*	*Admissions*	*Paid*
1941	5,086	130	$ 3,335.00
1942	23,770	1,346	36,689.00
1943	39,371	2,562	74,058.50
1944	63,717	3,738	113,205.50
Totals		7,776	$ 227,288.00
Total Hospitalization and Surgery		136,315	$4,389,957.66

Condensed Balance Sheet
April 30, 1945

Assets

Cash	$408,057.48
Bonds	375,000.00
Other	2,191.28
Total Assets	$785,248.76

Liabilities

Current (claims, bills, taxes)	$ 74,046.59
Deferred (prepaid fees, etc.)	268,287.69
Contingent reserve (for protection of members)	442,914.48
Total Liabilities	$785,248.76

What the Medical Profession Can Do

1. You can explain the Blue Cross voluntary program to your patients and to the business leaders in the community.

2. You can stress the long-range community civic service idea and show the business man the desirability of being a part of such a community health program.

3. You can urge them to consider such a program to offset any federal program.

4. You can get together in your various societies to see what recommendations you would like to make for improvements in the program. Hospital Saving Association welcomes constructive suggestions.

5. You can study the program so that you will understand exactly what we provide and will not misinform members about the provisions.

6. You can speak to them sincerely about not abusing the privileges of membership, showing them that all of us must cooperate to make the program sound.

7. You can be aware always of the costs of medical service, such as miscellaneous tests, x-rays, and laboratory work, in hospitals. Naturally, there should be no hesitancy in using such facilities when they are necessary for diagnosis and treatment, but excessive costs can make people fear and delay medical treatment today perhaps as much as any one thing. Length of stay in a hospital is also a factor in costs, as loss of productive time for the working man is an additional expense to him.

State Board of Medical Examiners

A meeting of the State Board of Medical Examiners was held in Raleigh, June 17-20 inclusive. All members of the board were present. Examinations, Parts I and II, were given to 206 applicants. Fifteen physicians were granted reciprocity licenses; no action was taken in three cases, and one was denied reciprocity license. No physician was allowed to take the examination or was given a reciprocity license unless he was a graduate of a grade A medical school.

The case of Dr. Gaston Justice of Marion, N. C., charged with narcotic irregularity, was heard on Tuesday. Dr. Justice had many letters of recommendation from local physicians and prominent laymen, pleading for a continuation of his practice. The board advised Dr. Justice not to apply for reinstatement of his narcotic license.

Dr. Richard C. Baker, osteopathic physician of Rockingham, was subpoenaed to appear before the board, but failed to do so. Attorney J. C. B. Ehringhaus phoned the secretary of the board that he had advised Dr. Baker not to appear, on the grounds that the Board of Medical Examiners did not have the authority to summon him. Charges were preferred against Dr. Baker by the Richmond County Medical Society for practicing medicine without a license. These charges were supported by exhibits, patients, and druggists as witnesses. The Board of Medical Examiners directed the secretary to prefer charges against Dr. Baker and submit them to the attorney general.

The case of Dr. John S. Hooker of Chapel Hill was heard by the board on Wednesday. Dr. Hooker, who is now serving five years in the State Penitentiary, was subpoenaed and appeared under guard. He stated that he was familiar with all the facts and did not feel that he had done anything to justify revocation of his license, unless it was being drunk. He stated, however, that he had signed a confession of a crime against nature, and upon that confession was convicted in the Orange County Court. Dr. Hooker's license was revoked.

News Notes from the University of North Carolina

The Department of Biological Chemistry and Nutrition has recently been notified of the renewal of their grant-in-aid from the Samuel S. Fels Fund of Philadelphia. This is the seventh consecutive year that this department has received aid from the Fels Fund. The purpose of this grant-in-aid is to support studies on the absorption and metabolism of quinine. The present work is chiefly concerned with the influence of nutritional deficiencies on the metabolism and anti-malarial effectiveness of this product.

* * *

Dr. Russell L. Holman of the Department of Pathology has been awarded a grant by the John and Mary R. Markle Foundation to continue studies on the relationship of diet and renal insufficiency to arterial disease.

* * *

The medical students of the University of North Carolina School of Medicine who completed their first two years of Medicine on June 13, 1945, have been transferred to the following schools to complete their third and fourth years:

John Purcell Allan, Chapel Hill—Jefferson Med. Coll.
George Walker Blair, Pittsboro—U. of Pennsylvania
James Seaborn Blair, Elizabethtown—U. of Maryland
Edwin Boyle, Sumter, S. C.—Jefferson Med. Coll.
Littleton Jay Bunch, Statesville—U. of Maryland
David Glenn Bunn, Kenly—U. of Maryland
Thomas Sidney Cheek, Smithfield—Med. Coll. of Virginia
E. Catherine Cline, Hickory—McGill U.
George Robert Clutts, Greensboro—Northwestern U.
Alfred Robert Cordell, Cliffside—Johns Hopkins U.
James Hicks Corey, Jr., Greenville—U. of Virginia
Sam Owen Cornwell, Chapel Hill—Cornell Med. Coll.
Courtney David Egerton, Raleigh—U. of Louisville
Grafton Clinton Fanney, Jr., Scotland Neck—Washington U.
Robert Greeson Fitzgerald, Candor—U. of Maryland
J. Henry Smith Foushee, Salisbury—Jefferson Med. Coll.
Harold Lacy Godwin, Fayetteville—Harvard Med. School
Ben Miller Gold, Shelby—U. of Maryland
Kirby Thompson Hart, Goldsboro—Harvard Med. School
John Allen Hightower, Jacksonville, Fla. — U. of Maryland
Edward Reginald Hipp, Charlotte—U. of Virginia
Richard Eugene Hooks, Whiteville—U. of Maryland
Hampton Hubbard, Charlotte—Med. Coll. of Virginia
Lewis Edward Jones, Norfolk, Va.—Jefferson Med. Coll.
Weldon Huske Jordan, Fayetteville—Harvard Med. School
David Josephs, Sanford—Med. Coll. of Virginia
Benjamin Jones Lawrence, Jr., Raleigh — Jefferson Med. Coll.
Carlyle Thomas Mangum, Winston-Salem—Harvard Med. School
John Howard Monroe, Hamlet—Havard Med. School
Jim Upton Oliver, Raleigh—Jefferson Med. Coll.
Karl Busbee Pace, Jr., Greenville—Jefferson Med. Coll.
William Gaston Palmer, Littleton — Harvard Med. School
John Robert Pender III, Charlotte—Jefferson Med. Coll.
Martha Frances Richardson, Seneca, S. C.—Med. Coll. of S. C.
James Ernest Ribet, Valdese—U. of Maryland
Henry Lee Sloan, Jr., Charlotte—U. of Pennsylvania
John Gordon Smith, Corryton, Tenn.—U. of Louisville
Roger Alexander Smith III, Smithfield—Washington U.
Thomas Lane Stokes, Norfolk, Va.—Jefferson Med. Coll.
Ferdinand Florian Szabo, Berwick, Pa.—New York U.
Charles Robert Thompson, Lenoir—U. of Virginia
Clifton Forrest West, Jr., Kinston—U. of Pennsylvania
James Stark White, Jr., Mebane—Northwestern U.
Coleman Morrison Whitlock, Jr., Mount Airy—U. of Pennsylvania
Dean Flewellyn Winn, Breezy Point, Iowa—Harvard Med. School
Winfield Augustus Worth, Jr., Elizabeth City — Washington U.

* * *

"Nurses in a Public Health Maternity Program" is a course for Negro graduate nurses given at the North Carolina College for Negroes in Durham. An excellent enrollment represents eight Southern states. This is the first specialized course in nursing ever offered to Negro nurses. Miss Mary L. Mills, a certified midwife who holds her M. A. from New York University, is the guest instructor. The course is sponsored by the School of Public Health and the Department of Public Health Nursing, University of North Carolina.

Two courses for public health nurses are being held at the University of North Carolina. Both are offered by the School of Public Health and the Department of Public Health Nursing. "The Public Health Nurse in a School Health Program" is to be taught by Miss Ethel C. Ryckman, recently of the Kellogg Foundation. "Group Work: Its Interpretative Factors" is to be taught by Miss Margaret Blee, Assistant Professor, Public Health Nursing, Department of Public Health Nursing, School of Public Health. The enrollment represents seven Southern states and Maine and Illinois.

* * *

"Ward Teaching and Ward Management," a course for hospital nurses, is in progress at the University of North Carolina. This course is offered through the Department of Education in cooperation with the North Carolina State Nurses' Association. The enrollment is unusually large this year. Miss Beatrice E. Ritter, Director of Nursing, School of Nursing, Binghamton City Hospital, Binghamton, New York, is the guest instructor.

Edgecombe-Nash Counties Medical Society

Dr. J. Lamar Callaway, Professor of Dermatology and Syphilology of the Duke University School of Medicine, discussed "The Every-Day Management of Common Dermatological Problems" at the June meeting of the Edgecombe-Nash Counties Society, held in Rocky Mount on June 13.

Forsyth County Medical Society

Dr. G. F. Reeves, former secretary of the Forsyth County Medical Society, has left Winston-Salem to go into private practice in Florence, South Carolina. Dr. Fred G. Pegg has been elected secretary to succeed Dr. Reeves.

Mecklenburg County Medical Society

The Mecklenburg County Medical Society honored nine Mecklenburg County doctors who are around 70 years of age or older at a dinner dance on June 1. The honorees were Drs. J. R. Alexander, R. L. Gibbon, J. G. Johnston, T. M. McCoy, C. S. McLaughlin, L. D. McPhail, T. N. Reid, W. M. Strong, and A. M. Whisnant.

Charlotte Mental Hygiene Society

The Charlotte Mental Hygiene Society held an anniversary meeting at the Hotel Charlotte on June 4. Dr. Victor Vogel, Consultant in Psychiatry to the Office of Vocational Rehabilitation, was the guest speaker. His subject was "The Outlook for Psychiatric Rehabilitation."

News Notes

Dr. D. C. Hackett has resigned as health officer of the Pasquotank - Perquimans - Camden District Health Department to enter the Coast Guard. Dr. William B. Bailey, a native of Ohio, will replace him.

* * *

Dr. Stephen McIntyre of Lumberton has been appointed chief surgeon of the Baker Sanatorium to succeed Dr. Felda Hightower, who resigned to return to his former position with the Bowman Gray School of Medicine.

Dr. J. F. Owen, formerly superintendent of the State Hospital at Raleigh, has opened offices in the Professional Building in Raleigh for the practice of neuropsychiatry and forensic medicine.

* * *

Dr. F. L. Owens of Pinehurst was presented with a letter of commendation by headquarters of the Pope Field base of the First Troop Carrier Command for his service in connection with the recent crash of a Pope Field plane. Dr. Owens, without regard to his own safety, entered the plane to determine if any remaining crewmen were still alive.

* * *

Dr. G. E. Stone of King died of a coronary occlusion on June 21.

* * *

Dr. F. L. Byerly has left the Forsyth County Sanatorium to go to Fort Wayne, Indiana.

* * *

Dr. Tom A. Williams, director of the Asheville City Guidance Clinic, has returned to Asheville after convalescing in the South. He spoke several times to the Mental Hygiene Seminar of Rollins College.

* * *

Colonel Harold B. Gotaas, Sn.C., Director of the Division of Health and Sanitation, Institute of Inter-American Affairs, has been decorated by the Chilean Government with the Order of Merit. Before joining the Army in 1942, Colonel Gotaas was Professor of Sanitary Engineering of the School of Public Health, University of North Carolina.

Policy on Assignment of M.C. Officers to Veterans Administration

Additional U. S. Army Medical Corps officers will not be assigned to duty with the Veterans Administration unless they had previously been serving on the staff of that organization, Major General George F. Lull, Deputy Surgeon General of the Army, announced.

In outlining this War Department policy General Lull stated that in the event officers specifically requested service with the Veterans Administration they would be eligible for such assignments.

"Courage and Devotion Beyond the Call of Duty"

Through the cooperation of Mead Johnson & Company, $34,000 in War Bonds are being offered to physician artists (both in civilian and in military service) for art works best illustrating the above title.

This contest is open to members of the American Physicians Art Association. For full details, write Dr. F. H. Redewill, Secretary, Flood Building, San Francisco, Cal., or Mead Johnson & Co., Evansville 21, Ind.

Pure synthetic Vitamin D^2 (Calciferol) has been made available in this country by Winthrop Chemical Company, Inc., according to announcement by Dr. Theodore G. Klumpp, president.

Free from lumisterol, toxisterol, suprasterol and other by-products of irradiation, the product is said never to vary in antirachitic potency. It will be marketed by the Special Markets Division of Winthrop to the pharmaceutical industry, the evaporated milk industry and others.

AUXILIARY

PRESIDENT'S MESSAGE

Dear Auxiliary Members:

As another year's work is getting under way, it is with genuine pleasure that I, as your President, extend greetings and best wishes to each of you, upon whom, in the most vital sense, the standard and effectiveness of our organization depend. Although I would not discount the efforts of the elected officers, the accomplishments of the Auxiliary are dependent chiefly upon the willingness of each individual member to do her part. I deeply appreciate the honor you have conferred upon me and promise to devote myself diligently to the welfare and interest of the Auxiliary. In return, I am asking your support and cooperation.

We are living in an unprecedented time, and our Auxiliary has an unparalleled opportunity to serve not only the medical profession, but the world at large. As you know, our purpose is to extend the aims of the medical profession and to promote a better understanding of the relationship between the physician and the community. Our husbands, as members of the Medical Society of the State of North Carolina, are banded together for scientific research into the cause, prevention, and cure of disease. We may go far under their direction in the advancement of health education and preventive medicine if we will only inform ourselves concerning these problems. To "be informed" is, in my opinion, the first requisite of an Auxiliary member. Certainly, no one should be better able than we to interpret the ideas, ideals, and ethics of the medical profession to lay organizations. Therefore, to safeguard this prerogative, it behooves us as wives of doctors to study and inform ourselves concerning the medical and hospital situation in the state and country and to lend our support to all legislation for the protection of organized medicine. Dr. Paul Whitaker, immediate past president of the Medical Society, is to be commended for his valiant fight against federal control of medicine and for the expansion of hospital and medical care in the state. It was largely through his efforts that the much discussed and widely publicized Hospital and Medical Care Bill was passed.

As an Auxiliary, we reaffirm our belief in organized medicine and pledge anew to the Medical Society our unstinted efforts in supporting the development and maintenance of the high standard of medical service. I noted with interest and favor, as perhaps many of you did, that Dr. Oren Moore, in assuming the presidency of the Medical Society, announced the creation of committees to study proposed legislation in regard to reducing infant and maternal mortality. These studies merit our participation and wholehearted support. We are deeply grateful for the advice and guidance of the Society in the past and, ever cognizant that we are only an Auxiliary, solicit its continued counsel and advice.

We are justly proud of our philanthropies —the Student Loan Fund and the maintenance of the beds in the three state sanatoriums—, but to continue these we urgently need an increased membership. It is my desire that not a single doctor's wife eligible for membership shall be outside the ranks this year. If each of us will work to this end, our goal of one thousand members will no longer be wishful thinking, but a reality.

The Bulletin, official magazine of the National Auxiliary, appears quarterly, and contains many helpful suggestions for those interested in the work. The annual subscription is only one dollar. All county officers, as well as Board members, are urged to subscribe to this. *Hygeia,* published by the American Medical Association for the public, is excellent for health education and for keeping abreast of the problems of the medical world. From each $2.50 subscription the Auxiliary receives a percentage commission, which is applied to the upkeep fund of the sanatorium beds.

In addition to our educational and philanthropic projects, our members have for the past three years been active in every phase of war participation. Now, with V-E Day an actuality and V-J Day imminent—though we must not relax our efforts until total victory—we look ahead to post-war planning. The doctors in the armed forces are doing a glorious work. Upon their return, it will be our duty to do all in our power to encourage and reestablish them. In order to do this, we must acquaint ourselves with plans for post-war medicine in North Carolina and its opportunities for the returning veteran.

Though we were denied the pleasure of personal contacts usually made at our annual

meeting, I am sure our work will not be greatly impeded or retarded if each of us will resolve with renewed determination to "carry on" in spite of difficulties. The Board meeting held in Raleigh on May 25 in lieu of the annual state meeting was most heartening and enthusiastic, bespeaking the capable leadership of Mrs. J. T. Saunders, retiring president. It will not be easy to measure up to the precedent set by her; but, with my faith and confidence in you and fortified with the pledged support of the Board members, I look forward to a year of continued service and progress. We must keep ever before us our motto: "Let us not be weary in well doing."

MRS. ERICK BELL
Wilson

* * *

ANNOUNCEMENT OF OFFICERS, CHAIRMEN, AND COUNCILORS FOR 1945-46

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Tenth District.....Mrs. S. S. Cooley, Black Mountain

BOOK REVIEWS

Physical Diagnosis. By Ralph H. Major, M.D., Professor of Medicine, The University of Kansas, Kansas City, Kansas. Third Edition, revised. 444 pages with 458 illustrations. Price, $5.00. Philadelphia and London: W. B. Saunders Company, 1945.

This is the third edition of Dr. Major's well known text on **Physical Diagnosis.** The author in his usual clear and concise fashion outlines methods of examination and diagnosis which have made previous editions popular and valuable to students and practitioners. The illustrations are numerous and excellent. The deliberate omission of chapters on detailed diagnostic laboratory procedures seems wise, and does not diminish the value of the text, which serves so well its specific purpose. Sufficient historical material and original description are introduced to make this book far more readable than the usual text of its kind.

Constitution and Disease: Applied Constitutional Pathology. By Julius Bauer, M.D., Professor of Clinical Medicine, College of Medical Evangelists, Los Angeles. Ed. 2. 247 pages. Price, $4.00. New York: Grune & Stratton, 1945.

The fact that a second edition of Dr. Bauer's book is issued within three years of its first publication is sufficient indication of the warm reception given the first edition. This monograph is a well integrated discussion of hereditary or constitutional factors in the production of disease, and covers a wide range of clinical entities. The author has succeeded in welding a large amount of factual information into a working hypothesis of disease origin. A clear and concise style makes the volume easily readable.

Although the general pattern of the second edition is the same as that of the first (the table of contents remains identical), much new information has been added. Although the size of the volume has been increased by only 26 pages, the amount of new material may be estimated from the fact that 153 additional references are included in the new bibliography. An index has been added, which greatly increases the usefulness of the book. The paper and binding are, however, of somewhat poorer quality.

Dr. Bauer emphasizes the tendency of many physicians to become preoccupied with the more detailed aspects of pathologic physiology and to forget the patient as a unique individual. A major objective of his discussion is to consider the patient as a whole and evaluate his innate constitutional abilities and his reaction to environmental change. Although many geneticists may object to the ready assumption of linked genes to explain certain syndromes, most readers will agree to the basic soundness of most of the conclusions reached. This volume will probably be of greatest value to the internist and the general practitioner, but specialists of all types will find something of value in it.

Clinical Roentgenology of the Digestive Tract. By Maurice Feldman, M.D., Assistant Professor of Gastroenterology, University of Maryland; Consulting Roentgenologist, Sinai Hospital, Baltimore. Ed. 2. Price $7.00. Baltimore, The Williams and Wilkins Company, 1945.

This new edition of Feldman's **Clinical Roentgenology of the Digestive Tract** is an amazing storehouse of information concerning practically every phase of roentgenological examination of the intestinal tract. The author has systematically brought up to date all important contributions from American and foreign literature leading to a clear understanding of roentgenologically revealed abnormalities of the gastrointestinal tract. All important radiological and clinical manifestations are discussed fully and clearly. Rarer conditions are adequately treated. This book attempts to be an authoritative quick reference volume, and it admirably accomplishes this purpose.

Emphasis is placed on the correlation of clinical and roentgenological findings. The techniques of roentgenological procedures are not detailed. Statistical data are included in proper perspective. Organization of material is excellent. Debatable clinical and roentgenological signs and diagnostic findings are given fair consideration. There is considerable duplication, but this is inevitable where essentially the same abnormality has been described in the literature under three or four different names. The subject matter is grouped under headings which make it easy to find the discussion of any desired condition.

The bibliography is adequate. The illustrations are better than average and are not too scarce. The type and paper are better than those of most current publications.

As a veritable one-volume library on the digestive tract, containing all the essential information necessary for busy roentgenologists, this book, to the reviewer's knowledge, has no equal. The author's twenty-six years of clinical and roentgenological experience is blended with his extensive knowledge of the literature in a remarkable way. As a quick, ready, concise reference volume for immediate correlation of clinical and roentgen findings, this publication fills a definite need for radiologists, general practitioners, surgeons, and all doctors who wish to have a well rounded knowledge of diseases of the digestive tract.

Radiologic Examination of the Small Intestine. By Ross Golden, M.D., Professor of Radiology, College of Physicians and Surgeons, Columbia University; Director of the Radiologic Service, The Presbyterian Hospital, New York. 239 pages. Price, $6.00. Philadelphia: J. B. Lippincott Company, 1945.

The author has added another splendid contribution to the roentgenologic knowledge of the intestinal tract. All basic facts concerning the complete examination of the small bowel are presented with the author's characteristic clarity, exactness, and sparkling appeal. No other such source for the methods, interpretation and technique of small bowel examination is to be found in the English language. Established knowledge is emphasized; questionable and debatable evidence is fairly but briefly included, and clinical histories are added where needed. The limitations of present knowledge and diagnostic possibilities are stressed in unmistakable terminology.

Embryology, anatomy, and physiology are discussed in a brilliant, short summary. The chapter on the Miller-Abbott tube should be valuable to every gastro-intestinal surgeon and will help him to understand better the difficulties of such examinations and the reasons for unsatisfactory results in many cases. Disorders of nutrition are clarified; diseases of the mesentery are included and well illustrated. Allergic manifestations are evaluated; inflammations and neoplasms are adequately covered.

The effects of certain drugs on the small bowel are explained. Miscellaneous conditions often forgotten by the busy radiologist, such as emotional changes, parasitic infestations, amyloidosis and scleroderma, are grouped in a stimulating chapter.

The bibliography includes 200 references, and the index is adequate. The illustrations are carefully selected and most instructive. The reproductions of pathological specimens are excellent without exception. It is the reviewer's impression that this relatively concise volume is absolutely essential to radiologists, gastroenterologists, and all those physicians who would attempt to keep abreast of the modern advances in gastroenterology and radiology.

The Psychology of Women. Volume Two, **Motherhood.** By Helene Deutsch, M.D., Associate Psychiatrist, Massachusetts General Hospital; Lecturer, Boston Psychoanalytic Institute. 498 pages. Price $4.50. New York: Grune and Stratton, Inc., 1945.

This is the second volume of Dr. Deutsch's work **The Psychology of Women**, and it concerns itself primarily with the psychological aspects of adult womanhood and, in particular, of motherhood. The psychological, psychodynamic, and psychopathological aspects of conception, pregnancy, delivery, and the confinement and lactation period are discussed. A serious attempt is made to gain some deeper understanding of the emotional factors in various personalities who undergo this set of experiences. Special chapters in the book are dedicated to mother-child relationships, to the understanding of unmarried mothers, adoptive mothers and stepmothers, and to the problems they face. The chapter which deals with the psychology and psychopathology of women during the climacterium should be of wide general interest.

The author makes use of a large number of case histories to illustrate her points. Considering the fact that she is dealing with an unusually difficult and poorly known and investigated field, her attempt to bring some understanding into a heretofore existing chaos brings credit to the author and the book. The language here, as well as in the previous volume, is quite psychoanalytically oriented. However, general biological principles are not neglected. The book is well organized and contains an extensive bibliography. It serves a very definite need of our time.

This volume can be recommended especially to obstetricians, gynecologists, and psychiatrists. To pediatricians who are interested in the factors behind the difficulties they encounter in children, the book will be of service. All general practitioners, nurses, and social workers will profit from time invested in reading this book.

In Memoriam

HARRY MAURICE MONTGOMERY, M.D.

Inasmuch as death has removed from our midst our highly esteemed and much beloved brother, Harry Maurice Montgomery, whose untiring service to his fellow men brought him an ever-widening circle of friends and the deep appreciation of his patients, therefore be it

Resolved, That we have lost one whom we shall ever be proud to recall as a faithful, though retired member of this Association, an honor to its medical status, and an example to its associates of pure friendship, noble generosity, and true manliness.

Resolved, That the medical profession at large has sustained in his death the loss of a hard-working, sympathetic, skillful, and gentlemanly physician.

Resolved, That the community in which he lived has reason to bow in sorrow at the loss of a noble and exemplary citizen, a faithful friend, a respected physician, an ornament to the church, and a fit example of morality.

Resolved, That we deeply sympathize with the grief-stricken wife of our deceased friend, and assure her of the sincere fellow-feeling of all who know of her great affliction.

Resolved, That in the presence of death we realize keenly the shortness and uncertainty of life, and would learn afresh the lesson that we, like him, should so live that we may not be afraid to die.

Resolved, That a copy of these resolutions be sent to the wife of the deceased, and also to the medical periodicals of the Alamance-Caswell Association for publication.

The Committee on Resolutions
Alamance-Caswell Medical Association

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INDEX TO ADVERTISERS

American Meat Institute XX
AR-EX Cosmetics, Inc. XXVII
Bilhuber-Knoll XXIX
Borden Co. IX
Broadoaks Sanatorium XXX
Burroughs Wellcome & Co. XXV
S. H. Camp Co. XVI
Charlotte, Eye, Ear, and Throat Hospital XXXII
Cheplin Laboratories XIV
Coca-Cola XXIX
Cook County Graduate School of Medicine XXVIII
General Electric XXII
Glen Alpine Rest Home XXVII
Glenwood Park Sanitarium XXXII
Charles C. Haskell and Company V
Holland-Rantos Co., Inc. X
Hynson, Westcott — Dunning XXVIII
Inter-Ocean Casualty Co. XXVII
Eli Lilly and Company ..... Insert and XVIII
Luzier's VI
M & R Laboratories XXIV
Mead Johnson & Company XXXVI
Parke, Davis and Company ..... XXXIV-XXXV
William Perske XXXIII
Philip Morris & Co., Ltd., Inc. II
Physicians Casualty Association
Physicians Health Association XXVIII
Pinebluff Sanitarium III
Powers and Anderson, Inc. XIX
R. J. Reynolds Tobacco Co. VII
Saint Albans Sanatorium XIX
Schenley Laboratory XXIII
Schieffelin & Co. XXX
Julius Schmidt, Inc. XIII
G. T. Searle & Co. 351
Southern Dairies XXI
Spencer Corset XXVI
Stuart Circle Hospital XXXI
Thompson Homestead School XXVII
Tucker Hospital XXXI
United Drug Co. VIII
Upjohn Co. XVII
Wachtel's, Inc. XXVII
Wander Co. XI
War Bonds 352
Westbrook Sanatorium XXXIII
Winchester Surgical Supply Co.
Winchester-Ritch Surgical Co. III
Winthrop Chemical Co., Inc. XV
Wyeth, Incorporated ..... Insert



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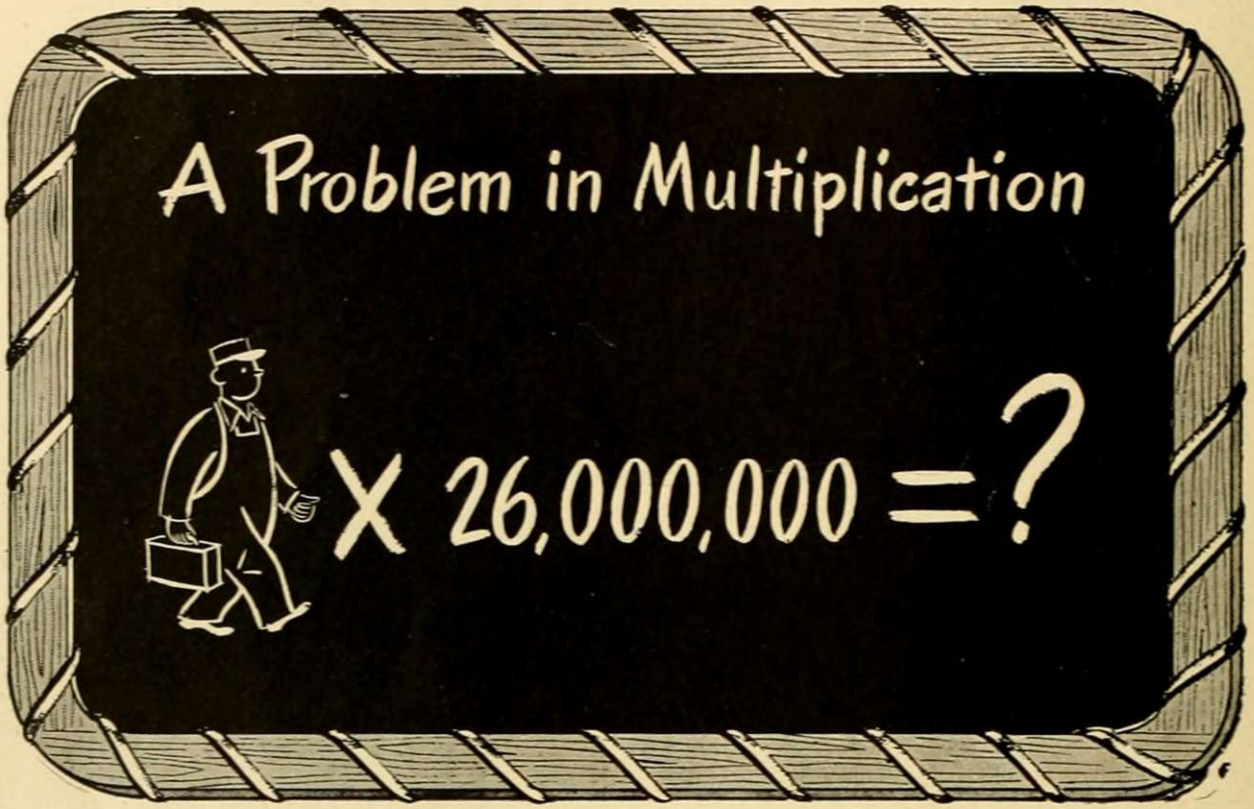

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RETRACTION AND CONSTRICTION RINGS

PIERCE RUCKER, M.D.
RICHMOND, VIRGINIA

Historical Considerations

In May, 1870, a 35 year old woman in labor drowned herself. Her body, still in rigor mortis, was taken to the anatomical laboratory of the University of Leipzig, where it was immediately put in a freezing mixture. Eight days later Professor Braune sawed it in two longitudinally. Thus a poor German outcast posed a question that has vexed anatomists and obstetricians to this day. For inside the uterus was a ring, cold and as hard as marble. Before the ring was allowed to thaw, Braune measured it accurately and had his famous lithographs made. He called this ring, which was 11 cm. cephalad to the external os, the *os internum.*

Before this discovery, it was known that the upper part of the uterus was thicker than that near the cervix. The illustrations in William Hunter's beautiful *Atlas of the Human Gravid Uterus* (1774) show this point very definitely. Hunter states that the first subject he dissected was a woman who died at term. Since the weather was favorable for preserving the body, he leisurely dissected it, having accurate drawings made as the dissection progressed. This leisurely dissection probably accounts for the fact that no rings on the interior of the uterus were seen. However, Hunter not only depicted but described that portion of the cervix uteri we now call the isthmus. His Plate XXV (fig. 1) is from a subject who died in the fifth month of pregnancy. I quote from his description: "G, the upper, narrower, and smaller part of the passage in the cervix uteri, where the decidua was evidently continued down into the inner membrane of that passage."

So far as I know, Braune[1] was the first to use the frozen section technique in studying the human pregnant uterus. Certainly he was the first to describe a ring. To Bandl, however, goes the credit for raising the question as to what enters into the formation of the structure caudad to this ring[2]. Braune misnamed it, but Bandle misinterpreted it. Braune, who saw it first, was content to let the matter rest, but Bandl persisted in his misconception and contended for it, with varying explanations, at three important German gynecological meetings. Hence his is the best known of all the names connected with this ring. He taught that the upper part of the cervical canal dilated into a funnel-shaped cavity, and that all the structure below Braune's ring was formed from the cervix uteri. Histological studies, however, did not support this view. Most observers showed that the upper part of this structure was lined by mucosa similar to that of the uterine body. To meet these criticisms Bandl advanced various ideas: (1) that muscle layers of the cervix grew and extended without a corresponding growth of the cervical mucosa, or (2) that the mucosa of the fundus slid down to cover the upper part of the cervical canal, or else (3) that the upper part of the cervical mucosa was destroyed in the first pregnancy and was replaced by decidua. And so the battle raged for a number of years—Kustner, Marchand, Bayer and Zweifel for the most part siding with Bandl; and Ruge, von Franque, Dittel,

1. (a) Braune, Wilhelm: The Position of the Uterus and Foetus at the End of Pregnancy. Illustrated by sections through frozen bodies, Leipzig, Veit & Co., 1872.
(b) Braune, W. and Zweifel, P.: Gefrierdurchschnitte in systematicher Anordung durch den Koerper einer



Fig. 1. Plate XXV of William Hunter's Atlas, showing an excellent illustration of the isthmus uteri.

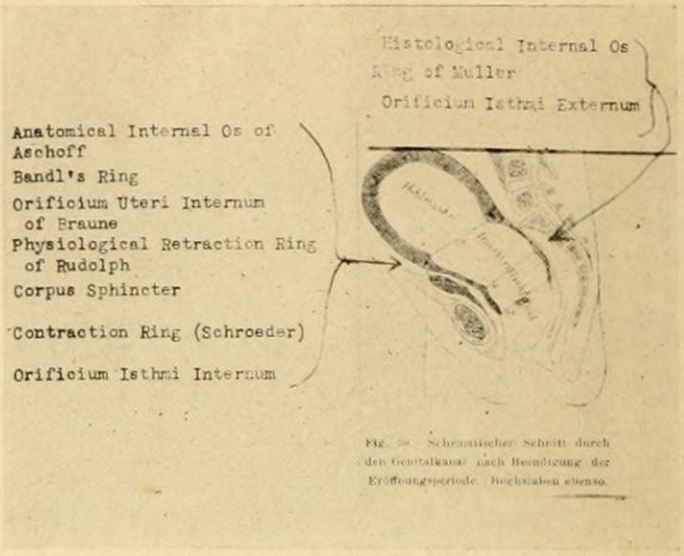

Fig. 2. A cut from Schroeder[3], adapted to show synonyms for the various rings.

Veit, Schroeder, Langhans, Mueller, McDonald, Leopold, Martin and Saenger opposing him. In 1886 Schroeder[3] named Bandl's ring the contraction ring. This choice of a name was unfortunate, for as Barbour[4] and Lusk[5] have pointed out, the term retraction ring more accurately describes this structure.

The problem that confronted these early investigators was indeed a difficult one. They were not dealing with a static organ, but with one that was growing, and one whose function was changing from that of nurturing the fetus to that of expelling the products of conception. To interpret these new structures in terms of the non-pregnant uterus at a time when the histology of the uterus was not fully understood, and especially when the response of the various parts of the uterus to hormonal stimulation was unknown, was well nigh impossible. Such landmarks as the upper border of the symphysis pubis, the point of reflection of the peritoneum, branches of the uterine blood vessels, the lower limit of decidual reaction, and the location of the fetal membranes were of little help. Within three years Bandl changed his explanation of the ring three times. In a paper read before the American Gynecological Society in 1884, Lusk[6] described the confusion that prevailed at this time and reported the findings in three autopsies performed on women dying in the last months of pregnancy. One woman was evidently a primigravida. Two of the autopsies were done by Dr. W. H. Welch and the third was performed by Dr. Janeway. In each subject the cervix was 4½ cm. long, the internal orifice was closed, the mucous plug ended at the termination of the cervical canal, and the membranes were adherent to the borders of the internal orifice. None showed the funnel-like cavity described by Bandl between the ring of Mueller and the adherent membranes. Lusk concluded that the terms, "ring of Bandl" and "ring of Mueller," introduced into obstetrical nomenclature an unnecessary element of confusion and should be abandoned.

3. Schroeder, K. L. E.: Lehrbuch de Geburtshuelfe, Bonn, M. Cohen & Sohn, 1880, p. 155.
4. Barbour, A. H. F.: (a) Some Recent Results from the Study of Labour by Means of Frozen Sections and Casts, Brit. M. J. 2:1002; 1053, 1890; (b) The Anatomy of Labour as Studied in Frozen Sections, Edinburgh, 1889; (c) On the Frozen Sections by Bumm and Blumreich and by Zangemeister. Is There a Lower Uterine Segment? J. Obst. and Gynaec. Brit. Emp. 13:267, 315, 1908; (d) Discussion on the Lower Uterine Segment in Labour, Tr. Edinburgh Obst. Soc. 38:227, 1912-13.
5. Lusk, W. T.: The Etiology and Indications for Treatment of Irregular Uterine Action during Labor, New York M. J. 17:561-577, 1873; (abstr) Med. Rec. 8:321, 1873.
6. Lusk, W. T.: A Note on the Ring of Bandl, Tr. Am. Gynec. Soc. 9:291-298, 1884.

Anatomical Rings

It was not until 1906, when Aschoff[7] described the *isthmus uteri*, that the anatomical and physiological significance of these structures began to be fully understood. The narrow, lowermost portion of the uterine canal (or the upper part of the cervical canal according to Frankl) is lined for some 7 to 10 mm. by a thin mucosa that is similar in structure to the endometrium. Its decidual reaction, however, is less marked than that of the body of the uterus. At the upper margin of this structure is what Aschoff called the *anatomical* internal os, and at its lower margin is what he called the *histological* internal os, because it marks the upper limit of the cervical mucosa. The former structure corresponds to Bandl's or Braune's ring, the latter to Mueller's ring. Early in pregnancy (fourth month) the isthmus hypertrophies and begins to widen out to form the lower uterine segment. Thus we have normally three rings. First, and most caudad, is the external os. Second, at the upper end of the cervix, is the histological internal os, or the ring of Mueller. It corresponds to the internal os as described by Lusk or, in the parlance of the Nomenclature Committee of the Anatomical Society, the *orificium isthmi externum*. The third, and most cephalad, is the anatomical internal os of Aschoff, Bandl's ring, the orificium internum of Braune, the physiological retraction ring of Rudolph, the corpus sphincter, the contraction ring of Schroeder, or the *orificium isthmi internum*. So much for the anatomical rings.

Contraction Rings

Classification

There is another type of ring which has no definite anatomical location, commonly called the contraction ring. It may occur at any level. Instead of rising or retracting as labor progresses, it contracts about some depression of the fetus and remains fixed. Clifford White[8] in 1912 clearly pointed out the clinical differences between the two types of rings. When there is no mechanical obstruction to labor, there should be no confusion. When, however, there is a contracted pelvis or other obstruction to labor, it is sometimes difficult to say whether the dystocia is due to the ring or to the disproportion.

Rudolph[9], who has made an intensive study of uterine contractions both in the human being and in the monkey, has recently collected all the cases of contraction rings that have been reported. He endorses White's classification, and in addition he divides retraction rings into the physiological and the pathological, and contraction rings, which he prefers to call constriction rings for the sake of clearness, into the reversible and the irreversible. In the presence of mechanical obstruction the physiological retraction ring rises to higher levels, and simultaneously the lower uterine segment becomes thin. The retraction ring then becomes pathological, and the process may end in rupture of the uterus. No such termination is associated with constriction rings. According to Rudolph, there have been only ten ruptures of the uterus in patients with constriction rings. Nine of these were due to operative procedures. The tenth was in one of Rudolph's own cases—a patient with a Naegele pelvis and a ring that was palpable just below the navel. After several hours of expectant treatment there was a spontanous rupture through the lower uterine segment. It is not clear upon what grounds the diagnosis of constriction ring was made. The description fits that of a pathological retraction ring.

Rudolph is to be commended in the first place for insisting on the term constriction ring, a name that was used by Reynolds[10] more than forty years ago. So far, except possibly in Rudolph's own case, it has not been confused with retraction ring. He is to be commended in the second place for emphasizing the fact that most constriction rings will relax spontaneously. This observation confirms that of Jacquemier[11], who in 1846 said that unequal spastic contraction of the uterus varies in intensity and may cease spontaneously. Rudolph is to be further commended for outlining a treatment that will prevent acidosis and dehydration in these protracted cases.

Clinically, the physiologic retraction ring needs no consideration. Since the pathologic retraction ring makes its appearance only in

7. Aschoff, L.: Das untere Uterinsegment, Ztschr. f. Geburtsh, u. Gynaek. 58:328-332, 1906.
8. White, Clifford: (a) Proc. Roy. Soc. Med. 6:70, 1912-13; (b) Five Cases of Labor Obstructed by a Contraction Ring, Brit. M. J. 2:752 (Dec. 2) 1916; (c) Contraction and Retraction Rings, Am. J. Obst. & Gynec. 11:364-367 (March) 1926.
9. Rudolph, Louis: Constriction Ring Dystocia, (a) J. Obst. & Gynec. Brit. Emp. 42:992-1026 (Dec.) 1935; (b) J.A.M.A. 108:532-538 (Feb. 13) 1937.
10. Reynolds, Edward and Newell, F. S.: Practical Obstetrics, Philadelphia, Lea Bros. & Co., 1902, p. 184.
11. Jacquemier, Jean-Marie: Manuel des Accouchements, Paris, Germer-Balliere, 1846, v. 2, p. 57.

obstructed labor, it is the cause of the obstruction and the means of meeting the mechanical difficulty which are important clinically. The retraction ring itself offers no impediment to the birth of the baby. It does explain the occurrence of rupture of the uterus in neglected cases.

Constriction rings, on the other hand, present serious clinical problems in themselves. They may occur in any stage of labor and are entirely unpredictable (unless the observations of Miles Phillips[12] are confirmed). The constriction ring contracts so firmly about the fetus that for all practical purposes the uterus and the baby are one structure. As long as it persists, there is no change in the position of either the ring or the infant. For that reason, there is no risk of spontaneous rupture of the uterus. On the other hand, there is no chance of the baby's being born. Nevertheless, painful uterine contractions continue. In fact, the pain incident to the contractions seems out of all proportion to their strength, and certainly to their effectiveness. Miles Phillips says that this characteristic type of pain makes its appearance early in labor. The contractions of ordinary labor are painful only at their peak. The pains that Phillips describes as "colicky" and that Maubray[13] in sturdy Elizabethan English called "bastard pains" begin as soon as the contraction can be felt by the palpating hand, and continue until the uterus relaxes. Mead[14] in the eighteenth century recognized the advantages of morphine in treating these pains. When colicky pains occur, according to Phillips, a constriction ring may be expected to develop.

Cause

Various explanations for constriction rings have been advanced from time to time. Rigby[15] mentions cold forceps. Cheron[16] thought they were caused by anything that induced hyperactivity of the uterus, such as ergot, bags, bougies, or obstruction to the progress of labor. White said they were due to premature rupture of the membranes and intrauterine manipulation. Rudolph, from an analysis of his own cases and of those reported in the literature, is convinced that the premature rupture of the membranes is not a causative factor, since it was not present in 45 per cent of the cases. He is also convinced that malpositions play little part in the etiology. He believes that a "disturbance of the physiology of the uterus, or a localized increased irritability of the uterus is probably the cause of the (inco-ordination) annular spasm of the circular muscle fibres at different levels and an inhibition of the longitudinal muscle fibres." In 1927 I reported on the use of adrenalin in the treatment of constriction rings[17]. At that time I thought of the condition as being due to a faulty nerve action, or an imbalance between the sympathetic and the parasympathetic system which was temporarily restored to normal by adrenalin. Clinically, it would seem that this imbalance is based on fatigue —a phenomenon comparable to that of intermittent claudication. Pride[18] and Reinberger[19] have found in such cases an acidosis or low carbon dioxide combining power due to the accumulation of lactic acid in the blood.

Incidence

The frequency with which this condition is encountered depends upon the care with which it is looked for. Johnson[20] reported 105 cases in 7339 private cases. In 6979 private patients delivered since November, 1932, I have found 105 constriction rings, or one in every 66 cases. Many reversible constriction rings are overlooked entirely, the case being labeled merely prolonged labor without a determination of the cause. Many difficult forceps operations in patients with normal pelves are due to constriction rings which are not recognized.

Diagnosis

The presence of a constriction ring should be suspected whenever there is a delay in labor without apparent cause. The suspicion is heightened if the uterine contractions are

12. Phillips, M. H.: (a) Contraction Ring in the First Stage of Labor, J. Obst. & Gynaec. Brit. Emp. 41:497, 1934; (b) The Prophylaxis of Constriction Ring Dystocia, J. Obst. & Gynaec. Brit. Emp. 45:638-643 (Aug.) 1938; (c) Discussion of Pendleton's paper, Abnormal Bandl Ring, Am. J. Obst. & Gynec. 33:324-330 (Feb.) 1937.
13. Maubray, John: The Female Physician, London, J. Holland, 1724, p. 214.
14. Mead, Richard: Medical Works, Edinburgh, A. Donaldson & C. Elliott, 1775, p. 432.
15. Rigby, E.: System of Midwifery, Philadelphia, Lea & Blanchard, 1841, p. 386.
16. Cheron, Henri: Des difficultes de la version causees par la retraction de l'anneau de Bandl, Paris, These, 1899.
17. Rucker, M. P.: The Treatment of Contraction Ring Dystocia with Adrenalin, Am. J. Obst. & Gynec. 14:609-615 (Nov.) 1927.
18. Pride, W. T.: (a) Retraction Ring and Difficult Deliveries, South. M. J. 19:212-215 (March) 1926; (b) Retraction Ring Dystocia; Its Cause and Correction, Surg., Gynec. & Obst. 66:1047-1053 (June) 1938.
19. Reinberger, James R.: Etiology and Management of Contraction Ring Dystocia, J. Oklahoma M. A. 34:375-379 (Sept.) 1941.
20. Johnson, H. W.: Delay in Labor Caused by Mild Degrees of Bandl's Ring, Texas State J. Med. 37:538-540 (Dec.) 1941.

painful out of proportion to their effectiveness. When labor comes to a standstill in spite of the fact that the patient continues to suffer, a constriction ring is frequently found to be the cause. Vaginal examination discloses the presenting part to be loose in the pelvis; about it the cervix hangs as loosely as a coat sleeve. The diagnosis is confirmed by feeling the ring with the hand within the uterus. The constriction is differentiated from the pathological retraction ring (there would be no occasion to introduce the hand into the uterus to feel a *physiological* retraction ring) by the tightness of the ring about the child. In the case of constriction ring the presenting part is freely movable within the pelvis, but not within the uterus. With a retraction ring the reverse is the case: the presenting part is driven tightly into the pelvis, but if disengaged can be moved freely within the uterus. Gilliatt described a sign which he says is pathognomonic of a constriction ring: "If on vaginal examination, either with or without anesthesia, the head of the child can be pressed into the pelvis in the interval between contractions, but when the manoeuver is repeated during contraction, the head cannot be made to descend, then this obstruction depends for its action upon the rigidity of the contracting uterus." I have noticed the same phenomenon when I have applied forceps. If an attempt is made to rotate the head, it will return to its original position when the forceps are released; or if traction is put on the head, it will descend for a certain distance only to regress when the traction is stopped. When this phenomenon has occurred, I have always found a constriction ring upon examination with the whole hand within the uterus.

Prognosis

The prognosis in cases of constriction ring dystocia depends upon a correct diagnosis and the institution of proper treatment. The earlier writers reported extremely bad results: White, an infant mortality of 72 per cent, a maternal mortality of 31.5 per cent; Michael[21], a fetal mortality of from 40 to 86 per cent and a maternal mortality of from 20 to 33 per cent. As late as 1941 McGill[22] reported a fetal mortality of 46 per cent and a maternal mortality of 15 per cent. Harper[23], who recommended delivery from below after the ring was relaxed with deep ether anesthesia, said that the fetal and maternal mortality in his cases was negligible. Herman Johnson, who had 105 cases in private practice, had no maternal mortality and a fetal mortality of only 5 per cent.

Treatment

The constriction ring may appear at any time in the three stages of labor. When it occurs early in the first stage, treatment should be expectant. Rudolph has shown that most constriction rings belong to the reversible type. The patient should be given morphine or demerol and encouraged to sleep. If the patient is not allowed to become dehydrated, there is no reason to worry about the length of labor. After a good rest, labor is apt to progress in a more normal manner.

When the constriction ring appears late in the first stage or after the cervix is fully dilated, two lines of treatment are possible. One is to rest the patient with morphine and keep up the fluid intake and the electrolyte balance. Rudolph reports excellent results from this method of treatment. On the other hand, if the constriction ring can be relaxed, the baby can be safely delivered from below much sooner. Dragging the baby through a ring that is not relaxed has no place in good obstetrical practice, and cesarean section after intrauterine examination and manipulation is dangerous.

The constriction ring can be made to relax in various ways. Beeson[24] was able to relax the ring in his case with chloroform and deliver the baby by version and extraction. Both mother and baby did well. Harper was able to relax the rings with deep ether anesthesia in all his cases save one, a patient he had previously treated with pituitrin. On the other hand, cases have been reported in which deep anesthesia had no effect upon the ring. Souter[25] reported excellent results from the use of amyl nitrite. Barnes[26] and Croft[27] reported success with this method in some cases and failure in others.

21. Michael, W. A.: Bandl's Ring as a Cause of Dystocia with a Report of 4 Cases, Am. J. Obst. & Gynec. 10:111-119 (July) 1925.
22. McGill, J. W.: Contraction Ring Dystocia, Wisconsin M.J. 40:105-108 (Feb.) 1941.
23. Harper, P. T.: (a) Contraction Ring Dystocia, Am. J. Obst. 68:640-649, 1913; (b) Contraction Ring Dystocia, Am. J. Obst. 73:15-22 (Jan.) 1916; (c) Bandl's Ring and Difficult Labor, Surg., Gynec. & Obst. 35:198-208 (Aug.) 1922.
24. Beeson, C. F.: Hour-Glass Contraction of Uterus, Am. Med. 7:315, 1904.
25. Souter, C. H.: Australian M. Gaz. 25:568, 1906.
26. Barnes, Fancourt: Hour-Glass Contraction of the Uterus Treated with Nitrite of Amyl, Brit. M. J. 1:377, 1882.
27. Croft, C. R.: Two Cases of "Contraction Ring" with Observations on Treatment, Especially by Amyl Nitrite, Lancet 2:166-168 (July 28) 1928.

Some twenty years ago, when I was studying the effect of caudal anesthesia upon uterine contractions, I noticed that the kymographic records showed cessation of uterine contractions whenever adrenalin was added to the novocaine solution. I checked this observation by giving adrenalin subcutaneously, and obtained the same sort of tracings. When I reported these findings before the obstetrical section of the Southern Medical Association[28], it was suggested that adrenalin should be a valuable remedy for constriction ring dystocia. With the hand within the uterus, one can feel the ring relax when 5 to 7 minims of a 1:1,000 solution of adrenalin are given hypodermically. When the ring relaxes, the baby can be delivered by appropriate means—version and extraction or forceps. It has been argued that the relaxation which I and others have thought to be due to adrenalin was in reality due to the anesthetic; that no one has observed a ring to relax in a patient who was not under an anesthetic. Recently, Thorp[29] has seen a ring relax under his eye in a patient who was operated on under a single injection of spinal anesthesia. The ring was quite evident when the uterus was opened, but faded quickly after adrenalin was given hypodermically. I do not see how the disappearance of the ring in his case can be attributed to "deepening" of the anesthesia.

A constriction ring occurring in the third stage is usually treated with anesthesia plus expression or manual removal of the placenta. Here, too, adrenalin is useful and will often obviate the administration of more anesthetic and save the patient from the dangers of manual removal of the placenta.

Analysis of Cases

Since November, 1932, there have been 6,979 deliveries by the staff of the Johnston-Willis Hospital and by me personally at several other hospitals. In this number there were 105 constriction rings. Eighty-one of these 105 patients were primiparas; 16 had had one child previously; 4, two previous children; 1, three previous children; 1, four; and 1 was a *grande multipara*, having had more than nine previous children. The average age of these patients was 29 years. The youngest was 18 and the oldest was 42 years. There were only 4 in their teens; 57 were between 20 and 30 years of age. Thirty-nine were between 30 and 40, and 5 were over 40. The average age for the 6,979 patients was 26.1 years. There was nothing significant in the family history of the 105 patients nor in their past history. One had a 2 plus Wassermann reaction, and one was married to a man who was known to have had syphilis. In 39 there was a history of normal menstruation. Eleven had irregular menstruation. Four menstruated at shorter intervals than twenty-six days and 10 at longer intervals than thirty days. Twenty-six began to menstruate at an earlier age than 13 years, and 14 at a later age than 14 years. Thirty gave a history of painful menstruation. Forty-five patients had normal pelves; 12, justo minor pelves; 14, funnel pelves; and 2, flat pelves; the remainder were unclassified. Most of these patients were in advanced labor when they were first seen. Four patients gave the history of a threatened abortion early in their pregnancy. Labor was induced in 63 instances, or 60 per cent of the cases; this percentage is somewhat higher than that in the whole series, which is 53½ per cent. Seven patients had dry labors, their membranes having ruptured at or before the beginning of labor. In 18, small doses of pituitrin were used to hasten the onset of labor, and in 4 instances pituitrin was used in the second stage of labor. There was one set of twins in the series. The presentations of the 106 infants were as follows: right occiput anterior, 8; left occiput anterior, 16; right occiput posterior, 37; left occiput posterior, 34; face, 1; brow, 3; breech, 6; shoulder, 1. Seventy-two were delivered by version and extraction; 6 by breech extraction; 14 by mid forceps operation, 8 by low forceps, and 1 by craniotomy. A Voorhees bag was used once and the cervix was dilated manually eight times. Ether anesthesia was used 85 times, intravenous pentothal sodium 16 times, caudal twice, spinal once. In 1 case the anesthetic agent was not recorded. The average duration of labor was 32.5 hours, the extremes being 4 hours and 99 hours. The average duration of labor in the whole series was 13¼ hours. Not all cases of prolonged labor by any means are due to constriction rings. Of 163 cases of more than 50 hours' duration, 20 or 12 per cent had constriction rings. Of 317 cases of 30 to 49 hours' duration, 26 (8 per cent) had constriction rings.

Perhaps a word of explanation about including the craniotomy case is in order. This

28. Rucker, M. P.: Action of Adrenalin on Pregnant Human Uterus, South. M. J. 18:412-418 (June) 1925.
29. Thorp, Adam T.: Relaxation of Bandl's Contraction Ring with Adrenalin Chloride, Correspondence, Am. J. Obst. & Gynec. 46:772 (Nov.) 1943.

patient was brought into the hospital in an ambulance, having been in dry labor for three days. The fetal heart sounds could not be heard. Under pentothal sodium anesthesia an exploration of the interior of the uterus was done. A tight ring was found about the baby's neck. The cord was not pulsating. The ring relaxed under adrenalin, but it was felt that the baby was too big and the outlet of the pelvis was too small to attempt a version and extraction. After the patient had been under observation for two days the cervix was completely dilated. Forceps delivery was unsuccessfully attempted, and a craniotomy was accordingly done. The ring is classed as a constriction ring because of its tightness about the baby's neck and because it did not ascend during labor.

Results

There was no maternal mortality. Eleven babies were stillborn; 2 of these were macerated and one other was dead before the mother was admitted to the hospital. Four babies died in the first two weeks of life, making a total of 15 babies lost or a gross fetal mortality of 14 per cent. This is four times the fetal mortality of the entire series. One baby had an imperforate anus; another had atresia of the jejunum; a third had spina bifida; and two had hemorrhagic disease of the newborn. One had a transitory Erbs paralysis.

The maternal complications were as follows: febrile puerperium, 12 cases; eclampsia, 2; pre-eclampsia, 1; ablatio placentae, 1; primary uterine inertia, 1; prolapsed cord, 1; mastitis, 1; pyelitis, 1; sacro-iliac strain, 1; pruritus, 1; edema of the cervix, 1. At least 4 of the 12 febrile patients had amniotic sac infection. In these 105 patients there had been a scattering of intercurrent infections in pregnancy, as follows: enteritis, 2; influenza, 1; bronchitis, 2; tonsillitis, 1; infantile paralysis, 1; Bell's paralysis, 1. Two patients had diabetes, and 3 were markedly overweight.

Summary

One hundred and five cases complicated by constriction rings in a series of 6,979 deliveries have been analyzed. The group with constriction rings contained a higher percentage of primiparas and were a little older than the group as a whole. There was a significantly larger number of malpositions in the constriction ring cases. The average duration of labor was increased. While constriction rings should always be thought of when labor is prolonged, they are not the only nor the most frequent cause of prolonged labor. If we think of constriction ring as being a fatigue phenomenon, then the significance of primiparity, of increased age, and especially of malposition of the fetus becomes apparent.

Under the administration of adrenalin the ring disappeared for a sufficient length of time to permit a safe delivery in all these cases.

PNEUMOCOCCIC MENINGITIS IN CHILDREN

With Report of Four Cases

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and

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Prior to the advent of chemotherapy, pneumococcic meningitis was almost invariably fatal; the mortality was greater than 99 per cent. A review of the literature in 1927 revealed only 150 recoveries from this disease[1]. Antipneumococcic horse serum was introduced in 1930, and this offered the first therapeutic hope. Only 30 more cures, however, were reported up to 1939[1]. The first real forward step was made in 1937, with the introduction of sulfonamides and type-specific antipneumococcic rabbit serum. The mortality figures dropped dramatically from almost 100 per cent to an average of 50 per cent, some writers reporting rates as low as 35 per cent.

Even then, the majority of recoveries were in adults; fatality rates in children less than 2 years of age still ranged over 80 per cent. It has been shown that pneumococcic antibodies are not produced during the first 2 years of life[1]. Eighty per cent of all cases of pneumococcic meningitis occur in children in this age group; the peak incidence is reached at six months, and falls off abruptly after that[2]. Thus, the highest fatality rate unfortunately occurs in the age group with

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1. Steele, Charles W., and Gottlieb, Julius: Treatment of Pneumococcic Meningitis with Sulfanilamide and Sulfapyridine, Arch. Int. Med. 68:211-231 (Aug.) 1941.

2. Waring, Antonio J., Jr., and Smith, Margaret H. D.: Combined Penicillin and Sulfanilamide Therapy, J.A.M.A. 126:418-424 (Oct.) 1944.

the highest incidence of cases. Special effort should therefore be directed toward the treatment of pneumococcic meningitis in infants.

With the advent of penicillin, the outlook for the youthful patient with pneumococcic meningitis is considerably better than it was only a few years ago.

The purpose of this paper is to present 4 case reports showing our experience with various forms of therapy in children with pneumococcic meningitis.

Case Reports

Case. 1

G. S., a 4 months old white male infant weighing 14 pounds, was admitted February 13, 1944, acutely ill. His present illness had begun five days previously as a common cold with cough, but accompanied by high fever and convulsions. He was seen for the first time three days before admission by his local physician, who made a diagnosis of bronchopneumonia and began giving the child sulfamerazine. Twelve hours before admission it was noticed that the patient's neck was stiff, and he was referred to this hospital.

When first seen here the child was fretful; the neck was definitely rigid, and the fontanel was bulging and tense. The chest was clear. Babinski and Kernig signs were positive. A lumbar puncture was done immediately, and spinal fluid under only moderately increased pressure was obtained. The cell count was 1,000, with a predominance of polymorphonuclears, and the Pandy reaction was 4 plus. Cultures of the spinal fluid revealed type XIV pneumococci. A blood culture made at the same time was positive for the same organism.

Sulfamerazine was continued in a dosage of 0.2 Gm. per kilogram of body weight every twenty-four hours, and supportive treatment, including transfusions, was given. A second lumbar puncture on the fourth day revealed 1,450 cells, predominantly polymorphonuclears. The blood sulfamerazine level at this time was 7.5 mg. per hundred cubic centimeters[3]. The dose was increased to 0.5 Gm. per kilogram, and two days later the blood sulfamerazine level was 5.5 mg. A lumbar puncture done on this day revealed 600 cells, predominantly polymorphonuclears.

Because clinical improvement was not satisfactory, and because cultures of the blood and spinal fluid were still positive for pneumococci, the drug was changed to sulfapyrazine, 0.4 Gm. per kilogram every twenty-four hours. Another lumbar puncture done the next day revealed 450 cells, and the level of sulfapyrazine in the blood was 12 mg. per 100 cc. The following day (sixth hospital day) the spinal fluid contained 1,050 cells, and the child seemed to be getting worse. Fifty thousand units of type XIV antipneumococcic rabbit serum were given subcutaneously in 100 cc. of saline solution. On the seventh day another 50,000 units were given intravenously.

Two days later lumbar puncture revealed only 300 cells; 3 cc. of fresh complement (using patient's serum plus donor serum) were given intrathecally. The next day the patient's temperature was normal for the first time, but by the twelfth day it had risen again. Another lumbar puncture was done and 25,000 units of antipneumococcic serum plus 3 cc. of fresh complement were injected intrathecally; another 25,000 units of antipneumococcic serum were given intravenously. The patient's temperature again returned to normal and remained so throughout the rest of his hospital stay. The Quellung test for the patient's serum (diluted 1:10) against his own organism was positive for the first time after this.

Because of difficulty in maintaining a therapeutic level with sulfapyrazine, the drug was changed to sulfadiazine. A lumbar puncture done one week after the intrathecal injection of serum revealed only 48 cells; it was sterile for the first time, and the child was clinically well. Sulfadiazine therapy was discontinued on the twenty-first hospital day, and the child remained free of symptoms and fever. The last lumbar puncture, done a few days before discharge, revealed only 14 cells (6 polymorphonuclears and 8 monocytes), and the culture was sterile. The patient was discharged on the thirty-second day (March 15, 1944) as cured.

A follow-up examination six months later revealed no evidence of residual damage to the central nervous system.

Case 2.

B. T., a 9 year old boy, was admitted on October 22, 1944, after an illness of two days, characterized by headache, vomiting and stupor. When admitted to the hospital he was comatose and was thrashing wildly. Opisthotonos was present and the Brudzinski and Kernig signs were positive. Left facial paralysis, left carpopedal spasm, and left ankle clonus were noted. Lumbar puncture revealed cloudy fluid under pressure; there were 8,000 cells, with 96 per cent polymorphonuclears. Only two colonies of pneumococci, which could not be typed, were grown from the spinal fluid on culture. Blood culture was negative. The patient was started on sulfadiazine, 0.2 Gm. per kilogram of body weight every twenty-four hours. Gross hematuria appeared the next day, however, and the drug was discontinued. In its place were given sulfamerazine, 0.1 Gm. per kilogram every twenty-four hours, and penicillin, 7,000 units intramuscularly every two hours and 10,000 units intrathecally daily for three days. Lumbar puncture on the second day revealed 2,450 cells; on the fourth day, 1,600 cells. Culture of the spinal fluid was consistently negative after the first day.

The patient's temperature returned to normal on the fourth day; he was rational and appeared much improved. The intramuscular doses of penicillin were reduced to 5,000 units every two hours and continued for six more days. Sulfamerazine was continued until three days before discharge. Lumbar puncture on the thirteenth day (after penicillin had been discontinued) revealed only 36 cells, chiefly lymphocytes. A lumbar puncture done just before the patient's discharge on November 12 (the twenty-second hospital day) showed only 2 cells. The neurological signs had disappeared.

A follow-up examination disclosed no evidence of residual central nervous system damage.

Case 3.

R. W., a 10 months old, 20 pound female infant, was admitted on December 18, 1944, **in extremis.** She was brought to the hospital because of a generalized convulsion following suppurative otitis media of two weeks' duration and stiffness of the neck for one week. When admitted, the child was semi-comatose; both ears were draining, the neck was rigid, and the fontanel was tense and bulging. Lumbar puncture revealed cloudy fluid under increased pressure; there were 32,500 leukocytes, predominantly poly-

3. All sulfonamide levels mentioned herein are reported as the level of free sulfonamide in the blood.

morphonuclears, and the Pandy test was 4 plus. Direct typing and culture of the spinal fluid revealed type XXIII pneumococci. Blood culture was negative.

Therapy with sulfadiazine and penicillin was instituted immediately. The patient received 1.6 Gm. of sodium sulfadiazine in 240 cc. of sixth molar sodium lactate subcutaneously, and 5,000 units of penicillin were given intramuscularly every two hours. Ten thousand units of penicillin were given intrathecally.

The patient died in convulsions ten hours after admission. Postmortem examination revealed left otitis media and purulent meningitis with fibrinous exudate around the base of the brain.

Case 4.

C. B., a 9 year old girl, was admitted on February 11, 1945. She had been sick for three days, with fever, headache, and vomiting, and had become delirious a few hours before admission. Her temperature on admission was 105 F.; she was delirious, and her neck was stiff. A sedative was administered and 5 Gm. of sodium sulfadiazine were given intravenously. Five hours after admission a lumbar puncture was done, revealing cloudy fluid under increased pressure; there were 40,000 leukocytes, chiefly polymorphonuclears; and the Pandy reaction was 4 plus. Type III pneumococci were demonstrated by direct typing of the spinal fluid and by culture. Blood culture was positive for the same organism.

The next morning the patient was given 20,000 units of penicillin intrathecally, and intramuscular injections of penicillin, 8,000 units every two hours, were started. Fifty thousand units of type-specific antipneumococcic rabbit serum, followed by 2.5 Gm. of sodium sulfadiazine and 500 cc. of plasma, were given intravenously. Later during the same day more sodium sulfadiazine (2.5 Gm.) and antipneumococcic serum (10,000 units) were given intravenously. The fluid intake was maintained by intravenous fluids. The Quellung test, using the patient's serum, was negative. On the evening of the second day 20,000 units of penicillin were again given intrathecally. The spinal fluid cell count at that time was 12,000.

On the third day lumbar puncture was done morning and night, and 20,000 units of penicillin were instilled each time. Another 10,000 units of antipneumococcic serum were given intravenously. Blood and spinal fluid cultures were now sterile. Spinal fluid cell count was 7,000. Two lumbar punctures were done on the fourth day, 20,000 units of penicillin being instilled each time; and 30,000 units of antipneumococcic serum were given intravenously, since the Quellung test was still negative. Cultures of the blood and spinal fluid were sterile. It was noted at the time of the last lumbar puncture that the fluid ran very poorly, showing evidence of blockage. The child expired a few hours after the last (seventh) lumbar puncture.

Postmortem examination revealed a thick, purulent exudate over the entire surface of the brain, with fibrous adhesions around the base. There was also a chronic otitis media on the right with an accompanying petrositis.

Comment

These 4 cases serve to illustrate various types of pneumococcic meningitis and the methods of treatment most commonly used in the pre-penicillin era. Sulfonamides and specific antiserum were used, and finally, in desperation, intrathecal serum and complement were tried. The recovery of infants receiving this type of treatment is not common. *Case 2* illustrates the milder form of the disease. Either drug alone (sulfonamide or penicillin) might have effected a cure. Both were used together because of the known seriousness of the disease and its tendency to recur.

Case 3 serves to illustrate the type of case in which the infection begins elsewhere, and the meningitis is not recognized until it is too late. It has been shown that about 60 per cent of all cases of pneumococcic meningitis are secondary to pneumococcic infections elsewhere in the body, usually otitis media, mastoiditis, or pneumonia[4]. Approximately 10 per cent of the cases follow operations or injuries involving the accessory nasal sinuses[5], and in the remaining 30 per cent no foci of infection are found.

Case 4 illustrates the severe, fulminating type of pneumococcic meningitis. The illness was of short duration, but the spinal fluid contained large numbers of pneumococci and there were no demonstrable circulating antibodies in the blood. All forms of therapy combined were ineffective in bringing about a cure. This is the type more commonly seen in infancy, since there is no demonstrable antibody production at that age. In this case, adhesive arachnoiditis about the base of the brain blocked the flow of the cerebrospinal fluid in only a few days—a development characteristic of the pneumococcic form of meningitis. It has been suggested that heparin (or air alone) given intraspinally may prevent the formation of these adhesions[6].

Prognosis

The earlier adequate treatment is begun and the fewer the number of organisms present in the spinal fluid, the better the prognosis. Regardless of therapy, the most important factor in the prognosis is the presence of adequate circulating antibodies.

The significance of blood stream invasion during meningitis is a controversial subject. Many writers feel that the positive blood cul-

4. Dowling, Harry F., Dauer, Carl C., Feldman, Harry A., and Hartman, Clarence R.: Pneumococcic Meningitis, New England J. Med. 226:1015-1018 (June 25) 1942.
5. Richards, G. Gill, and Moench, Louis G.: Pneumococcus

ture is of no significance[7], whereas others think that it is a poor prognostic sign. In the cases presented here, one out of the two patients who recovered and one out of the two who died had invasion of the blood stream.

As was pointed out previously, the age of the patient is an important factor in determining the outcome. The older the child, the better the prognosis. Pneumococcic meningitis has been reported in the newborn, but there are references to only three recoveries occurring at that age[8].

The type of pneumococcus causing the infection apparently has no bearing on the outcome. All are of approximately the same virulence and respond equally well to therapy. The most common types are the ones that were found in the cases reported here: types III, XIV, and XXIII. It should be noted that frequently it is impossible, after only a brief period of chemotherapy, to type the organisms found. If serotherapy is anticipated—as it should be in all infants—the organisms should be typed and cultured for future use in the Quellung test, before therapy of any sort is instituted.

Treatment

As soon as the diagnosis of pneumococcic meningitis is confirmed and the organisms are typed, therapy is directed along the following lines.

Sulfonamides

All patients receive a sulfonamide, alone or in conjunction with serum or penicillin, or both. Sulfadiazine, sulfamerazine, and sulfapyrazine are the drugs of choice, and none has any particular advantage over the others. *In vitro* studies should be made to determine which one is more effective against the infecting organism in each case. Sulfathiazole does not reach sufficient concentrations in the spinal fluid to make it satisfactory for treating meningitis[9].

In most instances the initial dose is given intravenously in the form of the sodium salt —0.1 Gm. per kilogram of body weight. This intravenous dose is repeated at intervals as necessary until the patient is able to retain the drug by mouth; then 0.2-0.4 Gm. per kilogram, divided into four or six doses, are given orally during the twenty-four hour period. Parenteral fluids are usually necessary to maintain adequate urinary output. Blood levels of the drug are determined daily, and the doses are regulated so as to obtain a blood concentration of 12 to 15 mg. per hundred cubic centimeters. It has been shown that the spinal fluid level obtained with sulfadiazine, sulfamerazine, and sulfapyrazine is 50 to 70 per cent of the level in the blood[10].

Goldring and Hartmann[11] have suggested the following method of giving sulfonamide drugs to children with severe infections: A 0.5 per cent solution of the sodium salt is given subcutaneously in one-half "fortified lactate Ringer's solution."* An initial dose of 60 cc. per kilogram of body weight is followed by 30 cc. per kilogram (20 cc. per kilogram when sulfamerazine is used) every eight hours for the first twenty-four to forty-eight hours. When the child is able, he takes the drug by mouth, and the lactate is given in fruit juices. The advantages of this method for the critically ill infant are that it is easy to administer, that enough alkali is given to produce urine *p*H of 7.0 or above, that the child receives sufficient fluids and electrolytes, and that sulfonamide levels of 20 to 40 mg. per hundred cubic centimeters of blood can be obtained quickly. It probably is not necessary to obtain blood levels this high, however[2,6,11,12].

The sulfonamides should never be injected intraspinally.

Penicillin

The administration of penicillin is begun as soon as the causative organism is identified. It is given both intrathecally and intramuscularly. The dosage of penicillin is not yet standardized, but experience has shown the following amounts to be satisfactory:

7. (a) Neal, Josephine B., Appelbaum, Emanuel, and Jackson, Henry W.: Sulfapyridine and Its Sodium Salt in the Treatment of Meningitis Due to Pneumococcus and Haemophilus Influenzae, J.A.M.A. 115:2055-2058 (Dec. 14) 1940.
   (b) Hodes, Horace L., Smith, Margaret H. D., and Ickes, Howard J.: Sixty Cases of Pneumococcic Meningitis Treated with Sulfonamides, J. A. M. A. 121:1334-1337 (Apr. 24) 1943.
8. Hogg, Paul, and Bradley, Chester D.: Pneumococcus Meningitis in the Newborn, J. Pediat. 26:406-410 (April) 1945.
9. Woolley, Paul V., Jr.: Sulfathiazole in the Treatment of Pneumococcic Pneumonia in Infants, J. Pediat. 20:185-186 (Feb.) 1942.

* Sodium lactate made up to 1/20 molar in Ringer's solution.

10. (a) Van Horn, K. L., and Woofter, A. C.: Pneumococcus Type XXXI Meningitis with Recovery, West Virginia M. J. 38:348-350 (Sept.) 1942.
    (b) Vandegrift, Harvey N.: Experience with Sulfapyrazine in Children, North Carolina M. J. 5:531-535 (Nov.) 1944.
11. Goldring, David, and Hartmann, Alexis F.: Diagnosis and Management of Severe Infections in Infants and Children: A Review of Experiences Since the Introduction of Sulfonamide Therapy, J. Pediat. 26:1-31 (Jan.) 1945.
12. Alexander, Hattie E.: Treatment of Haemophilus Influenzae Infections and of Meningococcic and Pneumococcic Meningitis, Am. J. Dis. Child. 66:172-187 (Aug.) 1943.

Infants and small children

Intramuscular: 30,000 to 40,000 units daily, in doses of 2500 to 5000 units every 2 to 3 hours.

Intrathecal: 5000 to 10,000 units twice daily for 2 or 3 days, then once daily for 2 or 3 days.

Older children

Intramuscular: 60,000 to 100,000 units daily, in doses of 5000 to 10,000 units every 2 to 3 hours.

Intrathecal: 10,000 to 20,000 units twice daily for 2 or 3 days, then once daily for 2 or 3 days.

It has been shown that penicillin given intramuscularly or intravenously cannot be recovered in the spinal fluid of normal subjects[13], but that it passes into the spinal fluid of patients suffering from meningitis in effective concentrations[14]. The concentration varies considerably in different patients, however, and evidence is accumulating that in the treatment of meningitis penicillin should be administered directly into the subarachnoid space[2,15].

When penicillin is to be injected intraspinally, it is dissolved in 5 to 10 cc. of sterile isotonic saline solution. After the spinal fluid has been allowed to drain until it barely drops from the needle, the penicillin solution is injected slowly and without force into the spinal canal. Complete surgical asepsis must be observed in performing the lumbar punctures. The third, fourth, and fifth lumbar spaces are used in rotation, and puncture of the same space twice in succession is avoided.

It has been shown that when penicillin is injected intrathecally a good therapeutic level is maintained for approximately twenty-four hours; toxic effects, though occurring occasionally, are not common[13]. The intrathecal route of administration is not discontinued until at least two or three successive negative cultures of the spinal fluid have been obtained. Cisternal administration of penicillin is attempted only if there is evidence that blockage is complete.

Intramuscular administration of penicillin is continued, together with the sulfonamide, until the patient is clinically well; then penicillin is stopped altogether and the sulfonamide is used alone for another week. If no signs of infection recur, all therapy is discontinued and the patient is kept in the hospital for another week to make certain that he does not have a relapse.

Serum

Type-specific antipneumococcic rabbit serum is a valuable adjunct in the treatment of pneumococcic meningitis, and should be employed in all cases occurring in children less than 2 years of age. It should be used without hesitation in older children who do not respond to adequate sulfonamide and penicillin therapy. The total amount given is determined by the Quellung reaction[16]. Daily determinations of this reaction are made, and antiserum is given until the patient's serum in a dilution of 1:10 causes capsular swelling of his own organism[6,12,16,17].

Serum is best administered intravenously, diluted in 100 to 200 cc. of isotonic saline solution and allowed to drip in over a period of about two hours. About 50,000 units should be given the first day and smaller doses daily thereafter until the Quellung reaction becomes positive. The subcutaneous or intramuscular route may be used satisfactorily if a vein suitable for use cannot be found.

The intrathecal administration of serum is to be discouraged, but if no antiserum can be demonstrated in the spinal fluid, after a sufficient level is obtained in the blood, antiserum plus complement may be given intrathecally as a last resort. The amount of antiserum should be small (1 or 2 cc.), and the complement (3 or 4 cc.) should be fresh serum (less than one hour old) obtained from the patient plus fresh serum from a donor. It must be remembered that the intraspinal administration of serum may be accompanied by severe reactions, and it should be carried out with extreme caution.

13. Rammelkamp, Charles H., and Keefer, Chester S.: The Absorption, Excretion and Toxicity of Penicillin Administered by Intrathecal Injection, Am. J. M. Sc. 205:342-350 (March) 1943.
14. (a) Rosenberg, D. H., and Sylvester, J. C.: The Excretion of Penicillin in the Spinal Fluid in Meningitis, Science 100:132-133 (Aug. 11) 1944.
    (b) Price, A. H. and Hodges, G. H.: Treatment of Meningitis with Penicillin Injected Intravenously and Intramuscularly, New York State J. M. 44:2012-2014 (Sept.) 1944.
15. (a) Herrell, Wallace E., and Kennedy, Roger L. J.: Penicillin: Its Use in Pediatrics, J. Pediat. 25:505-516 (Dec.) 1944.
16. Alexander, Hattie E.: Experimental Basis for Treatment of Haemophilus Influenzae Infections, Am. J. Dis. Child. 66:160-171 (Aug.) 1943.
17. Alexander, Hattie E., Ellis, Catherine, and Leidy, Grace: Treatment of Type-Specific Haemophilus Influenzae Infec-

Supportive Treatment

The most important supportive measure is the maintenance of the fluid balance and of adequate nutrition. If the patient is unable to take feedings, this must be accomplished by gavage and parenteral fluids. Whole blood and plasma may be indicated to combat anemia and undernourishment, and to provide the patient with more antibodies.

The question of mastoidectomy arises frequently in cases of meningitis associated with otitis, but surgery in the majority of cases should be deferred until the acute phase of the illness has passed[2].

Summary

Four cases of pneumococcic meningitis in children, with two recoveries, are presented, and the prognosis and treatment of the disease are discussed.

Pneumococcic meningitis is best treated with: (1) sulfonamides in a dosage sufficient to obtain blood concentrations of 12 to 15 mg. per hundred cubic centimeters; (2) penicillin both intramuscularly and intrathecally; (3) type-specific antipneumococcic rabbit serum in infants and in older patients who do not respond readily to combined sulfonamide-penicillin therapy; and (4) free and vigorous use of all general supportive measures.

THE MANAGEMENT OF PROSTATIC CONDITIONS IN THE AGING

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In a discussion of diseases of the aging, disorders of the prostate gland must assume a position of great importance. It is said that four out of ten men beyond the age of 50 have benign prostatic hypertrophy. According to some reports, 20 per cent of the cases of enlargement of the prostate gland are carcinomatous. Infections of the prostate are also common in the older age group. Some clinicians believe that 75 per cent of all men past 40 have some type of prostatic disorder.

It is the purpose of this paper to evaluate prostatic diseases as they occur in the aging patient and to discuss the management of such diseases which will give the patient the greatest degree of comfort compatible with safety.

The following types of prostatic disorders will be considered:

1. Prostatic infections.
2. Prostatic fibrosis or median bar.
3. Benign prostatic hypertrophy.
4. Prostatic malignancy.

Prostatic Infections

Prostatitis or chronic prostatic infection is no longer considered a disease of youth, or the direct result of venereal infection. Prostatitis is common in middle life and in old age, and is frequently unrecognized or overlooked. It is a nonspecific focal infection, usually spread by the hematogenous route from infectious foci elsewhere in the body, particularly abscesses of the teeth, infected gum pockets, and diseased tonsils. It may develop as a result of upper urinary tract infection, gallbladder disease, influenza and other infections. It sometimes manifests itself by a clinical picture of arthritis. It is diagnosed by examination of the prostatic secretion expressed by massage.

The sulfonamide drugs appear to have no effect upon prostatic infection, and massage of the prostate is still the indicated method of treatment. This procedure should be undertaken with caution in the presence of acute arthritis, as it may produce a severe exacerbation. If there is any suspicion of malignancy or tuberculosis, massage is contraindicated because of the danger of spreading the disease.

The source of the prostatic infection must, of course, be eradicated. Gentle massage, however, will often relieve the feeling of fullness in the urethra or rectum, the urgency of urination and the lower back pain, and may restore a feeling of well-being with remarkable rapidity. Rough massage should be avoided.

Prostatic Fibrosis

Known also as median bar, or contracture of the vesical neck, prostatic fibrosis usually results from long standing infection. The fibrous shrinking of the prostate produces obstruction to the vesical outlet, so that the same symptoms of frequency, urgency, and weak or hesitant stream may develop as in the patient with an enlarged prostate. Acute retention is rare in this type of obstruction. The amount of residual urine is small, but

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symptoms are constant and annoying. Rectal palpation reveals a small, firm gland, and the diagnosis is made by cystoscopy.

The treatment of this condition is definite: transurethral resection through the cystoscope can give these patients certain relief, by the removal with the cutting current of obstructing tissue at the vesical neck. A free urinary channel is thus provided, and the patient's symptoms may be entirely relieved. The shock associated with this procedure is small, and bleeding is minimal. Age is no contraindication.

Dilatation of the vesical neck by steel sounds may give temporary relief, but should be resorted to only where resection is contraindicated. It must be borne in mind that the frequent passage of sounds may be a dangerous procedure, sometimes producing infection and toxemia sufficient to overwhelm the aged patient.

Benign Prostatic Hypertrophy

The etiology of this extremely common condition is still unknown. The theoretical causes which have been suggested range from infection to sex hormones. Today it is generally believed that hormone imbalance is a definite factor, and that there is a disturbance between the androgenic and estrogenic ratio in the elderly male sufficient to produce prostatic changes.

Some patients in whom rectal examination reveals considerable enlargement of the prostate may have minimal symptoms, and on the other hand a prostate which feels small to the examining finger may cause marked frequency and discomfort. The intraurethral and intravesical encroachment is the important factor, and frequently this cannot be determined without the aid of cystoscopy. I seldom use the cystoscope in patients with large prostates. The passage of the instrument in these cases may produce bleeding, infection, complete retention, and even sepsis. An intravenous urogram is of great diagnostic aid: it shows evidence of good or bad renal function, and of upper urinary tract changes; intravesical prostatic encroachment is often conclusively demonstrated, and bladder diverticula may be revealed. The constant presence of large quantities of residual urine is indicative of definite obstruction, if the neurogenic factor has been ruled out. Such a case obviously requires radical treatment, or eventual damage to the upper urinary tract by back pressure is inevitable.

The present-day operative treatment of benign prostatic hypertrophy, whether by a complete prostatectomy or by a transurethral resection, has resulted in a remarkably decreased morbidity and mortality. Preoperative study, proper drainage, improved anesthesia, and the sulfonamide drugs have all been factors in our good results. Prostatectomy is no longer the bugaboo that it once was, except in those patients who are operative risks because of a multitude of complicating factors.

In cases of mild prostatic hypertrophy with a superimposed congestion gentle massage may be beneficial. Hormonal treatment has been far from satisfactory; good results as well as completely negative results have been reported from the use of male hormones, female hormones, and no hormones. In view of our knowledge that the male hormone is carcinogenic and may be a major factor in the production of prostatic carcinoma, the use of testosterone in large doses is unwise. However, I am hopeful that a successful hormone treatment may be developed in the future.

Many patients remain fairly comfortable with a small amount of residual urine and nocturia one or two times nightly. Their general health should be improved by fresh air, mild exercise, laxatives, a balanced diet, vitamins, the removal of foci of infection, and urinary antiseptics if infection of the urinary tract is present. Short wave diathermy and hydrotherapy may be of value. High voltage x-ray has given no results.

Acute retention resulting from over-indulgence in alcohol may subside after a few days of drainage with the indwelling catheter and require no surgical intervention. This condition appears to be an acute congestion superimposed upon a moderate hypertrophy.

Prostatic Carcinoma

Since Huggins and others published their studies on the relationship of the androgenic hormones to prostatic malignancy, a new phase in the treatment of this most devastating disease has been developed. Our past efforts in the treatment of prostatic carcinoma met with little success. Radical operations, removing the entire gland, have given good results in the hands of some operators, in cases where the diagnosis was made early;

unfortunately, however, early diagnosis is not the rule. Large doses of x-ray and radium seed implantation have been without value.

Huggins showed that after castration or removal of the androgenic factor the primary prostatic tumor becomes smaller in size, symptoms decrease or clear up entirely, and even those cases with extensive bone metastases show a definite slowing down of the process. Administration of the estrogenic hormone by mouth, alone or in conjunction with orchidectomy, has been of great value. The terrific pain associated with the malignancy and its metastases disappears completely, the patient gains weight, his appetite improves, the gland itself shrinks in size, and even residual urine decreases. Some patients leave a sick bed to return to their former occupations. X-ray evidence of osseous metastases may decrease remarkably. The serum acid phosphatase, often high in prostatic carcinoma, frequently drops to normal figures. After a variable period, unfortunately, relapses occur, and death ensues. There is no doubt, however, that such treatment makes these patients more comfortable for their remaining days.

Many patients cannot take even small doses of stilbestrol without experiencing abdominal cramps and nausea. Others can take 2 to 5 mg. daily without apparent difficulty. The improvement that follows administration of the drug is usually gradual, and less phenomenal than that resulting from orchidectomy.

The operation of orchidectomy is rapid and without shock to the average patient. For those patients who may react unfavorably to the suggestion of this procedure, a method has been devised which leaves in place the epididymis and tunica albuginea of the testis, and removes only the testicular substance. The scrotum is not completely emptied of its contents, and the psychological effect is favorable. Libido and potency are not affected by the operation.

The phenomenal results obtained in prostatic carcinoma by these methods of treatment indicate that this malignancy may eventually be cured by hormonal therapy, and opens up for investigation new possibilities in the etiology of carcinoma in general.

Conclusion

I have tried to cover in a brief report the present management of the various prostatic disorders which afflict the aging patient. I am happy to state that we are making definite advances in methods of treating these disorders, and I hope that the next decade will see even more striking progress, especially with regard to hormonal treatment.

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MAINTENANCE OF EMPLOYEE HEALTH AT THE NORTH CAROLINA SHIPBUILDING COMPANY

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The desirability of maintaining the health of industrial employees at a maximum level is even more obvious in wartime than in peacetime. A sick man, whether his illness is acute and disabling or chronic and nondisabling, cannot be expected to deliver the amount of work that a well man is capable of doing. The chronic and slowly progressive diseases are difficult to diagnose, and medical care is often not voluntarily sought until actual incapacitation occurs. When a condition has progressed this far, the amount of time lost and the expense of treatment are much increased.

Maintenance of manpower health, beyond the treatment of actual industrial injuries, is not required in industry. Progressive management, however, has recognized how it may contribute to industrial efficiency and employee morale by a health program prosecuted as earnestly as its maintenance of machinery and conservation of raw materials.

The preplacement examination is an essential phase of health maintenance; it offers management some of the opportunity of selection which it exercises in buying its machinery. The employee, who will become a cog in the organizational set-up, is expected to have certain physical capacities for work, just as machinery must meet certain specifications. If defects are present in an acceptable employee, records of such defects are valuable for future reference, and in evaluating his suitability for a particular job.

Occasional check-ups—a sound principle in physiology as well as in engineering—after employment may, and often do, reveal

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the presence of actual or incipient defects or disease; if the employee is advised in the right manner, he will appreciate being given such information and will almost invariably cooperate in treatment.

Preventive medicine finds its best field of practical application in industry. Here we not only have an opportunity for keeping the individual under a degree of surveillance, but we have a certain amount of control over important environmental factors.

Our health program, confined entirely to non-surgical conditions, has been in progress (with the exception of pre-placement examinations, which have been done since the establishment of the yard) for a little more than a year. There has been a certain amount of trial and error, in finding the angles most important to our particular industry of shipbuilding. In general, however, we now have a concrete, workable, and effective industrial health set-up.

Venereal Diseases

Serological tests for syphilis, using the facilities of our own laboratory, are done on all employees at the time of employment, and are repeated after an interval of a year. Approximately 2500 cases of syphilis, most of which were previously undiagnosed, have been discovered and the employees placed under treatment. Invariably the general health of these individuals improves as treatment progresses; the changes are noticeable, both subjectively and objectively. There is usually a gain in weight and an increase in energy and in capacity for work. Many individuals who have completed their course of treatment wish to take more and not infrequently come back with such requests. The U. S. Public Health Service holds a treatment clinic here once a week for individuals unable, because of difficulties of transportation, to secure treatment from private physicians or in the usual public health clinics. Approximately 100 men are registered for this special clinic, from a total of around 600 employees with syphilis. More than 15,000 copies of a pamphlet on venereal disease and prophylaxis have been distributed. A certificate, an important looking document stamped with the Shipyard Seal, is awarded to all employees who may wish it, upon completion of their course of treatment. This states our appreciation of their cooperation, and their contribution to community health.

Gonorrhea, very common among Negroes, has been found in numerous instances before and during employment. A complaint of a strained or wrenched back, presumably incurred at work, has often led to the discovery of gonorrhea and prostatitis. An explanation of cause and effect often fails to convince these patients; they honestly think that a urethral discharge means only that they have been lifting something too heavy.

Periodic Examinations

Periodic examinations of employees who are in jobs requiring particular alertness and skill—for example, crane operators and locomotive operators—have in at least 5 cases probably prevented serious accidents. Visual failure, a toxic goiter, impaired coordination, and cardiac conditions have been discovered, and the employees placed in less hazardous jobs.

Blood smears are done periodically on painters and certain welders working around lead paints. In only 5 cases, thus far, have signs of lead absorption been discovered; these patients were treated before clinical symptoms—and compensation questions—arose. A short note giving the result of the test and expressing appreciation for the employee's cooperation has helped the morale of these men.

X-ray examinations on all employees, with miniature 4 by 5 inch films, have proven of much value. Our type of examination, done with our own equipment, differs somewhat from the chest surveys done by public health agencies for many industries. In the latter, cases of tuberculosis are discovered and treatment is recommended. It is our experience, however, that the greatest value of our system, in addition to the recognition of cases requiring treatment and the screening of all new employees, is the fact that we retain the x-rays on file and are able to repeat the pictures at regular intervals. In this way we have been able to continue the employment of nearly 200 individuals with inactive tuberculosis. The assurance given by the knowledge that we are able to repeat the films any time an apprehensive individual wishes has meant much to morale, especially among welders. Approximately 35 individuals have been found to have tuberculosis of such extent and infectivity as to require immediate sanatorium care; most of these had positive sputums. Numerous other pathologic lesions of the chest have been found,

including several cases of sarcoidosis, 3 cases of Hodgkin's disease, lung abscesses, mycotic infections, cardiac hypertrophies, aortic aneurysms, and numerous bird and buck shot. Since beginning the x-ray program, we have done an average of 71 chest films a day, the maximum being 400 in one day. The total number done exceeds 20,000.

Routine urinalyses made upon employment and during periodic examinations have revealed 16 definite and previously undiagnosed cases of diabetes. Two employees, who apparently developed diabetes after employment, had attacks of diabetic coma which closely simulated simple syncope. Blood typing is done on all new employees along with the serological test, and has enabled us to provide donors quickly for urgently needed transfusions.

Prevention of Accidents

Accident-prone individuals are seen in cooperation with the Safety Department. Cumulative records, compiled by the Safety Department, on individuals with repeated minor accidents are sent to us; calling those employees in, we review their records with them. The most frequent factor, of course, has been failure to use safety equipment, but many other important factors—ranging from physical impairment and chronic disease of various types to psychic disturbances, have been found. Domestic and marital troubles have been the causes of many repeated minor accidents, which not infrequently follow a certain rhythm of occurrence. Talking seems to release much pent-up emotion in such employees, and their subsequent records almost invariably show marked trends for the better.

Absenteeism

Our method of attack on the problem of absenteeism is to gather cumulative attendance records. These data go back as far as July, 1943. When they are transferred to a calendar-like form, with a large blue circle blotting out the day of an unexcused absence and a red one indicating a day missed because of sickness, a very graphic record results. When such a record shows an untoward amount of time lost because of illness or without excuse, the department is asked to send the man over for an interview. In the interview, we attempt to discover the factors responsible for the employee's absenteeism. Approximately 95 per cent of individuals give sickness as their first and most important excuse, and for this reason we have tackled the situation from the medical point of view. An evaluation of symptoms, often with a physical examination, usually refutes the story. Appropriate advice and warnings are given. In several cases disease has been found, for which the patient almost invariably had received inadequate medical treatment, or none at all. We gather as much information as possible with our diagnostic facilities, and give the individual a report to be taken to his physician.

During a thirteen-month period, the 712 individuals thus far interviewed have lost a total of 31,563 days; 11,549 days lost have been attributed (by the department) to sickness, while 20,014 days have been tabulated as unexcused. The individuals interviewed, of course, had the worst attendance records in the yard. Fifty-six per cent of these individuals were Negroes; 41 per cent lived out of town. Of the 712 interviewed, 152 have been discharged, 18 placed on an inactive list; of the 505 continuing to work, 86 per cent have shown a definite improvement in their attendance records, and 14 per cent have not improved. A social worker is interviewing the 14 per cent who have not improved and is attempting to help them in the solution of domestic and housing difficulties.

Women Employees

Women employees receive a physical check-up after more than six months' work in the yard. The data thus far, gathered among women welders who have worked this long, indicate a definite improvement in the general health of these employees. In 30 cases selected at random, a comparison of preplacement records with subsequent examinations shows a gain in weight in all except three women; two of these were obese upon employment and the third was attempting to carry on full-scale housekeeping duties. In 21 of the 30 employees, the hemoglobin was the same (and was within normal limits) on both examinations; in 3 individuals it had regressed slightly (though still within normal limits), and 6 individuals showed improvement in the hemoglobin since employment. The ages of the women in this group ranged from 18 to 30, and the majority were married. The weight gain was most marked in the 18-24 age group.

General muscle tonus was improved in every case, and there had been a minimal number of respiratory complaints since employment. Repeat x-rays showed no lung changes attributable to welding smoke or fumes.

Miscellaneous Services

During a period of eight months (since January 1) more than 2000 individuals have come to the medical department for miscellaneous reasons. Approximately 20 per cent have been sent in by foremen for an evaluation of their physical ability for a particular job. All employees requesting terminations or transfers for physical reasons have been seen by us, and in most cases our opinion has been accepted. The majority of these individuals, however, have been in for general medical advice, with every conceivable complaint and symptom, and some which we are sure had never been conceived before. Many had not sought medical treatment elsewhere; others had failed to respond to treatment. Here again our facilities have proven of value; urinalyses have revealed a number of unsuspected renal conditions; blood studies have shown anemias of various degrees; and in 17 of 93 employees recently examined for vague and indeterminate symptoms, malaria was found. Stool examinations have shown hookworm ova, explaining abdominal discomfort that individuals were attributing to welding smoke and paint fumes. In many cases where the patient believed he was spitting blood, sputum examinations have shown iron rust. Chest x-rays have been lent to individuals to show their family doctors. Electrocardiographic tracings, taken in selected cases—especially key personnel —upon employment and in periodic examinations, are providing valuable information about incipient heart disease. Allergy tests (scratch tests) on individuals suffering with hay fever and asthma have enabled us to give advice as to treatment.

Our relationship with private medical practitioners has been good. No attempt is made to treat non-industrial illness. We gather what data we can from the history, physical examination and laboratory studies and refer the patient, with this information, to the physician of his choice.

Conclusion

Many medical care plans are appearing in current literature. Most of the more elaborate plans, stressing hospitalization and complete medical care by industry, have run into difficulties. A more widely publicized shipyard on the West Coast has blown its horn with the volume of Gabriel; yet investigation has shown that its program is lacking completely in the basic principles of preventive medicine, since no type of examination is systematically given the employees. Only when they become actually ill do the employees reap the benefits of their system of medical care.

We feel that the adoption of an in-plant industrial health program yields dividends in increased production and better employee morale. Such a program can act, too, as a liaison between the private practice of medicine and the public health agencies, with resulting benefit to community health. Many of the problems precipitating the current demand for socialized medicine may be solved in an adequate industrial medical program.

WHOOPING COUGH IMMUNIZATION IN NORTH CAROLINA

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Director of the Division of Epidemiology
North Carolina State Board of Health
RALEIGH

On March 13, 1945, the General Assembly of North Carolina completed its action on H. B. 316, making immunization against whooping cough compulsory for children under 1 year of age.

In view of this development it would appear advisable to review briefly the morbidity and mortality statistics for this disease in North Carolina, in order to determine what immunization policy might be most effective in bringing about a prompt reduction in the number of pertussis deaths.

The importance of the whooping cough problem in this state is clearly shown in table 1. Since practically all of the preventable communicable diseases of major importance are included in the recently revised list of North Carolina's reportable diseases[1], table 1 gives an accurate comparison of the importance of the various communicable diseases. Pneumonia, although it causes more deaths than any of the diseases listed in table 1, is not ordinarily classified as preventable and is therefore not included in the group of reportable diseases.

1. Reynolds, Carl V.: Letter to the Editor, North Carolina M. J. 6:50 (Jan.) 1945.

TABLE 1

Mortality from Reportable Communicable Diseases in North Carolina—1944 (provisional figures)

Rank	Disease	Deaths per 100,000 pop.
1	Tuberculosis	36.5
2	Syphilis	6.4
3	Whooping cough	3.7
4	Measles	1.6
5	Meningococcus meningitis	1.3
6	Poliomyelitis	1.2
7	Diphtheria	1.0*
8	Malaria	0.7
9	Rocky Mountain spotted fever	0.45
9	Dysentery, bacillary	0.45
10	Paratyphoid and typhoid fever	0.3
10	Endemic typhus fever	0.3
11	Scarlet fever	0.2
11	Septic sore throat	0.2
12	Encephalitis	0.1
13	Dysentery, amebic	0.08
14	Undulant fever	0.05
15	Granuloma inguinale and lymphogranuloma venereum	0.04
16	Gonorrhea	0.02
16	Rabies	0.02
16	Smallpox	0.02
16	Trachoma	0.02
16	Tularemia	0.02
17	Anthrax	0.0
17	Chancroid	0.0
17	Cholera	0.0
17	Dengue	0.0
17	Glanders	0.0
17	Leprosy	0.0
17	Plague	0.0
17	Psittacosis	0.0
17	European typhus fever	0.0
17	Yellow fever	0.0

* The North Carolina diphtheria death rate has fallen from 4.9 per 100,000 in 1939, at which time the state-wide diphtheria immunization law was passed, to 1.0 in 1944. This is a decrease of 3.9 for this period, as compared with a decrease of only 1.4 for the corresponding six-year period immediately prior to the passage of the immunization law.

Because syphilis does not ordinarily cause death until ten to thirty years after it is acquired, the present mortality rate is a measure of morbidity ten to thirty years ago. At the present rate of decline in syphilis deaths (from 421 in 1940 to 241 in 1944), the disease will undoubtedly appear as a minor cause of death ten years from now. That would be approximately the earliest date that the death rate would reflect the true situation in regard to today's syphilis morbidity. For all practical purposes, then, syphilis can be disregarded as an important cause of death among the reportable communicable diseases at this time, leaving to whooping cough the doubtful distinction of being second only to tuberculosis in the entire group of thirty-five diseases.

Tuberculosis control has recently received renewed emphasis. The prevention of whooping cough, however, has not, up to the present time, received adequate emphasis on a state-wide basis. The absence of any decline in the death rate over the past five years is shown in table 2.

TABLE 2

Mortality from Whooping Cough in North Carolina 1940 - 1944 (provisional figures)

Year	Total Deaths	Deaths per 100,000 pop.
1940	90	2.5
1941	199	5.5
1942	109	2.7
1943	112	2.9
1944	141	3.7

The age distribution of the cases and deaths is important in planning a whooping cough control program. Tables 3 and 4 give this information.

TABLE 3

Age Distribution of Pertussis Cases in North Carolina for the Period 1934 - 1943 (Total cases: 87,134)

Age Group	Per Cent of Total
Under 1 year	9.5
1 - 4 years	41.3
5 - 9 years	41.8
10 - 14 years	6.3
15 - 19 years	0.7
20 - 24 years	0.1
25 - 29 years	0.1
Over 30 years	0.2
	100.0%

TABLE 4

Age Distribution of Pertussis Deaths in North Carolina for the Period 1931 - 1940 (Total deaths: 2,174)

Age Group	Per Cent of Total
Under 1 year	63.2
1 - 4 years	33.1
5 - 9 years	2.9
10 - 14 years	0.4
15 - 19 years	0.2
20 - 24 years	0.05
25 - 29 years	0.05
Over 30 years	0.1
	100.0%

Since the majority of deaths from whooping cough occur in children under 1 year, a further study of this group is shown in table 5.

TABLE 5

Whooping Cough Deaths in Children under 1 Year in North Carolina Age Distribution by Months

Age in Months	1941	1942	1943	Total
1	3	4	5	12
2	9	12	13	34
3	8	8	11	27
4	9	11	12	32
5	3	2	2	7
6	6	9	10	25
Total first six months	38	46	53	137
7	1	5	2	8
8	0	4	4	8
9	1	4	6	11
10	5	6	11	22
11	4	1	3	8
12	3	8	4	15
Total second six months	14	28	30	72
TOTAL	52	74	83	209

It will be observed that for the three-year period represented in table 5 more than half of the 209 deaths reported in children under 1 year of age occurred in the first six months of life. This group constitutes approximately 40 per cent of all whooping cough deaths in this state, regardless of age, and should be given due consideration in the control program.

Evaluations of the effectiveness of pertussis vaccine have been almost exclusively confined to children over 6 months of age. The recent favorable report on pertussis vaccine by the Council on Pharmacy and Chemistry of the American Medical Association[2] was based on the use of the vaccine "after 6 months of age."

Immunization of this older group of children by physicians and public health clinics on a state-wide basis would in the long run be very effective in preventing deaths from whooping cough. Since approximately 83 per cent of the cases occur in children between the ages of 1 and 9 years, the elimination of this large group would greatly reduce the chances of exposure for infants under 6 months of age.

However, since five years will probably pass before approximately 50 per cent of the 1 to 9 year group will be immunized under the requirements of the new state-wide pertussis immunization law, some additional protection of young infants should be considered for that period. It is entirely possible, also, that future events will demonstrate the necessity of protecting young infants routinely, even after the 1 to 9 year group has been immunized, in order to eliminate a few deaths occurring in infants accidentally exposed to the disease in members of the population who have escaped vaccination.

Immunization of infants under 3 months of age was found by Sauer[3] in 1941 to be effective in preventing pertussis deaths. Sako, Treuting, and others[4] recently reported that immunization of infants under 2 months of age provided effective protection against death from whooping cough. In the discussion of his paper, Sako said: "The State of Louisiana since 1942 has adopted the routine outlined as a regular program in the well-baby clinics conducted throughout the state. To date more than 16,000 infants below the age of two months have been so immunized. It is significant, also, that the mortality figures for Louisiana since 1942 showed no deaths reported from the immunized group."

Immunization against pertussis of the group under 6 months of age cannot be carried out with the combined diphtheria and pertussis antigens now becoming popular. Furthermore, Sauer's study[3] showed that immunity acquired at this early age, although it is effective in preventing deaths from whooping cough during the first year of life, diminishes in effectiveness during the age period of 1 to 9 years, when the incidence of the disease is highest.

A practical solution to this problem would be the use of plain or alum-precipitated pertussis vaccine in infants under 6 months—preferably under 2 months—, followed by administration of the combined diphtheria and pertussis antigens at 9 months. Reinjection of pertussis vaccine is capable of producing a considerable rise in a low-titer immunity previously established[5].

The use of early whooping cough immunization on a state-wide basis should, therefore, make possible in the next two years a reduction in deaths among the group of infants under 6 months of age, while revaccination at 9 months would provide sufficient immunity to bring about an extensive reduction during the next five years in the number of cases occurring in the 1 to 9 year group. Further study of the incidence of the disease after the control program has made definite progress may show that booster doses for children in the upper half of this 1 to 9 year group will be necessary in order to insure continued immunity and prevent cases that might be a source of infection for infants.

Summary

1. Pertussis immunization of children before the age of 1 year is now required by state law.

2. Whooping cough is the third, or probably the second, leading cause of death among the reportable communicable diseases in North Carolina.

3. On the basis of morbidity and mortality data it would appear that the immunization

2. Felton, Harriet M. and Willard, Cecilia Y.: Current Status of Prophylaxis by Hemophilus Pertussis Vaccine, J.A.M.A. 126:294-299 (Sept. 30) 1944.
3. Sauer, L. W.: The Age Factor in Active Immunization against Whooping Cough, Am. J. Path. 17:719-723 (Sept.) 1941.
4. Sako, Wallace, and others: Early Immunization against Pertussis with Alum Precipitated Vaccine, J.A.M.A. 127: 379-384 (Feb.) 1945.
5. (a) Mishulow, Lucy, and others: Stimulation of Pertussis-Protective Antibodies by Vaccination, Am. J. Dis. Child. 62:1205-1216 (Dec.) 1941.
   (b) Rambar, Alvin C., and others: Studies in Immunity to Pertussis, Am. J. Dis. Child. 65:730-732 (May) 1943.

of children after the age of 6 months would probably result in a definite reduction in pertussis deaths in North Carolina within the next five years, while immunization of children under 6 months—preferably under 2 months—would probably result in a definite reduction in deaths within the next two years.

4. The routine immunization of small infants with plain or alum-precipitated vaccine, followed by the administration of combined diphtheria and pertussis antigens at 9 months of age, is suggested as a practical pertussis immunization program for this state for the next five years, and possibly longer.

THUMBNAIL SKETCHES OF EMINENT PHYSICIANS

JOSIAH C. TRENT, M.D., *Editor*

ANN ARBOR, MICHIGAN

THE EVOLUTION OF THE ASEPTIC PRINCIPLE IN SURGERY

VIII

LOUIS PASTEUR (1822-1895)*

Rarely in the annals of science do we find a man who satisfies our propensity to hero worship: if he is a genius in the laboratory, his private life is disappointing; if he makes some remarkable discovery, the remainder of his work is frequently mediocre or obscured by bitter controversies and recriminations. Louis Pasteur was one of those exceptional men who failed us in nothing. In the laboratory his reasoning was faultless and his work truly magnificent. In private life he was an exemplary son, a perfect husband, and the best of fathers. The many excellent appreciations and critiques of this great man which have already been written preclude any similar attempt here. Rather we shall of necessity present only that part of Pasteur's life and work which has a direct bearing on our subject.

Until the middle of the nineteenth century chemical thought was dominated by the great Liebig, who believed that fermentation was a disintegration, the breaking-up of a molecule by decay. Schwann and Cagniard-Latour had failed to impress the world with the idea that fermentation is due to living organisms, and Liebig had silenced all opposition with arm-chair logic: "If you admit that yeast lives, then you admit that it dies. Now it is in dying that it acts, as a result of the decomposition which it undergoes at that moment."

It was at this time that Louis Pasteur, an obscure French chemist whose work had dealt chiefly with crystalloids and their polarizing properties, began to encounter in certain industrial fermentations exceptions to the laws of correlation between crystals and rotary power—laws which he had previously found invariable. He had observed also that life alone is capable of creating full-fledged new dissymmetries. To the trained scientist, therefore, it logically followed that fermentation is a vital act. To prove this hypothesis, Pasteur resorted to experiment and, fortunately for the world, deserted pure chemistry for biology.

In 1857, after careful researches on the problem of lactic fermentation, Pasteur read before the Lille Scientific Society a paper, *Memoire sur la fermentation appelee lactique*, in which he completely demolished Liebig's theory. He concluded: "It is now my opinion as the result of the knowledge I have gained on this subject that whoever will judge impartially the results of this work and those which I shall publish in the near future[1] will recognize with me that fermentation is correlative with life, with the organization of globules, not the death or putrefaction of those globules."

To Pasteur, studying the role of microorganisms in fermentation, it was inevitable that he should question the origin of these minute bodies. In January, 1860, when the Academie des Sciences conferred on him the Prize for Experimental Physiology, he wrote to a friend: "I am pursuing as best I can these studies on fermentation which are of great interest, connected as they are with the impenetrable mystery of Life and Death. I am hoping to mark a decisive step very

*The following facts were taken from two excellent biographies: Rene Vallery-Radot, The Life of Pasteur, translated by Mrs. R. L. Devonshire, London, Constable, 1902; Emile Duclaux, Pasteur: The History of a Mind, translated by E. F. Smith and F. Hedges, Philadelphia, W. B. Saunders, 1920.

1. Memoir On Alcoholic Fermentation, presented to the Academie des Sciences in December, 1857.

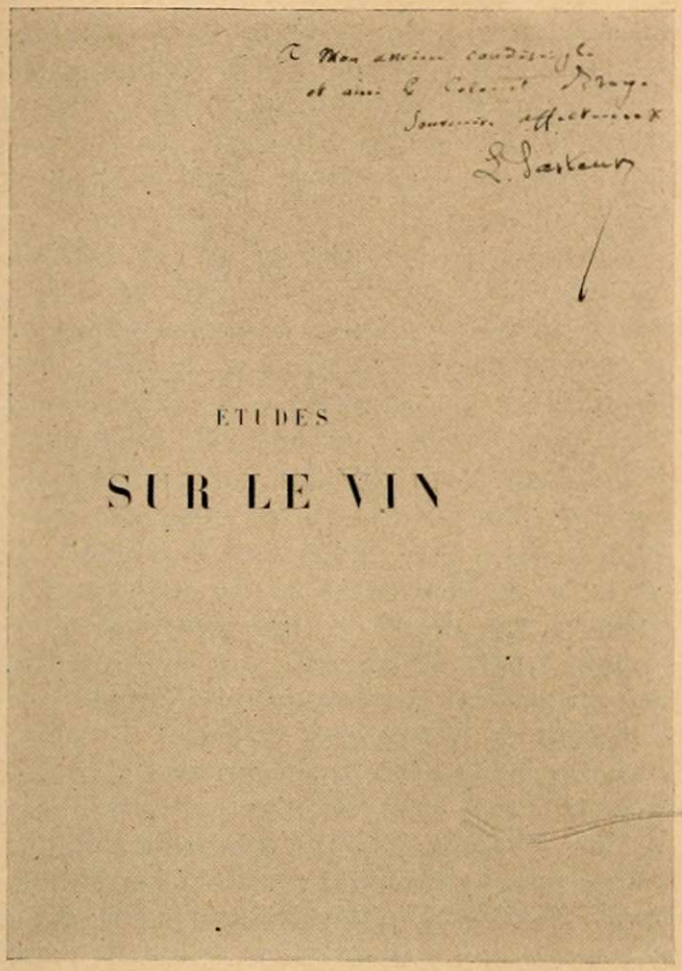

Fig. 1. The half-title of the second edition of Pasteur's **Etudes sur le vin**, Paris, 1875, showing a presentation inscription by the author to an old friend and schoolfellow.

soon by solving, without the least confusion, the celebrated question of spontaneous generation." This question was intimately tied up with Pasteur's expressed desire to "arrive at a knowledge of the causes of putrid and contagious diseases."

In spite of his preoccupation with the problem of spontaneous generation, Pasteur found time to carry on his experiments on the fermentation and diseases of wine (see fig. 1), work which led to the use of heat for the arrest of the fermentative process (pasteurization)[2].

In April, 1864, before an impressive audience at the Sorbonne, Pasteur delivered a final blow to the theory of spontaneous generation[3]. He remarked: "And therefore, gentlemen, I could point to that liquid and say to you, I have taken a drop of water from the immensity of creation, and I have taken it full of the elements appropriate to the development of inferior beings. And I wait, I watch, I question it, begging it to recommence for me the beautiful spectacle of the first creation. But it is dumb, dumb since these experiments were begun several years ago; it is dumb because I have kept it from the only thing man cannot produce, from germs which float in the air, from life, for life is a germ and a germ is life. Never will the doctrine of spontaneous generation recover from the mortal blow of this simple experiment."

2. We have seen in a previous sketch that Appert was actually the first to use this method in preserving foods.
3. A field pioneered by Francesco Redi (see Sketch III).

In 1865, a young Glasgow surgeon, Joseph Lister, who had been absorbed in the problem of sepsis and wound infection, discovered in reading Pasteur's works, particularly those dealing with spontaneous generation, the following facts[4]:

"(1) Putrefaction is a species of fermentation.

"(2) It is caused by the growth of micro-organisms and does not occur independently of their presence.

"(3) The micro-organisms are carried by the air on the dust that floats in it. They also occur on and in solid and liquid substances.

"(4) These micro-organisms can be destroyed by heat and other agencies or separated from the air by filtration.

"(5) Certain recognizable organisms produce definite and distinct fermentative processes.

"(6) All of these organisms require oxygen. Some of them flourish only in the presence of free oxygen (aerobic), others only in its absence (anaerobic). The latter acquire their oxygen from the bodies which by their growth they are causing to ferment and putrefy.

"(7) Many natural animal and vegetable products have no tendency to ferment or putrefy even in the presence of oxygen if collected with proper precautions and kept in sterilized vessels.

"(8) Spontaneous generation has never been observed to occur and thus may be regarded as a chimera."

Pasteur's ideas, as applied by Lister, culminated in one of mankind's most beneficial discoveries, the antiseptic principle in surgery.

J. C. T.

4. Sir Rickman Godlee: Lord Lister, London, Macmillan and Co., 1917, p. 176.

No person need be told that he has "a spot on the lung." If the condition is as clinically insignificant as the term suggests, the patient should be told that he has a scar from a previous tuberculous infection —one that needs an occasional check-up or one that needs no further observation. Or when the diagnosis is certain, the patient should be told that his lungs are normal. For, while "a spot on the lung" is often the obscured beginning of destructive disease, it is, in other cases, the starting point for tuberculophobia and anxiety neuroses, conditions that are no less crippling and hardly more easily curable than tuberculosis itself. Max Pinner, M.D., NTA Bull., Jan. 1945.

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AUGUST, 1945

COLLIER'S EDITORIAL SCHIZOPHRENIA

In *Collier's* for July 27, the irrepressible Miss Amy Porter contributes an article on the Emergency Maternity and Infancy Care Program, in which she naively states that "EMIC is having a salutary effect on hospitals, as they make improvements in order to qualify for EMIC cases." Doubtless the Council on Medical Education and Hospitals of the American Medical Association, the American Hospital Association, and the American College of Surgeons—among other standardizing agencies—will rejoice to have their prolonged efforts to raise hospital standards given such powerful assistance. Miss Porter also gives to EMIC—which became effective in March, 1943—credit for the fact that "Incomplete figures for 1943 show that the infant mortality rate was the lowest on record"—although this decline is but "continuing the sharp drop in infant deaths observed during the last eight years." Evidently the beneficial effect of EMIC has been retroactive.

Miss Porter concludes her article by stating that "the mother who had good care under EMIC is going to want the same kind of care when later children are born . . . The Wagner bill, in its health provisions, tackles these problems on a nation wide scale."

The same issue of *Collier's* has an editorial entitled "German Doctors under Nazism," which tells of an inspection tour made in Germany by Colonel Edward D. Churchill, surgical consultant to the Allied Mediterranean forces. "His over-all conclusion after inspecting six German hospital areas was that German handling of wounded was about 20 years behind the American procedure . . . By and large, they (German doctors) were victims of an apathy and a lack of ambition which would enrage a typical American doctor." (Incidentally, these words are strangely reminiscent of some recent comments upon our own federally controlled Veterans Administration hospitals.)

After a scathing denunciation of politically controlled German medicine, the editorial concludes:

> "The lesson in the German experience seems clear enough. It is that there is no substitute for a free, bold and inquisitive medical profession, or for generously financed and expertly staffed medical research, carried on year in and year out. It is devoutly to be hoped that the lesson of the German medical collapse will not be lost on us."

Since Miss Porter's name is listed as one of the editors of *Collier's*, the wide divergence between the viewpoint of her article and that of the unsigned editorial suggests that the collective editorial staff of *Collier's* might be suffering from schizophrenia—which means, literally, a divided mind. Could Miss Joan Lane, who is probably connected with the circulation department, have suspected this condition and desired professional advice when she sent copies of the two contributions to editors of medical journals? If so, this JOURNAL would suggest that Miss Porter abstain from Berlin bromide and Moscow marihuana long enough to digest the profound truth contained in the last paragraph of *Collier's* editorial.

A JOB WELL DONE

Someone once said something to the effect that the reward for a job well done is the opportunity for greater service. This opportunity has been justly awarded to our retiring president, Dr. Paul Whitaker. Our society never had a president who gave more freely of his time, his ability, and his physical strength. If restrictions on travel had not forced the cancellation of our annual meeting this year, he might have been made to realize how greatly his wise and unselfish service is appreciated by the membership. No man ever more deserved the thrill of receiving the president's jewel as the climax of his term of office, and no man would have had heartier applause on such an occasion.

Even Dr. Whitaker's "President's Message" had to be delivered to the small group in the Executive Committee meeting, though doubtless it has been read by the great majority of our members even more carefully than if they had heard it first hand. It reviews the achievements of his administration in perhaps the best of the many excellent addresses he has delivered throughout the state.

The outstanding accomplishment of Dr. Whitaker's administration was that of salvaging something from the ambitious program sponsored by the Poe Commission on Hospitals and Medical Care. That the program was not scrapped entirely was perhaps due more to Paul Whitaker's efforts than to anything else. Now that Governor Cherry has wisely appointed him on the new Hospital and Medical Care Commission, we know that he will play an important part in improving medical care in North Carolina.

The opportunity given Dr. Whitaker to lead in this forward movement recalls the pioneer work done by Dr. Isaac H. Manning in bringing hospital care within the reach of the people. Dr. Manning's reward for enlisting the support of the State Society for hospital insurance was the opportunity to lead the Hospital Saving Association of North Carolina into the very forefront of the so-called Blue Cross Plans. Now Dr. Whitaker has as his reward the opportunity to make North Carolina again a leader in extending medical care to the people under the auspices of the medical profession, rather than of politicians. The doctors of North Carolina love and trust him, just as they have loved and trusted Dr. Manning.

OMISSION OF TRANSACTIONS AND ROSTER

Conspicuous by their absence this month are the roster of members of the Medical Society of the State of North Carolina and the transactions of the annual meeting, which have been published in the August issue ever since the inception of the NORTH CAROLINA MEDICAL JOURNAL. The cancellation of the 1945 meeting, of course, explains the non-appearance of the transactions. In their place were published, in the July issue, the minutes of the Executive Committee meeting, together with the president's message, the report of the secretary-treasurer, the inaugural remarks of the president-elect, and a few of the annual reports which are usually presented to the House of Delegates. The roster is being omitted entirely this year, in an effort to stay within the quota of paper allowed for printing the JOURNAL. It is realized that this omission will work a hardship on many doctors who use the roster as a directory of North Carolina physicians and who have lost or worn out their copy of last year's August issue. The decision was made necessary, however, by the exigency of the paper situation and by the large amount of scientific material on hand. A few copies of the August, 1944, issue are still available, and any physician desiring one of these may obtain it by sending thirty cents in stamps or coins to the editorial office of the JOURNAL.

The officers of the Auxiliary to the Medical Society have graciously agreed to cooperate by omitting the roster of Auxiliary members this year and by publishing greatly abbreviated transactions of the Executive Board meeting. These appear in this issue of the JOURNAL.

* * * *

INFANT DEATHS FROM MECHANICAL SUFFOCATION

The Committee on Public Health Relations of the New York Academy of Medicine[1] has found that deaths from mechanical suffocation have increased by almost 60 per cent in the past decade, and that there were more than 1500 deaths from this cause in the United States in 1942. By far the majority of these deaths have been in children under 6 months of age. "To prevent these unnecessary deaths five suggestions have been offered for mothers to follow, as announced by the Committee:

"The first suggestion is—**never have loose materials, such as pillows, blankets, and outer covering in the baby's crib or carriage.** The infant should sleep on a firm mattress. His rubber sheets and under sheets should be spread smoothly and should be large enough to tuck tightly under the mattress—quilted pads should be tied down. Any top covers should be large enough to tuck firmly under the sides and lower end of the mattress. Loose objects such as pillows, loose blankets, and restraining straps are unnecessary and wholly undesirable.

"The second suggestion, especially for babies under 6 months of age, is—**watch the baby's position in his crib or carriage.** Observe him at frequent intervals when he lies "face down." The prone posture was noticed in 68 per cent of the babies in the New York City study who were found after accidental death, and many of these were discovered with soft pillows, mattresses, or mattress coverings occluding their noses or mouths. Only 17 per cent of the suffocated babies were found lying "face up"; these also had pillows or blankets covering the face.

"Since the peak of infant deaths from mechanical suffocation is reached during the late fall and early winter months, the third suggestion is—**let the baby wear enough clothes to maintain normal body temperature but allow him unhampered movement at all times.** Sleeping-bag garments with mechanical closing and locking devices which may catch beneath the infant's neck, as well as tight caps and bibs, should be avoided.

"A fourth suggestion is—**always sit up and hold the baby while feeding him.** This suggestion holds especially for the early morning feedings. If the mother, at the time for the 3:00 a.m. or 6:00 a.m. feeding takes the baby to her bed while she feeds him from the breast or from the bottle she may fall asleep with the disastrous result that baby smothers from having the mother's breast or other parts of her body occlude breathing. The parent's bed—next to the crib and carriage—has become the fourth most frequent site of infant death from mechanical suffocation.

"The fact that death takes place most often between 3:00 a.m. to 6:00 a.m. and 6:00 a.m. to 9:00 a.m. also leads to the fifth suggestion—**do not leave baby unguarded during or too soon after feeding.** Although most mothers "bubble" their babies during and after feeding, the early morning hours are not conducive to the patience which the job requires. Many mothers who have artificially fed children just prop the bottle into baby's mouth and leave baby while he feeds. In such situations there is the danger of suffocating from regurgitated food.

"These five simple rules are easy to follow and observe and should be made generally known."

1. Infant Deaths from Mechanical Suffocation. Current Editorial Comment, New York State J. Med. 45:1529 (July 15) 1945.

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INFORMATION BULLETIN FOR MEDICAL OFFICERS

The Bureau of Information of the American Medical Association has compiled a Bulletin for the information of physicians returning from the armed services. This supplies them with a concise statement of facilities now available to help them with their problems of licensure, further education, or location. The Bureau is anxious to make this material available to all medical officers.

The Bulletin "is designed to combine and abstract that information which is most desired by medical officers, and to point out exactly how more specific and detailed data can be obtained." Copies of the Bulletin may be obtained by writing to the Bureau of Information, American Medical Association, 535 North Dearborn Street, Chicago 10, Illinois.

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A CONSTRUCTIVE PROGRAM FOR MEDICAL CARE

For years there has been a demand that the American Medical Association adopt some sort of program for medical care. This demand has come from various sources. Some were sincere in believing that such a program was needed; others merely used this criticism to lessen the public's confidence in organized medicine. Over and over the charge was made that the A.M.A. was opposed to any extension of public health work, to any form of insurance that would lighten the burden of medical care, and to the enrollment of enough medical students to insure a steady supply of doctors for the population.

True to medical tradition, the A.M.A. was not stampeded into thoughtless action by a comparatively few individuals who sought to make up in noise what they lacked in numbers. It has, however, sought constantly to see that American people had the best medical care possible, and from time to time, through the House of Delegates, has clarified its position by putting into words its principles and policies.

This year the O.D.T. ruled that the annual meeting of the House of Delegates could not be held. On June 22, however, the Council on Medical Service and Public Relations, jointly with the Board of Trustees of the American Medical Association, adopted the most comprehensive platform for medical care yet presented to the public. This platform first appeared in the *Journal of the American Medical Association* for July 21; but because of its importance, it is reproduced on page 377 of this JOURNAL. Every doctor should study it carefully, and become familiar with its general principles. It will do much to answer the oft-repeated untruth that the American Medical Association is purely reactionary.

CONSTRUCTIVE PROGRAM FOR MEDICAL CARE

AMERICAN MEDICAL ASSOCIATION

This platform was adopted by the Council on Medical Service and Public Relations and the Board of Trustees of the American Medical Association on June 22, 1945.

Preamble

The physicians of the United States are interested in extending to all people in all communities the best possible medical care. The Constitution of the United States, the Bill of Rights and the "American Way of Life" are diametrically opposed to regimentation or any form of totalitarianism. According to available evidence in surveys, most of the American people are not interested in testing in the United States experiments in medical care which have already failed in regimented countries.

The physicians of the United States, through the American Medical Association, have stressed repeatedly the necessity for extending to all corners of this great country the availability of aids for diagnosis and treatment, so that dependency will be minimized and independence will be stimulated. American private enterprise has won and is winning the greatest war in the world's history. Private enterprise and initiative manifested through research may conquer cancer, arthritis and other as yet unconquered scourges of humankind. Science, as history well demonstrates, prospers best when free and unshackled.

Program

The physicians represented by the American Medical Association propose the following constructive program for the extension of improved health and medical care to all the people:

1. Sustained production leading to better living conditions with improved housing, nutrition and sanitation which are fundamental to good health; we support progressive action toward achieving these objectives:

2. An extended program of disease prevention with the development or extension of organizations for public health service so that every part of our country will have such service, as rapidly as adequate personnel can be trained.

3. Increased hospitalization insurance on a voluntary basis.

4. The development in or extension to all localities of voluntary sickness insurance plans and provision for the extension of these plans to the needy under the principles already established by the American Medical Association.

5. The provision of hospitalization and medical care to the indigent by local authorities under voluntary hospital and sickness insurance plans.

6. A survey of each state by qualified individuals and agencies to establish the need for additional medical care.

7. Federal aid to states where definite need is demonstrated, to be administered by the proper local agencies of the states involved with the help and advice of the medical profession.

8. Extension of information on these plans to all the people with recognition that such voluntary programs need not involve increased taxation.

9. A continuous survey of all voluntary plans for hospitalization and illness to determine their adequacy in meeting needs and maintaining continuous improvement in quality of medical service.

10. Discharge of physicians from the armed services as rapidly as is consistent with the war effort in order to facilitate redistribution and relocation of physicians in areas needing physicians.

11. Increased availability of medical education to young men and women to provide a greater number of physicians for rural areas.

12. Postponement of consideration of revolutionary changes while 60,000 medical men are in the service voluntarily and while 12,000,000 men and women are in uniform to preserve the American democratic system of government.

13. Adoption of federal legislation to provide for adjustments in draft regulation which will permit students to prepare for and continue the study of medicine.

14. Study of postwar medical personnel requirements with special reference to the needs of the veterans' hospitals, the regular army, navy and United States Public Health Service.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

Bowman Gray School of Medicine of Wake Forest College

This 38 year old white male factory worker was admitted to the hospital in a semi-comatose condition on July 23, 1944, with a history of severe headaches, chills and fever. The patient had been well all of his life, except for occasional headaches. The nature and location of these headaches were not stated, but apparently they were severe enough at times to cause his physician to give him injections of morphine. These headaches had occurred at intervals for about ten to twenty years.

The patient attributed the onset of his present illness to a blow on his head while he was at work on July 1, 1944. He had been welding in a stooped position, and when he raised his head suddenly he struck it on an iron beam. He complained about the pain, and several workers and the foreman felt the "knot" on the side of his head. From this time on, the pain in his head was so severe that he was unable to carry on his work with the usual efficiency. He took numerous aspirin tablets, BC's, and similar remedies, and refused to see a doctor until one week following the accident. An x-ray taken of his skull at this time was considered normal. The physician gave him medicine to control his headache. The patient then began to complain of fever, which usually occurred at night; his temperature was not taken, however. He had an occasional hard, shaking chill. Four days before admission to the hospital he complained of blindness and was ataxic on returning home from work. He was admitted to another hospital in a stuporous condition. On physical examination his temperature was 104 F., pulse 100, respirations 28, blood pressure 140 systolic, 70 diastolic. He was stuporous, but responded to stimulation. Neurological examination was negative. The white blood cell count was 14,000, with 85 per cent polymorphonuclear neutrophils. The blood bromide level was 60 mg. per 100 cc. A blood Kahn test was negative. The pressure of the cerebrospinal fluid was 510 mm. of water, and the fluid contained 19 mononuclear cells. Neurosurgical consultation was requested, and because signs of increased intracranial pressure and a suggestion of spasticity on the right side of the body were present, an operation was advised. The patient was transferred to the Baptist Hospital on July 23, 1944.

Course in the hospital: The patient was taken immediately to the operating room, where his head was shaved. At this time the scalp was noted to be slightly edematous over the left occipitoparietal region. An incision was made on the left side of the scalp preparatory to ventriculography. The pericranium was noted to be less adherent than usual. When the plug of bone was removed from the skull, a thick, yellowish, creamy pus gushed forth. When the opening was enlarged, granulation tissue could be noted on the dura. Several other burr-holes were made in an effort to drain the purulent material adequately, but no other material was encountered. The organism was identified as Staphylococcus aureus. The patient was placed on sulfadiazine, but a spiking temperature continued. On the day of his death, his blood pressure was 70 systolic, 50 diastolic. He became comatose, began having Cheyne-Stokes respirations, and died.

Discussion

Dr. George T. Harrell, Jr.: In summary, this is the story of a young vigorous man who died of a slowly developing, acute intracranial process with symptoms suggesting an infection. The headaches which he had had for ten to twenty years may have been due to disease of the para-nasal sinuses or to vascular abnormalities, but the record is inadequate. In any event, they probably had no bearing on his final illness.

The patient received a moderately severe blow on the head which did not render him unconscious but which left him with constant headache. Apparently there was no bleeding from the ears or nose or passage of cerebrospinal fluid from the nose. An x-ray of the skull made about the eighth day was said to be negative. It would be interesting to know if this was taken in a lateral position, with the affected side down, or whether enough films were taken to show the mastoids, para-nasal sinuses, and base of the skull. Some time after the eighth day and before the eighteenth day, the patient began to have chills and fever. Only when blindness and ataxia developed on approximately the eighteenth day did he stop work. When he was admitted to the hospital on the

twenty-second day, he was stuporous. Pus was recovered when craniotomy was done on the twenty-third day, but he continued to run a spiking fever. He finally became comatose and died on the twenty-sixth day. This history suggests a slowly progressive infectious process which was not completely relieved at operation.

The coma, fever, bradycardia, and headache would be consistent with either severe infection or an intracranial space-consuming lesion. The site of the lesion might be indicated by the local edema over the left occipitoparietal region, the ataxia, spasticity on the right side, and blindness. The blindness may have been caused by a local lesion or by a general increase in intracranial pressure. It would be helpful to know whether the ataxia was unilateral and whether the blindness was quadrantic or unilateral.

The white cell count of 14,000, with 85 per cent polymorphonuclears, is consistent with an infection. With the organism subsequently recovered by culture (Staphylococcus aureus), the polymorphonuclear percentage may be even higher than this in the acute stage, but this disease had been present for three weeks. The fact that the cerebrospinal fluid was under increased pressure confirms the clinical impression of increased intracranial pressure. The 19 mononuclear cells indicate that the infection had not extended into the subarachnoid space but was still walled off from it.

Anatomically, a lesion of the left occipitoparietal region involving the scalp, periosteum, skull and dura was demonstrated.

Etiologically, how much of the patient's illness could be attributed to trauma alone? Locally, one would expect edema and possibly a hematoma following the compression of a soft tissue such as the scalp between two resistant objects—the skull and an iron bar. There may or may not have been a visible laceration. No bleeding is described, but minute breaks in the skin are common following trauma and would be likely to result from compression of a soft part between firm objects. Edema and hematoma would also occur in the periosteum. The bone might show a fracture at the site of the blow, on the opposite side, or at the base of the skull. No fracture was seen in the x-ray eight days after the injury, however. Had a fracture involved the base of the skull, there should have been stiffness of the neck and xanthochromia or an increase in the protein content of the spinal fluid at the time of the lumbar pucture. The brain might have received a laceration at the site of the injury or on the opposite side, by the so-called contra-coup method. No localizing neurologic signs were described to suggest this.

How did the infection enter the brain? Surface organisms, of which the Staphylococcus aureus is the most common, could have entered through a microscopic break in the skin. The presence of edema, interfering with the local blood supply, or of a hematoma would furnish excellent conditions for local growth. Infection may have entered by extension from infected areas such as the para-nasal sinuses, the external auditory canal, or the mastoid cells. The negative x-ray findings do not confirm such a mechanism. The infection may have been blood-borne; transient bacteremias are known to occur in healthy individuals following trauma, chewing, and so forth. The infection might have extended from the local lesion to the blood stream, since there was a period of at least eight days without symptoms of infection.

How can the *anatomic* and the *etiologic* points of view be reconciled? The extension of infection from an unnoticed break in the skin into an edematous or hemorrhagic area frequently results from local trauma. As the infection progressed, the periosteum would become infected. The skull would not be involved until after the periosteum had been damaged, with interference to the local blood supply. Localized osteomyelitis resulting from direct extension or from extension through tiny veins which communicate with the skull would lead to involvement of the meninges as the infection progressed through the inner table. If the progression of the infection was slow, the body would tend to wall it off and a localized extradural abscess would form. Such an abscess was found at operation.

Why, then, did the man not improve when the pus was drained? Further notes on his subsequent course would help to answer this question. I would like to know the results of a lumbar puncture or blood culture; whether or not tiny furuncles or hemorrhages in the skin developed; and whether there was any change in neurologic signs or alteration in the ventricular pattern of encephalograms. Two possibilities are evident: (1) The infection may have extended beyond the extradural abscess into the brain without the de-

velopment of generalized meningitis. Further descriptions of the type of blindness or ataxia would aid in localizing the infection in the cerebellum or occipital lobe. (2) The infection may have extended not into the brain, but into the blood stream, to account for the persistence of chills and fever. Since no embolic phenomena are described, however, and since the infection has been shown to have walled off as it extended, I would suggest, in the absence of definite data, that the infection had extended into the occipital lobe.

DR. ELBERT A. MACMILLAN: It would seem that this is a case of so-called Pott's puffy tumor, a disorder characterized by inflammation and swelling of the scalp and osteomyelitis of the skull at the site of trauma occurring a few days to a few weeks previously. Although I am not able to explain satisfactorily the exact sequence of events which led to this patient's death, I see no way to escape the connection between the trauma and the subsequent fatal conclusion of this case.

DR. EVERETT O. JEFFREYS: This case of "Pott's puffy tumor" corresponds in almost every detail with several of the cases reported in the original monograph by Sir Percivall Pott[1]. The characteristic findings at operation are edema of the scalp, separation of the periosteum, and a lessened vitality of the bone, manifested by a loss of its luster and a peculiar yellow-white appearance characteristic of dead bone. When the skull is trephined an accumulation of purulent exudate is found outside the dura, pushing the dura away from the skull. On the dura there are dirty granulations which may be young, or may be old and heavy, depending on the length of time that the pus has been in contact with the dura. The amount of pus varies greatly in various cases. The case in question showed the characteristic pathological picture when the skull was trephined and the pus was aspirated and drained without opening the dura. This focus of pus apparently gave rise to the formation of a thrombus in the sagittal sinus. This is easily explained by the fact that the veins of the dura drain into the sagittal sinus.

A fracture of the bone or a wound of the scalp, other than a microscopic laceration or abrasion which will permit infection to enter the superficial veins, is not necessary to initiate infection in the subdural space. Batson has injected dye into the superficial veins of the scalp and found that it passed through the nutrient veins into the cancellous portion of the bone, then through more nutrient veins to the extradural space, and from there into the sagittal sinus and on down into the substance of the brain, finally spilling out into the larger veins of the circulation. Septicemia is a frequent sequel of epidural abscess or osteomyelitis.

1. Pott, Sir Percivall: Observations on the Nature and Consequence of Wounds and Contusions of the Head, Fractures of the Skull, Concussions of the Brain, Etc., London, C. Hitch and L. Hawes, 1760.

Dr. Harrell's Diagnoses

1. Contusion of the scalp and periosteum
2. Secondary infection with Staphylococcus aureus
3. Osteomyelitis of the occipital and parietal bones resulting from direct extension of the infection
4. Extradural abscess caused by direct extension from the osteomyelitis
5. Intracerebral extension to the occipital lobe or cerebellum

Anatomical Discussion

DR. W. C. THOMAS: The scalp was markedly edematous over the entire vertex, and particularly where incisions for the burr holes in the skull were made. A suppurative blood-stained material was noted on the gauze covering the left parietal incision. No localized abrasion or hematoma of a subacute type was present. The periosteum was loosened over the left parietal region. The region from which the extradural abscess had been drained showed a roughening of the inner table of the parietal bone and a fibrous type of response in the dura mater over an area 7 cm. in diameter and extending into the superior sagittal sinus. There was a friable septic thrombus involving the lateral wall of the sinus for a distance of about 3 cm.

Both lungs were studded with abscesses measuring up to 1.5 cm. in diameter and filled with a creamy, light yellowish pus. Both kidneys presented light yellowish pinpoint abscesses, in the cortical portions particularly. Staphylococci were isolated from the dura mater, the superior sagittal sinus, and the abscesses of the lungs and kidneys.

This case exemplifies an unusual complication of an apparently insignificant injury to the head. The edema of the scalp noted at the time of operation corresponds to the

condition described by Sir Percivall Pott[1] and subsequently referred to as "Pott's puffy tumor." Few such cases have been reported[2]. The interval between the injury and the development of the extradural abscess may be weeks or months. In this case, the infection spread to the superior sagittal sinus and thence to the lungs and kidneys.

Anatomical Diagnoses

1. Edema of the scalp
2. Osteomyelitis of the parietal bone of the skull
3. Extradural abscess, parietal region, left side, caused by staphylococci
4. Superior sagittal sinusitis with incomplete thrombosis
5. Pulmonary and renal abscesses, caused by staphylococci

Closing Discussion

DR. HARRELL: The reason for the persistence of symptoms of infection is now clear. The release of pus under pressure did not abolish the entrance of foreign protein into the blood stream. Bacteria were multiplying in a venous thrombus. Had the results of a blood culture been available, thrombophlebitis might have been suspected because of the persistent chills and fever. Had the condition of the patient permitted adequate neurologic examination and the weakness of the leg been detected, the thrombus could have been localized in the superior longitudinal (sagittal) sinus. The scattered multiple abscesses in the lungs and kidneys were embolic, but no signs, symptoms, or accessory data were available to suggest their presence.

2. Brock, Samuel: Injuries to the Skull, Brain, and Spinal Cord, ed. 2, Baltimore, Williams and Wilkins Co., 1943, p. 58.

Atypical Migraine. Spells of vomiting, lasting from one to three days, and not associated with abdominal pain, are often due to migraine. The headache may be so mild that the patient does not mention it. In these cases it is helpful to find that there is no indigestion between the spells. Often I feel much helped toward the diagnosis by learning that in childhood the patient used to come home with those spells of bilious vomiting which I feel sure are often equivalents of migraine. I feel surer of my diagnosis of migraine when I learn that the attacks usually follow excitement or fatiguing experiences, or come when the woman is going to entertain in her home, and I am sure when I get the story of a preliminary scintillating scotoma, or of an absence of the trouble during pregnancies.—Alvarez, Walter C.: Nervousness, Indigestion, and Pain, New York, Paul B. Hoeber, Inc., 1943, p. 43.

CASE REPORTS FROM THE TUMOR CLINIC

NORTH CAROLINA BAPTIST HOSPITAL

Mr. L., a 68 year old cotton-mill worker, presented a chief complaint of a recurrent mass on the anterior lateral aspect of his right upper arm. The present illness began three years ago, when a small mass appeared at the site of the present tumor. His doctor thought it was probably a wen and excised the lesion. No pathological study was performed on the specimen. After two to three weeks the lump reappeared, and within a year had attained the size of a hen's egg. The patient consulted another physician, who gave him a course of x-ray and then surgically removed the lesion. Pathological study was performed on the tissue, which was diagnosed fibrosarcoma. Amputation of the arm was advised, but the patient refused. Five or six months later the tumor recurred for the third time. This time it was firm, fixed, and non-tender. When the patient was admitted to the Baptist Hospital it measured 6 by 4 by 4 cm.

The family history and past history were non-contributory. The review of systems revealed several interesting facts, however. Six months prior to admission here the patient had his first and only attack of epistaxis, and was in another hospital for about a week. Two months before admission he had "flu," and since then had had a constant cough productive of thick, white, mucoid sputum, which was occasionally blood streaked. He had also suffered from slight, intermittent attacks of dyspnea during the past year. His usual weight was 110 pounds, but on admission he weighed only 90.

On physical examination the patient was found to be a fairly well developed, but very thin man who appeared to be his stated age. He was not acutely ill or uncomfortable. His temperature was 98.6 F., his pulse rate 78, his respiratory rate 16, and his blood pressure 130 systolic, 70 diastolic. The optic fundi showed arteriosclerotic changes. Examination of the ears, nose, mouth, throat, and neck revealed nothing unusual. The chest was emphysematous; expansion was symmetrical and normal in degree. Crackling rales were present in the dependent portions of the lungs. The heart was not enlarged; the sounds were regular but distant. All the peripheral vessels were tortuous and sclerotic. The abdomen was scaphoid. There were no masses or tenderness. The spleen,

liver, and kidneys were not palpable. The genitalia were normal.

On the antero-lateral aspect of the deltoid region of the right arm there was a symmetrical, firm, fixed, non-tender mass, measuring 6 by 4 by 4 cm. It seemed to be attached to the humerus. The skin covering the lateral half of the tumor was blue, thin, and discolored by congested superficial veins. The medial half of the tumor was covered by erythematous skin which was desquamating. At the inferior medial border of the tumor there was an oblique, healed scar 5 cm. in length.

This patient had no lymphadenopathy. The neuromuscular system was apparently normal.

All urinalyses were normal except for occasional red blood cells in two specimens. The red cell count was 4,560,000, the hemoglobin 15 Gm., the color index 1.0, the white cell count 8480, with a normal differential. The corrected sedimentation rate was 12 mm. in an hour. The total serum proteins on admission were 7.2 Gm. per 100 cc., and the blood sugar was 105 mg. per 100 cc. The Kahn test was negative. Two sputum examinations showed no tubercle bacilli.

The electrocardiogram was normal except for premature auricular beats.

Tumor Clinic Discussion

RADIOLOGIST: The film of this patient's right humerus and upper arm shows an irregular, large, dense, soft-tissue mass arising from the antero-lateral soft tissues near the insertion of the deltoid. This mass is homogeneously dense and does not appear to arise from bone. There is localized decalcification of the cortex of the bone beneath the mass.

X-ray reveals the chest to be clear.

Although the fibrosarcoma is reported to be a relatively rare type of tumor, we have seen four of these cases in the last two months in this clinic. We have found, not only from our own experience but also from the literature, that local excision of this lesion is of no benefit. Amputation, plus x-ray treatment, has given fair results, particularly where the tumor is located well out on an extremity.

FIRST SURGEON: Do the internists think that this man is a good operative risk?

INTERNIST: Since there is no history of diminished cardiac reserve, except occasional mild attacks of dyspnea, and since the electrocardiogram is normal, I see no reason why this patient should not tolerate the proposed surgery.

SECOND SURGEON: The only method of giving this patient a chance is disarticulation of the shoulder. The best plan is probably to give extensive x-ray therapy to the mass and then amputate the arm.

Tumor Clinic Opinion

Recommendation: Deep x-ray therapy to the mass, followed by disarticulation at the shoulder joint.

Prognosis: Poor.

Follow-Up Note

The right arm was amputated at the shoulder. The patient tolerated the procedure well, had an uneventful course, and was discharged from the hospital on the eighth postoperative day. When he returned to the outpatient department one and a half months after operation he had gained 10 pounds in weight. The chest was clear to percussion and auscultation, and there was no evidence of local recurrence.

Prognosis: Poor.

Blame:
1. Failure of first surgeon to have tissue examined.
2. Patient's refusal of adequate treatment advised on first recurrence.
3. Type of malignancy.

Health of Troops Here is Excellent

During this past winter and spring the health of troops stationed in the United States has been excellent, surpassing that of any previous war year. The low hospital admission rate for all diseases reflects fewer communicable conditions, as it is during this period of the year that infectious diseases usually predominate.

Relapses in the United States of malaria infections acquired in tropical areas overseas increased each month until March 1945, but have since declined slightly. With malaria control in all overseas areas now greatly improved, the number of relapse cases should continue to decrease.

"Sulfa" in Wounds Discontinued

The Army's accumulated experience in wound management does not justify the local use of any chemical agent in a wound as an anti-bacterial agent, according to the Office of The Surgeon General. The local use of crystalline sulfonamides (sulfa powder) has therefore been discontinued except in the case of serous cavities where its use, while permissible under the direction of the surgeon, is not recommended. This subject is covered by War Department Circular No. 160 as amended by W. D. Circular No. 176, 1945.

TUBERCULOSIS ABSTRACTS

A Review for Physicians

ISSUED MONTHLY BY THE NATIONAL TUBERCULOSIS ASSOCIATION

VOL. XVIII AUGUST, 1945 No. 8

WHENEVER an individual handicapped by arrested tuberculosis seeks employment, the private physician finds himself called upon to step into the role of referee. Only he can make the decision as to what will serve the best interests of the patient as well as protect the community and satisfy the requirements of industry. The medical adviser's success in discharging this key responsibility will depend largely upon close cooperation with all others concerned.

THE PRIVATE PRACTITIONER AND THE INDUSTRIAL PHYSICIAN

The transition period for the tuberculous patient from a status of carrying on light activity to becoming a self-sustaining wage earner is a period of trial and error depending upon developing immunity and the results of two warring processes. Opposing one another are the tendency of the tuberculous infection to progress and the tendency of healing to occur. Unless it is appreciated that this period is a dynamic interval, the need for repeated check-ups may be overlooked.

In the minds of both the private practitioner and the industrial physician the welfare of the patient must be the primary issue, taking second place to no other consideration. Too often the patient feels that the primary objective is to earn a living. Occasionally he will not realize that check-ups are worth his time and his money, and, unfortunately, but quite infrequently, the family physician may feel similarly. More often, the patient is interested in: first, getting well; secondly, making a living; and thirdly, becoming a wage earner in a way that recovers his self-confidence, his respect for himself, and his position as a working, economic, and social constituent of his community. Of great importance is the indoctrination of the individual that check-ups are not to be feared. The patient must assume an aggressive and participating attitude in the fight against his disease.

The objective of the private practitioner is to fulfill the duties of his profession in getting the patient well. The physician has another interest, and that is to demonstrate the value of the private practice of medicine. This also has a financial aspect to the physician. The fight against tuberculosis cannot be won without the participation of the private practitioner of medicine.

The industrial physician on his part has at least three objectives: (1) The protection of all employees against open cases of tuberculosis; (2) the protection of the so-called arrested tuberculous patient from his own over-activity or poor judgment; and (3) the protection of the industry itself from financial loss in attempting to convert the tuberculous patient into a wage earner.

All are well aware of the validity of the first two points. The last point becomes significant when one hears that by some courts "aggravation of tuberculosis" is held compensable.

With due respect to the interests of the three parties mentioned above, what is to be accepted as evidence that a tuberculous patient is employable? (1) First and foremost is a series of X-rays demonstrating that the lesion is static or regressing under the conditions of living undergone by the patient during that period of observation. (2) It is essential that this period of observation covered by the serial X-rays include eight hours at least of daily activity, even though of light or moderate degree. (3) There must be an adequate series of negative sputum examinations. The author personally prefers a minimum of three consecutive negative sputum examinations, or preferably, gastric aspiration. (4) An obvious increase in the feeling of well-being of the patient, such as complete absence of symptoms and a satisfactory weight history, is important. (5) A

blood sedimentation rate has been found to be worth while, and hence at least one normal sedimentation rate should be insisted upon. (6) A daily record of the temperature at 4:00 p.m. and 8:00 p.m. for an immediate period of ten days should be established. (7) There must be developed in the patient a proper attitude toward his own condition and a proper understanding of just what this trial-and-error period means in the way of mutual cooperation. By *proper*, "humble" or one of forfeiture of any rights is not meant. What is meant is good insight and a paramount will to get well. (8) Finally, there must be an available job which the applicant can do and may do without causing real or alleged damage to himself, or creating a menace to his fellow employee.

In order to achieve this, there must be a system of restricted placement, and, in setting up such a system the medical status of the individual must be kept confidential so that the employee will feel reassured, and thus be helped to establish self-respect and regain confidence in himself.

No classification system can be followed blindly. Individual evaluation of each case is necessary and any preformulated procedure of restricted placement is nothing more than an over-all guide. Such a restricted placement procedure must be revised constantly and kept up to date, and the health status of the individual must also be re-evaluated at regular intervals.

In connection with this re-evaluation, it may be worth while to discuss the author's manner of handling any one particular case. Whenever the routine pre-employment X-ray brings to light a lesion about which there is any question of activity, the applicant is refused employment until a thorough survey by his family physician or qualified agency is made available. Routinely, the author asks for: (1) previous chest X-ray record, if any; (2) at least three negative sputum examinations and, where warranted, at least one negative gastric aspiration; (3) a ten-day, twice a day, temperature record; (4) the sedimentation rate; (5) written permission of the physician caring for the case that this person may work; (6) following this evaluation, another discussion with the patient exploring and improving his mental attitude; and, lastly, a re-classification, taking into consideration other restricting disabilities the employee may have.

Depending upon the indications of this re-evaluation, the employee is reviewed in one, two or three months, and, according to the indications, these re-evaluations are either increased or decreased in time frequency throughout the year or years. This procedure applies to the white-collar men as well as the group that wears overalls.

Should a tuberculous patient with seniority displace, or "bump off," as they call it, another employee with less seniority on a job where there is a possible hazard for a tuberculous patient, a difficult problem might arise. Such a situation will demand that, above all other considerations, the health of the convalescent or "arrested" tuberculous patient be in no way endangered by compromise. If one realizes and practices the principles of health preservation with absolutely no compromise, this "bumping-off" problem will certainly be settled in a medically satisfactory manner.

An important phase of this problem will have been omitted if attention is not called to the need of financial aid to replace lost income for those individuals who must cease working for a period of time. Group health insurance is one such source of aid. Community welfare agencies and possibly federal agencies also may be able to help make up for this lost income.

Cooperative Efforts of the Industrial Physician and the Private Practitioner in Re-employment of Arrested Tuberculosis Patients, J. F. Johnson, M.D., Industrial Medicine, January, 1945.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.
Raleigh

Autopsy: *The right of a coroner to order or perform an autopsy is limited to such persons as are supposed to have died from unlawful means.*

This case was instituted by the father and mother of a young girl against the county coroner, who was also a physician, and others for performing an autopsy on the child illegally and without permission of the next of kin.

The coroner in his answer alleged that the postmortem examination was done for the purpose of determining the cause of death and furnishing the plaintiffs with a death certificate. As a further defense he also

alleged that the child was thought to have died from neglect, inasmuch as there had been only a chiropractor in attendance during the illness of the deceased. However, testimony was produced at the trial in Superior Court tending to show that there had been four other physicians in attendance at intervals, as well as a registered nurse most of the time. Three of the doctors were of the opinion that the child suffered from tuberculosis, while no opinion as to the diagnosis was expressed by the fourth physician.

It was found in Superior Court that the coroner had exceeded his authority in performing the autopsy, as he admitted that it was done for the sole purpose of determining the cause of death and furnishing the father with a death certificate. The evidence did not show that there had been neglect or that the person died by unlawful means. The jury decided in favor of the plaintiffs, and there was an award of $1500 damages against the coroner. A motion for a new trial was overruled, and the coroner appealed to the Supreme Court.

The Supreme Court was of the opinion that the statutes regarding such matters had been violated, and in part quoted the law as follows: ". . . the coroner is authorized to hold an inquest (which may of course include an autopsy) upon the dead bodies of such persons only as are supposed to have died by unlawful means." The court also added that the coroner did not have the consent of the next of kin, which, in the absence of authority by virtue of his office, would be required. The judgment of the lower court was affirmed.

All the other defendants denied that they had performed the autopsy or had anything to do with it. The court, being satisfied as to the truthfulness of the answer, dismissed the case against them.

The statutes regarding such matters are essentially the same in North Carolina, and it becomes the duty of doctors who witness or assist in any way in performing an autopsy to satisfy themselves that all legal requirements have been complied with. Specifically our law is as follows: "The right to perform an autopsy upon the dead body of a human being shall be limited to cases especially provided by statute or by direction or will of the deceased; cases where a coroner's jury deem it necessary upon an inquest kin or nearest known relative or other person charged by law with the duty of burial in the order named and known shall authorize such examination or autopsy." (Supreme Court of South Dakota, fall term, 1926. V. 210 N.W., p. 348.)

CORRESPONDENCE

July 12, 1945.

To the Editor:

I am writing to ask if you will call the attention of your readers to the fact that their malpractice insurance does not cover a situation of the kind described, chiefly because the insurance reads that all claims for **monetary** damage only will be defended by the insurance company.

The Chicago Medical Society and probably the Illinois Medical Society will take this matter up at their regular medical-legal committee meetings. I am under the impression that the insurance companies will cover such actions as cited below if enough pressure is placed upon them by physicians throughout the country. I am seeking your cooperation in this endeavor.

Dr. Ralph Reis and I were cited before the Board of Registration and Education of the State of Illinois by the action of a misguided attorney claiming that we were guilty of malpractice as consultants in a case of fulminating type of eclampsia. The patient and her baby expired within twenty-four hours after one of us was contacted by telephone. The attending physician in this case wished to do a cesarean section. He was advised against it by one of us and about twelve hours later was again advised against it by the second consultant.

The attorney claimed that our malpractice consisted in preventing the attending physician, who is a general surgeon, from proceeding with a cesarean section, thus depriving the patient and her baby of proper medical care.

As you know, the Board of Health of the City of Chicago controls to some extent the practice of obstetrics in Chicago hospitals. Dr. Reis and I were certified as consultants and it was in this capacity that we were called into this case. The attorney felt that the Board of Health and its consultants were interfering with the practice of medicine in the state of Illinois, and brought the action after malpractice for monetary damage was outlawed in legal courts of this state.

The insurance companies (Medical Protective of Fort Wayne and St. Paul Mercury) refused to accept liability. Dr. Reis and I had to hire our own attorneys and bear the expense of the trial before the Board of Education and Registration. The verdict was rendered in our favor and the private comments of the physicians who heard the case were such that you would not print them.

The Illinois State Department of Insurance sees no reason why physicians haven't an insurable risk in cases of this kind. I personally feel that insurance companies selling malpractice insurance should cover actions of this type. Surely the loss of a State license to practice medicine through the action of an attorney who has the power to bring malpractice actions on flimsy excuses, should be covered.

Very truly yours,

BULLETIN BOARD

News Notes from the North Carolina Tuberculosis Association

In North Carolina there are three state sanatoria with a total of 420 beds for Negroes and 720 beds for white patients. There are now open seventeen county sanatoria with bed space for 404 Negroes and 503 white patients. There is one Federal hospital for veterans, with 337 beds for Negroes and 932 beds for white patients. In the various other state institutions there have been provided about 300 beds for the tuberculous. In all there are 3,616 beds for tuberculous patients in North Carolina. This number does not include the beds that have recently been placed on the porches to take care of the overflow caused by tuberculous war personnel.

* * * *

At a mass meeting held in the Warren County Court House on Friday night, June 15, a Warren County Tuberculosis and Health Association was formed. Mr. Henry Cohen was elected president; Mr. Marvin Newsome, vice-president; Miss Eleanor Barber, secretary; and Mr. J. H. Daniel, treasurer. Dr. David T. Smith, President of the North Carolina Tuberculosis Association, was the principal speaker at the meeting. Other speakers were Mr. Frank Webster, Executive Secretary of the North Carolina Tuberculosis Association, and his assistant, Mr. L. L. Miller.

* * * *

The annual meeting of the executive committee of the National Tuberculosis Association was held in New York City on June 6 and 7. At the same time, the executive committees of the American Trudeau Society and the National Conference of Tuberculosis Secretaries met. Officers elected for the National Tuberculosis Association were: Mr. Will Ross, Milwaukee, who succeeded Dr. Fred Heise as president; Dr. Victor F. Cullen, Maryland, president-elect; Dr. H. Stuart Willis, Michigan, first vice president; Dr. Philip H. Pierson, California, second vice president; Dr. Charles J. Hatfield, Pennsylvania, secretary; and Mr. Livingston Platt, New York City, treasurer. Honorable Harry S. Truman and Surgeon General Thomas Parran were made honorary vice presidents.

New officers of the American Trudeau Society are: Dr. Ezra Bridge, Rochester, president; Dr. John Alexander, Ann Arbor, president-elect; Dr. McLeod Riggins, New York, vice president; Dr. Hugh B. Campbell, Norwich, Connecticut, secretary-treasurer.

Edgecombe-Nash Counties Society

Dr. Kenneth Dickinson of Raleigh was guest speaker of the Edgecombe-Nash Counties Society at its July meeting, held in the New Ricks Hotel on July 11.

News Notes

Dr. Sim Mayo Wrenn of Goldsboro has been elected chief of surgery at the Thompson Memorial Hospital in Lumberton, succeeding Dr. Stephen McIntyre, who resigned recently to become chief surgeon at the Baker Sanatorium.

* * * *

Dr. Theodore Antonokas of High Point, formerly a major in the medical corps of the Army Air Forces, has accepted a position as surgeon with the Morehead City General Hospital.

Dr. A. L. Ormond has left the Western North Carolina Sanatorium to enter private practice in Hickory.

* * * *

Dr. A. Y. Linville, Winston-Salem's oldest physician, died on July 7. Dr. Linville had retired from active practice some years ago.

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Dr. J. D. Rudisill of Lenoir, owner and surgeon of the Caldwell Hospital, died suddenly at Edgemont on July 28.

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Dr. Joseph Selman has recently joined the staff of the City Memorial Hospital in Winston-Salem.

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Dr. Tom A. Williams of Asheville was guest speaker at the July meeting of the Greenville County (S. C.) Medical Society. His subject was "The Conditioning Principle in Psychiatry."

* * * *

Dr. George L. Pritchard of La Grange is at Black Mountain, recuperating from a recent illness.

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Dr. J. M. Lilly of Fayetteville, and Dr. Vance P. Peery of Kinston are ill and will not be able to return to practice for an indefinite period.

The American Red Cross Announces a New Policy Governing the Participation of Red Cross Chapters in Civilian Blood Donor Services

The successful use of plasma and other blood derivatives for the armed forces and the association of the American Red Cross with the procurement of blood for this purpose has resulted in a widespread demand that the Red Cross, out of the abundance of its experience, render a similar service to the civilian population. The Medical and Health Advisory Committee of the American National Red Cross recommended that a study be made as to the need for continued Red Cross activity in civilian blood donor services. Accordingly, the study was undertaken and consultation held with the United States Public Health Service, the Board of Trustees of the American Medical Association, the Conference of State Medical Society Secretaries and Editors of State Medical Journals, the Association of State and Territorial Health Officers, the American Hospital Association, and others. There was general agreement that the American Red Cross should authorize its chapters to cooperate with state and local health departments and other reliable medical and health agencies in the procurement of blood for civilian use. Following careful consideration by the administrative and technical staffs of the American National Red Cross, such authorization has been granted under specified policies, principles and procedures.

Medical and health agencies which now have or are planning a program to furnish blood and blood derivatives for civilian use and are interested in obtaining the assistance of Red Cross chapters should contact their chapter if the territory the program is to serve is within an individual chapter's jurisdiction. If the program is to serve a territory in the Southeastern Area involving the jurisdiction of more than one chapter, it is suggested that contact be made with Dr. A. E. Hardison, Medical Director, Southeastern Area, American Red Cross, 230 Spring Street, N.W., Atlanta 3, Georgia.

News Notes from the Office of the Surgeon General

The Army Medical Department celebrated its 170th anniversary on 27 July of this year with the realization that it has grown into the largest organization of the kind ever known and that it is giving this nation's army the best medical care that soldiers have ever received.

From its inception in 1775 shortly after General George Washington became Commander-in-Chief of the Continental Army until the present day, the Army Medical Department has made steady progress in military medicine; it has made scientific discoveries that have benefited all of mankind; but never has its progress in both of these categories been so rapid as in recent years.

The Honorable Robert P. Patterson, Under Secretary of War, in a tribute to the work being done by the Medical Department under Major General Norman T. Kirk, The Surgeon General, recently said that no army at any time in history has achieved a record of recovery from wounds and freedom from disease comparable to that of the American Army in this war. Mr. Patterson said also that the Medical Department is attaining new records in almost every field of its endeavor. He cited the Army's record of saving nearly 97 of every 100 wounded soldiers who reach Army Hospitals, the disease rate of less than one in one thousand, and similarly startling figures with reference to malaria, the dysenteries, and other disease, showing that the Medical Department has established effective control on all disease fronts.

News Notes from United Nations Relief and Rehabilitation Administration

The extensive epidemics of typhus which swept North Africa during the war have been followed by an epidemic of louse-borne relapsing fever. This is stated by Dr. G. Stuart, Chief of the Epidemic Control Section of the UNRRA European Regional Office, UNRRA Epidemiological Information Bulletin No. 11 which was issued recently. More than 40,000 cases were reported up to March, 1945, mainly in Tunisia, but in recent months the outbreak has spread also to Algeria and Morocco.

Cholera appears to be more widespread than usual in China, India and French Indo-China. By the end of June there were 8,000 cases in Chungking. Since 1921, cholera has remained confined to Asia, and, so far, no case has appeared west of Bombay.

Disability Held No Barrier to Job Success or Social Life

Wounded veterans are assured that in most instances their earning capacity need not be impaired even by serious disability.

Nor need they lose out socially, or with the girl back home.

These assurances, contained in the pamphlet **Straight Talk For Disabled Veterans** published by the Public Affairs Committee, are tempered by the admission that the disabled men face a hard, gruelling task and that success will only come to those who work for it.

Straight Talk For Disabled Veterans by Edna Yost is Pamphlet No. 106 in the series of popular, factual, ten-cent pamphlets issued by the Public Affairs Committee, nonprofit educational organization at 30 Rockefeller Plaza, New York 20, New York.

Medical Books Wanted

The Medical and Surgical Relief Committee of America has received an appeal for medical books from Dr. Severinghaus, member of the Medical Nutrition Mission in Italy. The Mission has set up a hospital called the Polyclinica which is part of the University of Naples. The books are for the use of the Mission. Later it is intended to donate them to the Pediatric Clinic library.

The list of books requested is as follows:

1. R. P. Strong: Stitt's Diagnosis, Prevention, and treatment of Tropical Diseases, Seventh edition. 2 volumes. Blakiston.
2. Conant, Martin, et al.: Manual of Clinical Mycology. Saunders.
3. Saxal: Pediatric Dietetics. 1937. Lea and Febiger.
4. Brennerman's loose leaf Pediatrics. Nelson, 4 volumes.
5. Best and Taylor: Physiological Basis of Medical Practice. Williams and Wilkins.
6. McLester: Clinical Nutrition and Dietotherapy. Saunders.
7. Miller: Oral Diagnosis. Blakiston.
8. Peters and Van Slyke: Quantitative Clinical Chemistry. Williams and Wilkins. 2 volumes.

Books should be sent to the Medical and Surgical Relief Committee, 420 Lexington Avenue, New York 17, N. Y.

Basal Temperature Records to Aid Infertility Treatment

A basal temperature record to aid in determining the probable time of ovulation in individual women is being made available by the Medical Committee of the Planned Parenthood Federation of America to physicians interested in the treatment of infertility and the planning of conception.

As reported by Dr. Pendleton Tompkins in the issue of March 11, 1944 of the Journal of the American Medical Association (Vol. 124:697-700), it has been found that an accurate daily record of basal temperature is valuable in estimating the optimum time of conception.

There is a slight rhythm of variation in the normal temperature of a healthy woman—the temperature being lower during the first half of the menstrual cycle than during the later half. The transition from the lower level to the higher one occurs at about the time of ovulation. In many cases the temperature will show a sharp drop and then shoot immediately to the higher level which can be taken as an indication that ovulation is taking place. As the variation for the entire cycle may be less than half a degree, the patient must be provided with complete instructions and forms with which to plot her temperature accurately. The temperature is taken rectally each morning immediately upon awaking before the patient has gotten out of bed, talked, eaten, drunk or smoked.

The charts, as provided by the Planned Parenthood Federation, provide for a six month's record. They indicate the calendar months, the length of the individual cycle and the number of days backward from the onset of the menses at which ovulation can be estimated to occur.

The charts, together with the instruction forms for patient use, are available at cost through the Medical Department, Planned Parenthood Federation of America, Inc., 501 Madison Avenue, New York 22, N. Y.

AUXILIARY



Mrs. J. T. Saunders, Asheville, President 1944-1945

TRANSACTIONS OF THE EXECUTIVE BOARD

Because of restrictions on travel the annual meeting of the Auxiliary was not held in 1945. A meeting of the Executive Board was held in Raleigh on April 25. At the request of the editor and business manager of the NORTH CAROLINA MEDICAL JOURNAL and in cooperation with the government's curtailment of paper to periodicals, the full transactions of the Board will not be published this year. The minutes of the meeting and the reports of the president, the treasurer, and the committee on revisions to the By-Laws, as well as the inaugural remarks of the president-elect, are printed below.

Officers 1944-45

President—Mrs. John T. Saunders, Asheville
President-Elect—Mrs. Erick Bell, Wilson
First Vice President and Chairman of Organization—Mrs. K. B. Pace, Greenville
Second Vice President and Chairman of McCain Bed—Mrs. J. C. Knox, Wilmington
Third Vice President and Chairman of Stevens Bed—Mrs. G. M. Billings, Morganton
Fourth Vice President and Chairman of Student Loan Fund—Mrs. Paul Whitaker, Kinston
Chairman of Past Presidents—Mrs. P. P. McCain, Sanatorium
Corresponding Secretary—Mrs. C. C. Belcher, Asheville
Recording Secretary—Mrs. Harry L. Johnson, Greensboro
Treasurer—Mrs. E. C. Judd, Raleigh
North Carolina Councilor to Southern Medical Auxiliary—Mrs. Clyde R. Hedrick, Lenoir
Advisory Board Chairman—Dr. Rachel Davis, Kinston

Standing Committees 1944-45

Program—Mrs. M. D. Hill, Raleigh
Public Relations—Mrs. G. T. Harrell, Winston-Salem
Legislative—Mrs. T. L. Umphlet, Raleigh
Press and Publicity—Mrs. C. N. Burton, Asheville
Bulletin—Mrs. Wingate Johnson, Winston-Salem
Hygeia—Mrs. John D. Robinson, Wallace
Memorial—Mrs. Joseph A. Elliott, Charlotte
Historian—Mrs. Elbert MacMillan, Winston-Salem
Research—Mrs. John B. Ray, Leaksville
Scrapbook—Mrs. G. C. Cooke, Winston-Salem
Jane Todd Crawford Memorial—Mrs. Harry Winkler, Charlotte
War Participation—Mrs. Reuben McBrayer, Sanatorium
Medical Officers' Wives—Mrs. Reece Berryhill, Chapel Hill
Doctor's Day—Mrs. R. S. McGeachy, New Bern
Nominations—Mrs. R. A. Moore, Winston-Salem
Revisions—Mrs. J. Buren Sidbury, Wilmington

District Councilors

First District—Mrs. Carlton A. Davenport, Hertford
Second District—Mrs. C. S. Barker, New Bern
Third District—Mrs. E. P. Walker, Wilmington
Fourth District—Mrs. George Mitchell, Wilson
Fifth District—Mrs. A. L. O'Briant, Raeford
Sixth District—Mrs. A. C. Bulla, Raleigh
Seventh District—Mrs. W. M. Summerville, Charlotte
Eighth District—Mrs. Rigdon Dees, Greensboro
Ninth District—Mrs. W. G. Byerly, Lenoir
Tenth District—Mrs. S. S. Cooley, Black Mountain

Minutes of the Executive Board Meeting

The Executive Board of the Auxiliary to the Medical Society of the State of North Carolina met in Raleigh at 11 a.m. on April 25, 1945, at the home of Dr. and Mrs. M. D. Hill. Mrs. John T. Saunders, President, was in the chair.

After Mrs. Hill had graciously welcomed those present, Mrs. Joseph Elliott of Charlotte conducted an impressive Memorial Service for the members of the Auxiliary who had died since last year's annual meeting:

Mrs. J. M. DeArmon of Charlotte
Mrs. J. R. Hester of Wendell
Mrs. J. T. Mann of High Point
Mrs. Thomas McCoy of Charlotte
Mrs. C. E. Moore of Farmville
Mrs. Wylie Moore of Charlotte
Mrs. John B. Wright of Raleigh

The roll call showed twenty-one members of the 1944-45 Board and quite a few members of the 1945-46 Board to be present. The secretary then read the minutes of the fall Board Meeting and these were approved. Mrs. Saunders then read her report as president and Mrs. McCain, Chairman of Past Presidents, welcomed new members to the Board.

In accord with a motion made by Mrs. C. N. Burton, seconded by Mrs. E. P. Walker, and passed, the reports of the councilors and committee chairmen were not read in full, but each councilor and chairman gave the highlights of her report.

Mrs. Erick Bell, chairman of the bed in the Eastern Sanatorium, reported that the bed was occupied by a nurse. The Board voted to name this bed for

Dr. George M. Cooper of Raleigh.

The following awards were made:

Five dollars (given by Mrs. J. T. Saunders) to Hoke County for being the first auxiliary to pay its dues 100 per cent.

Five dollars (given by Mrs. P. P. McCain) each to Guilford and New Hanover county auxiliaries for the largest contributions to the McCain Endowment Fund, each having given $100.00 to the fund.

Five dollars (given by Mrs. C. N. Burton) to Buncombe County Auxiliary for the largest contribution to the Stevens Bed Fund.

The Davis Achievement Award—a silver cup and $25.00—went to the Eighth District, Mrs. Rigdon Dees Councilor, for outstanding accomplishments. The Sixth District was given honorable mention for their good record.

Greetings were read from Dr. R. D. McMillan, who was unable to attend, and also from Dr. Rachel Davis, who was kept away because of an acute illness. Dr. Paul Whitaker of Kinston, President of the State Medical Society, brought greetings from that body. He reviewed the activities of the Medical Society during the past year, and expressed his sincere personal and official appreciation for the constructive work of the Auxiliary during this difficult period. He also thanked the Auxiliary for the inspiration which he felt it had furnished and was continuing to furnish to the Medical Society of the State of North Carolina.

Mrs. E. C. Judd gave the treasurer's report, and recommended that part of the Student Loan Fund be put into a "G" Bond. Mrs. K. B. Pace made a motion, which was seconded by Mrs. McCain, that $750.00 be used for this purpose. The motion was carried.

The corresponding secretary was instructed to write to Dr. Rachel Davis, expressing regret that illness kept her from attending the meeting, and to Dr. George M. Cooper, informing him that the bed supported by the Auxiliary in the Eastern North Carolina Sanatorium at Wilson had been named "The George M. Cooper Bed" in his honor.

Mrs. Hill then invited the Board members to the recreation room for a delightful turkey dinner. After a brief social period members again gathered in the drawing room for the afternoon business session.

The recording secretary asked that a statement be included in the records correcting an impression in the minutes of the fall meeting that Mrs. Vernon Lassiter or Mrs. Harry Winkler was responsible for the loss of the minutes prior to the present secretary's term of office. This statement was to read: "Following the mailing of the transactions of the October Board Meeting it was brought to the secretary's attention that the past minutes of the Auxiliary were lost at the end of the term of Mrs. J. D. Freeman, Wilmington, as recording secretary. No minutes were turned over to the present secretary." It was brought out in discussion that the minutes were sent to the meeting held in Raleigh in 1943, but for some reason did not reach Mrs. Harry Johnson.

Mrs. K. B. Pace made a motion, which was seconded by Mrs. George Mitchell and approved, that a committee be appointed to get as much of the material from the missing years as possible, in order to bring the minutes up to date. It was suggested that the members of this committee be from Winston-Salem, since most of the records are kept there.

Mrs. Umphlet read a recommendation from the Wake County Society that Auxiliary membership in the State Legislative Council be considered. Mrs. McCain explained the function of this council and suggested that the matter be given consideration, although any action could be taken only with the approval of the Advisory Board from the Medical Society. A motion that this recommendation be given favorable action if approved by the above Board was made by Mrs. Burton, seconded by Mrs. McCain, and passed.

Mrs. J. Buren Sidbury was unable to attend but sent revisions to the Constitution and By-Laws, which were read by Mrs. McCain. These are published on page 391. A motion was made by Mrs. McCain and seconded by Mrs. Elliott that during 1945-46 the Auxiliary function according to the new By-Laws, in so far as is feasible. This was passed.

The following report from the nominating committee was then read:

President—Mrs. Eric Bell, Wilson
President-Elect—Mrs. Frederick Taylor, High Point
First Vice Pres.—Mrs. John T. Saunders, Asheville
Second Vice Pres.—Mrs. J. C. Knox, Wilmington
Recording Secretary—Mrs. Charles H. Gay, Charlotte
Corresponding Secretary—Mrs. H. F. Easom, Wilson
Treasurer—Mrs. E. C. Judd, Raleigh

A motion made by Mrs. Pace and seconded by Mrs. Elliott that the report be accepted as read was passed unanimously. Mrs. McCain installed the new officers. Mrs. Saunders then turned the gavel over to Mrs. Bell, whose impressive inaugural address may be read on page 394.

Mrs. McCain invited the Board to meet with her in the fall. Mrs. Hill was thanked sincerely for her hospitality, and the meeting was declared adjourned.

Respectfully submitted,
MRS. J. T. SAUNDERS, President
MRS. H. L. JOHNSON, Secretary

Report of the President

It is a pleasure to see so many of you here today. We have all looked forward to returning to Raleigh, and we have come together to strengthen our organization and to give happiness to all in renewed friendships. We are grateful to Mrs. Hill for her generous hospitality in having us in her home and for arranging this meeting. Our thanks go also to Mrs. Judd, Mrs. Bulla and Mrs. Umphlet, local Board members, for their assistance in making this meeting a success.

Because of the ruling of the Office of Defense Transportation, the responsibility of carrying on the work of the Auxiliary has fallen to an overworked Board of Directors. I am deeply impressed with the enthusiasm and interest manifested by the officers, chairmen and members of the Auxiliary. They have regarded their jobs seriously; they have faith, the will to help, and the courage to serve the medical profession in the many situations and problems which must be met. While this has not been a year of great achievements, I am sure that we have measured up to our responsibilities.

As President of the Auxiliary to the Medical Society of the State of North Carolina, I wish to submit the following report for the year 1944-1945. Since so many reports and problems must be crowded into this one day, I shall make my report as brief as possible.

The most important task we have today is acquainting ourselves with pending medical legislation which will affect the entire medical profession. The Wagner-Murray-Dingell Bill is still the most talked about bill in the country today. Our legislative chairman, Mrs. T. L. Umphlet of Raleigh, urged continued study of this bill. I am glad to report that all auxiliaries made a special study of this proposed

legislation. Special attention has also been given this year to the proposed state-wide program of hospital and medical care and to the Blue Cross Plan.

The public relations chairman, Mrs. G. T. Harrell of Winston-Salem, outlined the objectives of her committee in the **North Carolina Medical Journal.** The cause of health education lies close to the heart of every woman and man. The young people are committed to our keeping and we must do our best in making them the best citizens possible.

In an article in the October issue of the **Journal** Mrs. M. D. Hill of Raleigh, program chairman, outlined suggestions for the county auxiliaries to use in planning their programs. Juvenile delinquency has been front page news since Pearl Harbor. Special emphasis on such programs was urged by national and state program chairmen.

Mrs. C. N. Burton of Asheville, press and publicity chairman, prepared an article for publication in each month's issue of the **Journal.** These articles were contributed by various officers and committee chairmen of the state Auxiliary. We wish to thank the editors of the **North Carolina Medical Journal** for their cooperation and for the space given us each month. We have shared our space with the Field Army of the American Cancer Society and with the State Tuberculosis Association.

Our **Bulletin** chairman, Mrs. Wingate Johnson of Winston-Salem, has urged all Board members and officials of county auxiliaries to subscribe to this timely magazine in order that they may know the plans and policies of the national Auxiliary. The **Bulletin** also contains excellent addresses and medical information.

In a letter to all county auxiliaries Mrs. John D. Robinson of Wallace, **Hygeia** chairman, stressed the importance of this magazine. Because of war conditions one-year subscriptions have been discontinued; two and three-year subscriptions are slow in coming in. Knowing the importance of this publication of the American Medical Association as the only authentic health magazine, we must continue our efforts to increase its circulation.

Mrs. Joseph A. Elliott of Charlotte has been memorial chairman and chaplain. She has prepared memorial services in tribute to our members who have passed away this year and for the families who have lost loved ones in this war.

The state historian, Mrs. Elbert MacMillan of Winston-Salem, has kept a faithful record of the Auxiliary. The complete chronological history of the organization since its founding in 1923 proves interesting and helpful to all members.

Mrs. John B. Ray of Leaksville, research chairman, has no report at this time. A paper on "Women Doctors of Our State" is being prepared.

Mrs. G. C. Cooke of Winston-Salem, scrapbook chairman, has fulfilled the regular duties of keeping the scrapbook up-to-date with clippings, bulletins, and programs concerning the auxiliary. We are very grateful to Mrs. Cooke for revising the old scrapbooks and for gathering information to complete the history of her committee.

Mrs. C. R. Hedrick of Lenoir, councilor to the Southern Medical Auxiliary, reports that the annual meeting of that society was postponed this year. However, we have continued to cooperate with this auxiliary in supporting the Jane Todd Crawford Memorial Fund. Mrs. Harry Winkler of Charlotte, as state chairman, reports a growing memorial fund. We are grateful to Mrs. R. S. McGeachy of New Bern, chairman of Doctors' Day, for her capable leadership in the state-wide observance of the day, March 30. Doctors at home and abroad were honored in ways most appropriate to the situation.

Our war participation chairman, Mrs. Reuben McBrayer of Sanatorium, reports that almost every doctor's wife is engaged in some kind of war service cooperating with the Red Cross and in the War Loan Drives.

Mrs. Reece Berryhill of Chapel Hill, chairman of the medical officers' wives, reports a successful year. Many of these wives have never been members of an auxiliary, and others are strangers in their locality. The personal service, sincere interest, and friendliness of the Auxiliary members uphold the ideals of our Auxiliary.

To Mrs. J. Buren Sidbury of Wilmington, chairman of revisions, I wish to express my thanks and appreciation for her encouragement and help in solving my many problems. She has worked very hard this year to revise the By-Laws to meet the present-day situations. These revisions will be presented later.

I want to thank Mrs. R. A. Moore of Winston-Salem, chairman of nominations, and her committee. The list of new officers will be presented later for approval.

This year no new auxiliaries have been formed, and we have lost none. My sincere thanks go to Mrs. K. B. Pace of Greenville, organization chairman, who has kept in contact with the ten district councilors. The councilors have responded generously, and to them much credit is given for the success of the year's work.

To Mrs. J. C. Knox of Wilmington, chairman of the McCain Bed, to Mrs. G. M. Billings of Morganton, chairman of the Stevens Bed, and to the committee of the Eastern Sanatorium Bed, with Mrs. Erick Bell of Wilson as chairman, I express my appreciation and congratulations on the splendid work done this year. Three nurses are our guests. Their thanks and praise bespeak the interest and friendliness shown them by auxiliary members. The financial report will be given later by Mrs. E. C. Judd, treasurer. We are very grateful for Mrs. M. L. Stevens' gift of $1,000 to buy bonds for the Stevens Bed.

Mrs. Paul Whitaker of Kinston, chairman of the Student Loan Fund, made no loans this year. She reports the full payment on a loan to a former student.

To our treasurer, Mrs. E. C. Judd of Raleigh, I wish to express my sincere appreciation for her faithful and efficient work. I am deeply grateful for the encouragement she has given me this year and for her promptness in answering all questions.

To Mrs. Harry L. Johnson of Greensboro, recording secretary, and Mrs. C. C. Belcher of Asheville, corresponding secretary, I express my gratitude for their cooperation and valuable assistance.

We all join in thanking Dr. Rachel Davis for her encouragement and understanding help.

Thanks to all past presidents, on whose reports I have depended, and especially to Mrs. P. P. McCain of Sanatorium, chairman of past presidents. Without her confidence and guidance I would have been lost.

Our president-elect, Mrs. Erick Bell of Wilson, has been a great help to me this year and has acquainted herself with the problems of the Auxiliary.

Because of travel difficulties I have had to decline most invitations to visit county auxiliaries. The Ninth District Medical and Auxiliary Meeting in Lenoir was attended. I have tried to keep in close touch with the Auxiliary members through letters. Correspondence has been the greatest pleasure of the year, and also perhaps the most arduous task. It is the tie that binds us to each other and brings us into closer touch with the work of the local auxiliaries.

In closing I want to thank you for the honor and privilege of having served as your state president and for the fine spirit and service you have rendered this year.

MRS. JOHN T. SAUNDERS

Revisions to By-Laws

Preamble and Articles 1 (Name) and 2 (Objects) remain unchanged.

Article 3. Membership and Dues.

Sections 1 and 2 unchanged.

Section 3. Life membership may be conferred by the payment of $100.00.

Section 4. The annual dues shall be $1.00.

Article 4.

Section 1. Strike out "**four**" (vice presidents) and insert "**two.**"

Section 2. Add: The recording secretary shall be elected in odd years and the second vice president and treasurer in even years.

Section 3. Unchanged.

Section 4. There shall be a nominating committee consisting of five members, no two of whom shall come from the same district. The president shall appoint the chairman, who **shall serve for one year and shall not be eligible for reappointment.** The other members shall be elected by the Board of Directors. (It is not specified at what meeting they shall be elected, as some presidents prefer having them elected at the post-board meeting, others at the fall meeting.)

Sections 5, 6, and 7 remain the same.

Article 5. Duties of Officers.

Sections 1, 2, and 3 are unchanged.

Section 4. The second vice president shall serve as chairman of activities. It shall be her duty to promote the endowment and maintenance funds of the three beds at the three state sanatoria and the Auxiliary Loan Fund. She shall be permitted to appoint such chairmen as may be deemed essential to raise funds and interest the membership in these activities.

Strike out sections 5 and 6.

Sections 7, 8, and 9 become 5, 6, and 7.

Article 6. Unchanged.

Article 7. Finances.

Sections 1 and 2 unchanged.

Section 3. Strike out "McCain and Stevens Beds" and insert "the three beds sponsored by the Auxiliary in the three state sanatoria." Rest of section to read: "At the end of each year one-half of the amount left in the maintenance fund shall be placed in the McCain Endowment Fund for the use of the three beds."

Sections 4 and 5 unchanged.

Articles 8 (Executive Committee) and **9** (Board) unchanged.

Article 10. Beds at State Sanatoria.

Section 1. The members of this Auxiliary shall have as their major projects the upkeep of the three beds at the three state sanatoria.

Sections 2 and 3 unchanged.

Article 11. (Loan Fund) is unchanged.

Article 12. McCain Endowment Fund.

Section 1. Strike out "McCain bed at Sanatorium" and insert "the three beds sponsored by the Auxiliary at the three state sanatoria."

Article 13. Unchanged.

Article 14. Standing Committees.

Section 1. Standing committees may be created by the Board of Directors as they are needed to promote the work of the Auxiliary.

Section 2. The chairmen of the committees on nominations and press and publicity are appointed for one year only. All other chairmen are appointed for a term of two years. The only chairmen who may serve two consecutive terms are the chairmen of the following committees: revisions, **Bulletin,** legislation, war participation, and medical officers' wives. These are eligible for immediate reappointment. The following chairmen shall be appointed in **odd** years: program, public relations, **Hygeia,** and memorial. The following shall be appointed in **even** years: historian, research, scrapbook, Jane Todd Crawford memorial, medical officers' wives. As other committees are created they shall be assigned to appointment in odd or even years.

Articles 15, 16, and 17 remain unchanged.

Further suggestions: I recommend that the legislation chairman be from Raleigh. I think the committees on war participation and medical officers' wives belong to the war era and not to a permanent program.

For greater exactness, **Article 6** (Meetings) could be changed to read: "The annual meeting of the Auxiliary shall be held at the same time and place as that of the Medical Society of the State of North Carolina. If for any cause an annual meeting cannot be held, the Board of Directors may transact all business usually acted upon by the membership, including the election of officers."

Respectfully submitted,
MRS. J. BUREN SIDBURY
Chairman of Revisions

Report of the Treasurer

I herewith submit my report of the treasurer's records for the year 1944-1945. All accounts have been recorded and disbursed according to the By-Laws.

Mrs. J. T. Saunders, our most capable and untiring president, was influential in getting large contributions sent to the treasurer. It was through her influence that the Martin L. Stevens Endowment Fund was started in a big way by Mrs. Martin L. Stevens.

With sincere thanks to Mrs. Saunders, each member of the Executive Board and all county auxiliary presidents and treasurers for their cooperation in helping make this year the best financially, herewith is appended the auditor's report, covering in detail the activities of the treasurer's office for the past year.

Respectfully submitted,
MRS. E. C. JUDD

Auditor's Report

Mrs. E. C. Judd, Treasurer
The Auxiliary to the Medical Society of the
State of North Carolina
2108 Woodland Avenue
Raleigh, N. C.

Dear Madam:

In accordance with your instructions, we have examined the books and records of your Auxiliary for the period from July 1, 1944 to June 30, 1945 and submit herewith the following statements:

Exhibit A —Statement of Assets and Liabilities
Schedule A-1—Notes Receivable—Student Loan Fund
Exhibit B —Summary of Receipts and Disbursements
Schedule B-1—General Expense Fund—Receipts and Disbursements
Schedule B-2—District Achievement Prize Fund —Receipts and Disbursements
Schedule B-3—McCain-Stevens Beds Upkeep Fund—Receipts and Disbursements

Schedule B-4—War Participation Fund—Receipts and Disbursements
Schedule B-5—Sanatoria Bed Fund—Receipts and Disbursements
Schedule B-6—Martin L. Stevens Endowment Fund—Receipts and Disbursements
Schedule B-7—McCain Endowment Fund—Receipts and Disbursements
Schedule B-8—Student Loan Fund—Receipts Disbursements

During the year the Bed Upkeep Funds were combined in the Sanatoria Bed Fund.

We inspected securities on hand and obtained confirmations from the depository covering balances on deposit. We found your records in excellent condition.

Certificate

Subject to the foregoing comment, we certify that, in our opinion, the accompanying Statement of Assets and Liabilities as of June 30, 1945, and the related statements fairly reflect the financial conditions at that date and the results from operations for the period from July 1, 1944 to June 30, 1945, upon the basis of accounting records consistently maintained.

Respectfully submitted,
R. L. STEELE AND CO.
By: R. L. Steele, C.P.A.

Exhibit A
Statement of Assets and Liabilities
As of June 30, 1945

Assets	*Total*	*General Expense Fund*	*District Achievement Prize Fund*	*Sanatoria Bed Fund*	*Martin L. Stevens Endowment Fund*	*McCain Endowment Fund*	*Loan Fund Student*
Cash in Bank—Exhibit B	$1,765.77	$200.01	$75.00	$746.14	$ 200.00	$ 100.65	$ 443.97
Notes Receivable—Schedule A-1	140.00	—	—	—	—	—	140.00
Investments:							
U. S. Defense Savings Bonds of 10-1-41 — Series F — Mature 12 years from date for $2,800 at cost	2,072.00	—	—	—	—	2,072.00	—
U. S. War Savings Bonds of 6-1-43 — Series F — Mature 12 years from date for $1,500 at cost	1,110.00	—	—	—	—	1,110.00	—
U. S. War Savings Bonds of 6-1-44 — Series F — Mature 12 years from date for $500— at cost	370.00	—	—	—	—	370.00	—
U. S. War Savings Bonds of 9-1-43 — Series F — Mature 12 years from date for $325— at cost	240.50	—	—	—	240.50	—	—
U. S. War Savings Bond of 4-1-45—Series G—2½% payable semi-annually	1,000.00	—	—	—	1,000.00	—	—
U. S. War Savings Bond of 6-14-45 — Series F—Mature 12 years from date for $500— at cost	370.00	—	—	—	—	370.00	—
U. S. War Savings Bond of 6-30-45 — Series F—Mature 12 years from date for $1,000— at cost	740.00	—	—	—	—	—	740.00
TOTAL ASSETS	$7,808.27	$200.01	$75.00	$746.14	$1,440.50	$4,022.65	$1,323.97
Surplus	$7,808.27	$200.01	$75.00	$746.14	$1,440.50	$4,022.65	$1,323.97
TOTAL SURPLUS	$7,808.27	$200.01	$75.00	$746.14	$1,440.50	$4,022.65	$1,323.97

Schedule A-1
Notes Receivable—Student Loan Fund
June 30, 1945

Date	*Maker*	*Maturity*	*Original Amount*	*Amt. at June 30, 1945*
2-10-37	Miss Margaret Whittington) W. W. Whittington) Pearl G. Whittington)	2 years	$ 100.00	$ 40.00
8-25-39	Miss Margaret Whittington) Mrs. Pearl B. Whittington)	—	100.00	100.00
			$ 200.00	$ 140.00

Exhibit B
Summary of Receipts and Disbursements
For Period from July 1, 1944 to June 30, 1945

	Balance 7-1-44	Receipts	Disbursements	Balance 6-30-45
General Expense Fund—Schedule B-1	$ 196.73	$ 330.00	$ 326.72	$ 200.01
District Achievement Prize Fund—Schedule B-2	100.00	—	25.00	75.00
McCain-Stevens Beds Upkeep Fund—Schedule B-3	520.22	—	520.22	—
War Participation Fund—Schedule B-4	25.00	456.00	481.00	—
Sanatoria Bed Fund—Schedule B-5	—	1,269.42	523.28	746.14
Martin L. Stevens Endowment Fund—Schedule B-6	—	1,200.00	1,000.00	200.00
Total Wachovia General Checking Account	$ 841.95	$3,255.42	$2,876.22	$1,221.15
McCain Endowment Fund—Schedule B-7 (Wachovia Savings Account)	184.87	286.04	370.26	100.65
Student Loan Fund—Schedule B-8 (Wachovia Savings Account)	849.15	335.65	740.83	443.97
Total All Funds—Exhibit A	$1,875.97	$3,877.11	$3,987.31	$1,765.77

Schedule B-1
General Expense Fund

Balance on Deposit July 1, 1944		$ 196.73
Receipts:		
Dues 1944-45 (660 members @ $1.00) ½ to Sanatoria Fund		330.00
		$ 526.73
Disbursements:		
Auditing Fee	$ 45.00	
Stationery, Printing and Postage	92.24	
Mrs. Harold F. Wahlquist—National Treasurer (660 members @ $.25)	165.00	
District Counselor's Expense	5.48	
Mrs. E. C. Judd, Treasurer—Expense Account	19.00	326.72
Balance on Deposit—June 30, 1945 To Exhibit B		$ 200.01

Schedule B-2
District Achievement Prize Fund

Balance on Deposit—July 1, 1944		$100.00
Receipts		—
		$100.00
Disbursements:		
District Achievement Prize		25.00
Balance on Deposit, June 30, 1945		$ 75.00

Schedule B-3
McCain-Stevens Beds Upkeep Fund

Balance on Deposit July 1, 1944		$520.22
Disbursements:		
Transferred to Sanatoria Bed Fund, July 1, 1944		520.22
Balance		$ —

Schedule B-4
War Participation Fund

Balance on Deposit—June 30, 1944		$ 25.00
Receipts from Sale of Emblems		456.00
		$481.00
Disbursements:		
Medical and Surgical Relief Committee of America	$456.00	
Dr. Joseph Hoquet (Check outstanding 7-1-44)	25.00	481.00
Balance		$ —

Schedule B-5
Sanatoria Bed Fund

Balance on Deposit July 1, 1944		$
Receipts:		
Transferred from McCain-Stevens Beds Upkeep Fund	$520.22	
Dues 1944-45 (660 members @ $1.00) ½ to Sanatoria Fund	330.00	
Contribution	419.20	1,269.42
Disbursements:		
N. C. Sanatorium	$203.50	
Western N. C. Sanatorium	212.63	
Eastern N. C. Sanatorium	107.15	523.28
Balance on Deposit June 30, 1945		$ 746.14

Schedule B-6
Martin L. Stevens Endowment Fund

Balance on Deposit July 1, 1944		$
Receipts:		
Contribution—Mrs. Martin L. Stevens		1,000.00
Miscellaneous Contributions		200.00
		$ 1,200.00
Disbursements:		
U. S. Savings Bonds Series G		1,000.00
Balance on Deposit, June 30, 1945		$ 200.00

Schedule B-7
McCain Endowment Fund

Balance on Deposit, July 1, 1944		$184.87
Receipts:		
Contributions	$283.25	
Interest on Savings Accounts	2.79	286.04
		$470.91
Disbursements:		
U. S. Savings Bond, Series F	$370.00	
N. C. Intangible Tax	.26	370.26
Balance on Deposit June 30, 1945		$100.65

Schedule B-8
Student Loan Fund

Balance on Deposit—June 30, 1944		$ 849.15
Receipts:		
Contributions	$ 38.00	
Miss Margaret Knight (Payment on Loan)	80.00	
Charles Highsmith, Jr. (Payment on Loan)	200.00	
Interest on Savings Account	17.65	335.65
		$1,184.80
Disbursements:		
U. S. Savings Bond—Series F	$740.00	
N. C. Intangible Tax	.83	740.83
Balance on Deposit, June 30, 1945		$ 443.97

INAUGURAL REMARKS

Mrs. Erick Bell

I assume this office with a mixed feeling of joy and apprehension. It is a privilege to do Auxiliary work in any capacity; therefore, I am grateful for the honor of being your president and thank you for your confidence in me. I hope that I may merit the honor, prove worthy of your confidence, and in a degree measure up to your expectations. However, I am not unmindful (and it is this which gives rise to my apprehension) of the responsibilities accompanying this honor and of my own limitations, for my only qualifications are my interest and willingness to serve. Mistakes I will make, I am sure; but with your support and wise counsel I shall go ahead unafraid.

During the past year as your president-elect, I attempted to study and familiarize myself with Auxiliary work. I trust that, as Mrs. Saunders' understudy, I have proved an apt pupil; I don't know, but I am grateful that she has not publicly divulged my I. Q. Having served as historian from 1937 to 1940, I should have had some concept of the work, but I am afraid I did not realize the magnitude of it until now.

I wish at this time to express my appreciation, first, to Mrs. J. T. Saunders, who has been untiring in her efforts to school me in the many details essential in carrying on Auxiliary work; to Mrs. P. P. McCain and Mrs. J. B. Sidbury, whose advice and guidance have been an inspiration to me; and to all who have cooperated with me in any way. It is most gratifying to find how many are willing to help. To the Board members, both old and new, who have so kindly agreed to serve, I wish to say "Thank you." It is only through a fusion of the wisdom of experience and the freshness of a new viewpoint that we can obtain the highest efficiency and broadest outlook.

The ensuing year may prove to be one of testing for the Auxiliary. Undoubtedly we will be confronted with many problems, frustrations, and difficulties. With travel restrictions, shortages of servants, and hearts burdened because of absent loved ones, we may many times become discouraged and weary. The tempo of life has been stepped up and probably will gain momentum as the war nears its end. Each day brings new duties, new problems, more denials, and more sacrifices. However, we must not take the defeatist attitude, relax our efforts, and become lackadaisical; we must rather accept this test as a challenge, redoubling our determination and intensifying our efforts to prove our worthiness and maintain the standards achieved by our predecessors. To falter now would involve not only the present but the past and future; for today is only a link between yesterday and tomorrow, as is suggested by Longfellow in these lines:

> The Past and Present here unite,
> Beneath Time's flowing tide,
> Like footprints hidden by a brook,
> But seen on either side.

Voices out of yesterday call to us to carry on and complete the tasks so nobly begun, and the voices from the future say, "Keep the torch burning brightly and pass it on; we shall need it when you are gone."

To encourage and sustain us in these days ahead, I recommend that we adopt as our motto and keep ever before us the admonition, "Let us not be weary in well doing." (Galatians 6:9)

As the years have passed the Auxiliary has grown, not only in membership but in its scope of work. Even a casual retrospective view reveals this. Much credit for this growth goes to the pioneers and former leaders who laid the foundational structure of organization, projects, and programs.

The work of the Auxiliary is three-fold: social, educational, and philanthropic.

The social aspect will of necessity be limited for the duration of the war. It is to be regretted we had to forego our annual meeting, for there is a certain amount of inspiration and perspective to be derived from personal contacts. We miss this greater fellowship, and our membership may suffer as a consequence unless we devise some means to collect the dues usually paid at the time of registration. It is to be hoped that long before the time for another general meeting the clouds of war will have been pierced and entirely dispersed by hopeful rays of a lasting world peace.

Faced with travel restrictions, it occurs to me that in order to carry on our work more efficiently district meetings should be stressed; and, contrary to popular opinion that this is not the time to organize, it seems a most opportune time to organize more county units. These meetings would not involve travel on a convention scale and would keep interest alive and greatly expedite the work.

The educational aspect is a continual obligation. Certainly the opportunities and need of health education have never been greater than they are today, with such strides being made in medical research and legislation. As an Auxiliary we assume the obligation to interpret and safeguard the ideas of American medicine at all times and under all conditions. So it behooves us as doctors' wives to inform ourselves on all questions pertinent to the profession and to cooperate with other organizations and agencies in sponsoring health programs.

There is no more effective medium for advancing health education than **Hygeia**, and I hope that there will be a wider distribution of this magazine than ever before.

The Bulletin, issued quarterly, gives a comprehensive view of the work and accomplishments of the national Auxiliary and other state organizations. It is my hope that each member of the Board and all county officers, as well as members at large, will subscribe to this.

Our philanthropic projects — the Student Loan Fund and the beds in the three sanatoria—are well established, and the Auxiliary is gratified with the good being accomplished in this phase of its work.

The gratifying accomplishments achieved under the efficient leadership of Mrs. Saunders during the past year, the objectives of the Auxiliary, and the manifold opportunities before us are a challenge to the present members not only to keep intact precedents set by our predecessors but to forge ahead to do bigger and better things.

Remember, "There is no priority on loyalty, no rationing of courage, no scarcity of patriotism, and no lack of faith." These attributes are indestructible.

> Let us then be up and doing,
> With a heart for any fate;
> Still achieving, still pursuing,
> Learn to labor and to wait.
> (Longfellow).

PHYSICIAN WANTED

Physician for industrial dispensary in the South. Must be graduate Class A school. Please write details and give references in first letter. Expenses of interview will be arranged for satisfactory applicants. Write to Medical Director, Box 590, Knoxville 5, Tennessee.

BOOK REVIEWS

Dietotherapy—Clinical Application of Modern Nutrition. Edited by Michael G. Wohl, M. D., Associate Professor of Medicine, Temple University School of Medicine; Chairman, Advisory Committee on Nutrition, Philadelphia Department of Public Health; With a Foreword by Russell M. Wilder, M.D., Ph.D., Professor of Medicine and Chief of the Department of Medicine, Mayo Foundation; Member of the Committee on Medicine and Subcommittee on Medical Nutrition, Medical Sciences Division, National Research Council. 1029 pages with 93 illustrations. Price, $10.00. Philadelphia and London: W. B. Saunders Company, 1945.

Dr. Wohl's book presents the relation of nutrition to disease and the clinical application of dietary therapy in intercurrent disease. After a brief discussion of the normal diet and the physiology of the gastrointestinal tract, there are sections by the fifty-eight collaborators discussing water metabolism, the role of fat, carbohydrate and protein in the diet, and the importance of various mineral elements as well as trace substances. This is followed by concise discussions of vitamins A, C, D, E, K, the B complex, and vitamin inter-relationship. Each chapter represents an authoritative compilation of the fundamental laboratory and clinical work to date. The practical applications of this information are discussed in the remaining chapters, which deal with the application of dietotherapy to digestive and cardiovascular diseases, to allergy, and to the care of surgical patients. There is also an adequate discussion of the use of diet in the management of patients having metabolic disturbances, infectious diseases, and psychiatric and central nervous system disorders.

Dr. Wohl and his collaborators are to be commended for presenting a well written, comprehensive, and splendidly documented book, the emphasis of which is on the clinical application of our knowledge of modern nutrition. This volume is recommended to students, investigators, and all practitioners of medicine.

Doctors at War. Edited by Morris Fishbein, M.D., Editor of the **Journal of the American Medical Association** and of **Hygeia**; Chief Editor of **War Medicine.** 418 pages. Price, $5.00. New York: E. P. Dutton & Company, 1945.

The final history of U. S. medicine in World War II will not be written for some time to come. This book attempts to report it in its manifold aspects up to the present. Edited by Dr. Fishbein, who has written the introductory chapter, the book contains sixteen chapters by authoritative contributors, and describes commendably the organization and achievements of the various branches concerned with military medicine, from the Procurement and Assignment Agency to the Veterans Administration. It is an excellent document of the transformation of medical science in a democratic nation into a vital part of the war machine—a tremendous task which is still in the process of completion. Written for the layman and the doctor without dramatization, fully illustrated with official photographs, it might also

Men Under Stress (In and After Combat). By Lt. Col. Roy R. Grinker, M.C. and Major John P. Spiegel, M.C., Army Air Forces. 484 pages. Price $5.00. Philadelphia: The Blakiston Company, 1945.

This book is a document of the progress which has been made in psychiatry during this war.

The authors have had, overseas as well as in this country, wide experience in observing, examining and treating each type of emotional and mental difficulty associated with war. This books deals primarily with psychiatric reactions of men in the Army Air Forces. The experiences which created mental difficulties are specific; however, the reactions of the men to them do not differ from reactions of men in other branches of the armed services, and therefore the material accumulated and presented in this book has general application.

Particular emphasis is placed on material and methods used for treatment. An attempt is made to evaluate psychodynamic and physiological as well as biological and social factors which contribute to the psychopathological reactions. The relationship of the stress and strain of wartime to the outbreak of mental illness is clearly demonstrated. Case histories are freely cited, and the case material is interpreted and discussed.

The book is valuable from a historical as well as a medical standpoint, and belongs to the few positive assets which modern warfare gives to mankind. It should be read by every physician who deals with servicemen or veterans or with their families, or who expects to deal with them in the future. It will be of great value to all workers in allied medical fields who come in contact with soldiers and veterans along professional lines.

Preventive Medicine. By Mark F. Boyd, M.D., M.S., C.P.H., Field Staff Member, International Health Division, Rockefeller Foundation; Formerly Professer of Bacteriology and Preventive Medicine in the Medical Department, University of Texas. Seventh Edition, revised. 591 pages with 187 illustrations. Price, $5.50. Philadelphia and London: W. B. Saunders Company, 1945.

This book attempts to cover the field of prevenive medicine from the viewpoint of the individual practicing physician. Because the differentiation between preventive medicine and public health is still in a state of flux, much material is presented from the viewpoint of the public health official; the sections on infant and child hygiene are examples. It is pointed out in the introduction that the diseases with which preventive medicine is concerned occur chiefly below the age of 30 and are primarily the infectious diseases; the diseases occurring in the older age groups are still not susceptible to attack by preventive measures. The individual acute infectious diseases are discussed. Descriptions are given of the infecting organisms, modes of transmission and methods of control, including immunization procedures, isolation, and disinfection measures. The discussions of chemotherapy are incomplete from the practicing physician's viewpoint, since the newer sulfonamides are not mentioned in connection with the streptococcic infections, and penicillin is discussed only under the venereal diseases. In the section on food, it is interesting that alcohol is dis-

mentioned. Illustrations have been kept to a minimum. References are not given at the end of each chapter but are grouped as a bibliography at the end.

This book should serve adequately as a textbook for medical students and as a review of the present status of preventive medicine for general practitioners.

In Memoriam

ROBERT GRAY McPHERSON, M.D.

Robert Gray McPherson was born at Holman Mills, Alamance County, on October 27, 1880. He was the son of Gray McPherson and Sarah Terry McPherson. He attended the local public school, going from there to the Liberty High School.

His medical education was obtained at the University of North Carolina. He received the degree of Doctor of Medicine there in 1908. During the summers of his student years he worked with Dr. W. E. Walker in Graham, obtaining knowledge of the routine things that occur in a large general practice. The year after graduation was spent as an intern at Rex Hospital, Raleigh.

On January 4, 1911 he was married to Josie Julian McBane. To them five children have been born.

After finishing his internship Dr. McPherson located at Saxapahaw, where he practiced until the time of his death, though he moved his residence about 1926 from the village to a place that he had purchased a few miles to the south. The site that he selected gives an insight into the man himself. It was a broad table-land with the view of a valley dipping to the east and Cane Creek Mountain beyond. He set his house facing east, so that he could look across the valley to the calm solidity of that high hill. "I will lift up mine eyes unto the hills from whence cometh my help." In the beauty of that setting he found much comfort and spiritual rest. Each day he made a pilgrimage through the woods along a favorite path. What his thoughts were on these trips there is no way of knowing—but it is certain, if we may judge from the serenity of his life, that he found a satisfactory communion with nature and with the God of nature.

"Bob" McPherson had a large practice over an extensive area. He was capable, honest, tolerant, kindly, cheerful, faithful and humane. He could have made good in any community, but he practiced in the country because he liked the country. He literally wore himself out practicing medicine. Despite coronary warnings that he well recognized and that his professional friends and advisers recognized, he continued to the end to do what he could to aid the sick. The end came as suddenly as was to be expected, appropriately out of doors among the trees of the yard he loved, on January 14, 1945.

The community, the profession, and this society have lost a useful and beloved member. His place cannot be filled in our hearts, but in our record we inscribe this memorial, and to his family we give our sympathy.

J. L. Johnson, M.D.
E. S. Lupton, M.D.
Geo. L. Carrington, M.D., Chairman
Obituary Committee
Alamance-Caswell Counties Society

INDEX TO ADVERTISERS

AR-EX Cosmetics, Inc. 396
Ayerst, McKenna & Harrison VI
Broadoaks Sanatorium XXVI
S. H. Camp and Company XXI
Charlotte, Eye, Ear, and Throat Hospital XXIV
Cheplin Laboratories XII
Commercial Solvent VIII
Cook County Graduate School of Medicine XXVIII
Dairy Council XXI
Glen Alpine Rest Home XVIII
Glenwood Park Sanitarium XXV
Charles C. Haskell and Company V
Inter-Ocean Casualty Company XXVIII
Eli Lilly and Company Insert and XVI
M & R Laboratories XV
Mead Johnson & Company XXXII
Parke, Davis and Company XXX-XXXI
William Perske XVIII
Philip Morris & Company, Ltd., Inc. XI
Physicians Casualty Association
Physicians Health Association XVIII
Pinebluff Sanitarium III
Powers and Anderson, Inc. XXI
R. J. Reynolds Tobacco Company VII
Saint Albans Sanatorium XXVII
Schenley Laboratory XXII
Schieffelin & Company XXVII
Julius Schmid, Inc. IX
G. T. Searle & Company XVII
Smith, Kline & French XX-XXIX
Southern Dairies XIX
Stuart Circle Hospital XXVI
Thompson Homestead School XVIII
Tucker Hospital XXV
Upjohn XXIII
Wachtel's, Inc. XXVIII
Westbrook Sanatorium XXIV
White Laboratories II
Winchester Surgical Supply Company
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Winthrop Chemical Company, Inc. XIII
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VOLUME 6 SEPTEMBER, 1945 NUMBER 9

THE EARLY MANIFESTATIONS OF FILARIASIS

COL. J. M. HAYMAN, JR., M.C.

To most of us who practiced in this country before the war, filariasis was but one of the exotic diseases like kala-azar, Oroya fever, and Madura foot, of which we had vague memories from medical school. The vividness of these recollections was usually inversely proportional to the time elapsing since graduation. Consequently, to a doctor reasonably well established in practice, the mention of filariasis conjured up little but pictures of elephantiasis — huge legs, or breasts, or arms—or of photographs on the wall of the office of the professor of parasitology. With the outbreak of the war, however, and the subsequent return of men from posts in many tropical areas where the disease is endemic, filariasis has assumed new interest. A number of men in the armed forces have been infected, but the form of the disease — its symptoms and apparent course—differs from that described in the textbooks and in most articles in the literature. These are based on observations on native populations who have lived all their lives in an endemic area, and have consequently been subjected to repeated infections over relatively long periods of time. The condition met in the armed forces, on the other hand, represents a minimal infection occurring after a relatively short period of exposure.

Causative Agents

Filariasis is defined by Manson-Bahr[1] as "a morbid condition produced by certain nematode worms, or filariae, the adults of which, of both sexes, live in the lymphatics, connective tissue, or mesentery, producing live embryos, or microfilariae, which find their way into the blood stream, where they are capable of living for a considerable time without developing further." While circulating in the peripheral blood, these microfilariae are ingested by mosquitoes or other blood-sucking insects. After undergoing further development, they migrate to the mouth parts of the insect, escaping into the skin of a vertebrate host with the insect's next blood meal.

There are at least five different types of filarial worm parasites which may infect man. Wuchereria bancrofti, or Bancroft's filaria, is the most important, and this discussion will be limited to that species.

The larval form of this parasite, or microfilaria, was discovered in 1863 by Demarquay, in Paris, in hydrocele fluid withdrawn from a patient from Havana. Bancroft, in Brisbane, Australia, after having encountered the larval form in chylous urine and in blood, discovered the adult worm in a lymphatic abscess in 1876.

Transmission

The role of mosquitoes as intermediate hosts of W. bancrofti was first urged by Manson. In 1877, he fed a number of blood-sucking insects upon an individual with filariasis, and examined them at intervals thereafter. In most of the insects, the larval filariae were digested or, at least, failed to develop, but in certain mosquitoes they grew in size and underwent a developmental differentiation. At first it was believed that the mosquito, dying when ovipositing on water, afforded the parasites access to water; that they became free for a time in water, and were transferred to the definitive human host when water containing the

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From the Medical Service, Moore General Hospital, Swannanoa, N. C.

mitter, as well as intermediate host, came to be accepted only after the direct transmission of the dog heart worm, Dirofilaria immitis, had been demonstrated by Grass and Noe. But for a considerably longer period, the idea of water convection continued to attract adherents.

Distribution

Bancroft's filaria is the most widely distributed species of parasite affecting man, its habitat extending unevenly throughout the whole tropical belt. In Europe, it is apparently confined to Barcelone, Hungary and Turkey. It is present along the southern shore of the Mediterranean. It is common throughout the whole central tropical belt of Africa. In the Far East it extends along the coast of India, through Malaya, French Indo-China, South China, southern Korea and Japan, the Philippines, Borneo, New Guinea, and the Dutch East Indies. It is sparsely present in northern Australia. It is extremely common in some of the Pacific Islands, where as many as 60 to 80 per cent of the natives are affected. In the western world, it is common along the northern coast of South America, although it has not been reported from the west coast. It is common in the greater and lesser Antilles.

The first demonstrated cases of filariasis indigenous to the United States were reported by John Guiteras[2] from Charleston, South Carolina. Sporadic cases have been reported from time to time from Florida, Alabama and Virginia. The region of Charleston, however, remained the only known focus of any consequence in the United States. In 1915, Johnson[3] reported finding filariasis in 19 per cent of 400 hospital inmates within a year. Today, however, filariasis indigenous to this country has practically disappeared, even from Charleston.

It is interesting to speculate on the spread of this world-wide disease[4]. "There are reasons—suggestive, if no more—partly based on the history of human commerce and travel in comparison with the grades of infestment of known districts, and the history of ancient prevalence of such manifestations of filariasis as elephantiasis and chyluria, that would support the conjecture that the original location of the species was along the southern coast of Asia, and that the parasite spread thence east and west into Indo-China and Oceania on the one hand, and into Africa on the other." It probably was brought to the West Indies and the Americas with the importation of African slaves. The absence of the disease on the Pacific coast, even in tropical America, in contrast with the long range of infestment on the Atlantic coast, supports this view; so does the fact that there is no mention of so striking a condition as elephantiasis in the early accounts of the Barbados, where later it was so common that it was known as "Barbados leg."

Characteristics

The parent worms have been found in human tissues many times since Bancroft first demonstrated them. They are long, creamy white, hair-like nematodes with a smooth cuticle. They are 1½ to 3 inches in length, the female being about twice as long as the male. The sexes often live together and, at times, are inextricably coiled about each other. The young embryos in the inner portion of the uterus of the female are confined within thin, hyaline, ovoidal shells. As they are pushed into the outer portion of the uterine tubes, these shells are elongated to accommodate the uncoiling embryos and become known as the "sheaths." In this stage, they are discharged by the mother worm. The microfilariae which migrate into the lymph channels and blood stream measure 127 to 320 micra in length by 7.5 to 10 micra in width. When present in large numbers, they can be found in wet film preparations. When the parasites are scanty, it is necessary to use larger amounts of blood in thick drop preparations which are dried and then dehemoglobinized, or to draw several cubic centimeters of blood which are laked and centrifuged, and the sediment searched for larvae. When seen in fresh blood, the embryo filaria is a snake-like organism which, without materially changing its position, wriggles about very actively.

One of the most fascinating problems of filariasis, as yet unsolved, is that of microfilarial periodicity. In patients with filarial infections acquired in most parts of the world, very few or no microfilariae can be found in the peripheral blood during the day. They begin to appear in the evening, reaching a maximum between 10 p.m. and

2. Guiteras, John: The Filaria Sanguinis Hominis in the United States, Med. News, 48:399, 1886.
3. Johnson, F. B., quoted by Francis, E.: Filariasis in Southern United States, U. S. Pub. Health Serv., Hyg. Lab. Bull. No. 117, 1919.
4. Smith, A. J.: Filariasis in the Americas, Proc. 2nd Pan Am. Scient. Cong., Washington, 9:49-76, 1917.

2 a.m., and have almost disappeared again before the victim awakens. On the other hand, filarial infections acquired in Fiji, Samoa, Wallis and Ellice Islands, and Tahiti, where the morphology of the parasite is identical, manifest no nocturnal periodicity. Manson found that during the day, while the microfilariae are absent from the peripheral blood, they accumulate especially in the lungs and larger arteries. It has not been learned how they continue to maintain their position in the blood current, or what forces determine their peculiar distribution. Many theories have been suggested to account for this nocturnal periodicity. Relaxation of the host's body during sleep is believed by some to be responsible. Mackenzie[5] showed that if a patient with filariasis is made to sleep during the day and remain awake at night, the periodicity is reversed after a period of three or four days, the parasites coming into the blood during the day and disappearing during the night. It has been suggested that the night swarming of the embryos is an adaptation to the habits of its usual intermediate host, the mosquito Culex fatigans, which is a night-biter. The common vector in the Pacific Islands where periodicity is not found is the day-biting Aedes variegatus. Colonel Lane[6] hypothesized a mid-day parturition of the female filaria, and this hypothesis was supported by O'Connor's[7] finding that the condition of all females in any body was similar. The second part of Lane's hypothesis—that the microfilariae survive only twenty-four hours—has been disproved. Knott's[8] observation that embryos are more sluggish during the day than at night and are, therefore, not usually able to pass through peripheral capillaries, may help to explain the phenomenon, although he does not offer any explanation for this daytime lethargy.

Course

The development of Bancroft's filariasis in man may be divided into four stages: (1) the incubation period, (2) a latent symptomless period, (3) the acute stage, (4) the chronic stage.

5. Mackenzie, quoted by Manson-Bahr (1).
6. Lane, C.: Mechanical Basis of Periodicity in Wuchereria Bancrofti Infection, Lancet 2:399-404 (Aug. 19) 1933.
7. O'Connor, F. W.: The Aetiology of the Disease Syndrome in Wuchereria Bancrofti Infections, Tr. Roy. Soc. Trop. Med. & Hyg. 26:13-47 (June) 1932.
8. Knott, J.: A Method for Making Microfilarial Surveys on Day Blood, Tr. Roy. Soc. Trop. Med. & Hyg. 33:191-196 (July) 1939.

Incubation period

The incubation period—that is, the time from the entrance of the infective larvae from the mosquito until the development of symptoms or the appearance of microfilariae in the peripheral blood—has usually been given as one to as long as seven years. Some of the infected service men, however, developed mild symptoms as early as three months after the first exposure. Buxton[9] cited one case in which a research worker developed epitrochlear adenitis forty-three days after being bitten by an infected mosquito.

Symptomless period

The latent symptomless stage may last for several years or even throughout life. During this period there are no manifestations or symptoms, although local tissue alterations around adult worms may be in progress and microfilariae may be found in the peripheral blood. Manson-Bahr emphasizes the fact that the filariae are not generally pathogenic, and that in most cases of filarial infection the parasite exercises no manifest injurious influence whatever. The microfilariae, whose presence is so commonly associated with the disease are, so far as is known, particularly harmless.

Acute stage

In a certain number of persons, however, the adult worms do produce very definite symptoms, chiefly by obstructing lymphatics. The early symptoms—or those of the acute stage—consist of recurring lymphangitis, adenitis, and scrotal swelling, often accompanied by fever and lasting several days to two weeks. Gradually the attacks become less severe and come at longer intervals. These bouts are called "elephantoid fever" in some places, "ague" in Barbados, "mumu" in Samoa, and "wanganga" in Fiji.

There has been considerable discussion as to whether these phenomena are due to the worms themselves, or are attributable to secondary infection, particularly with streptococci or staphylococci. O'Connor[7] in 1931 established beyond reasonable doubt that the presence of bacteria is not necessary for the occurrence of most of the pathological changes and all of the inflammatory attacks associated with filariasis. This conclusion

9. Buxton, P. A.: Researches in Polynesia and Melanesia, No. 2, Memoir Series, London School of Trop. Med. and Hyg., 1928.

has been amply verified by Wartman[10] in his study of cases in the Southwest Pacific. O'Connor thought that living worms might produce some lymphatic blockage, and possibly some tissue reaction, but that it was more probable that dead worms, undergoing disintegration and absorption, or calcification, liberated or produced toxic substances which gave rise to the acute inflammatory changes. The reactions he believed to be allergic in nature.

Chronic stage

The lesions of the chronic stage of filariasis include elephantiasis, chyluria, chylous ascites, chylous diarrhea, arthritis, lymph scrotum, varicose groin or axillary glands, and filarial abscess. These conditions are seen almost exclusively in natives of endemic areas, or in persons who have lived for many years in such an area, and have had repeated re-infections. They are the result of chronic widespread fibrotic obstruction to the lymphatics with dilatation and possibly rupture of the distal lymph channels. It should be pointed out that filariasis is not the sole cause of lymphatic elephantiasis. Manson-Bahr classifies the types of elephantiasis as follows: (a) congenital or familial (Milroy's or Meige's disease); (b) septic, as following streptococcal infections such as erysipelas; (c) toxic, caused by absorption of irritating chemicals, such as chrysarobin; (d) obstructive, due to tuberculous glands, carcinoma, or surgical removal of a main chain of glands; (e) secondary to venous thrombosis, as in phlegmasia alba dolens; and finally (f) parasitic, associated with infection with filariae of the genus Wuchereria.

Filariasis in the Armed Forces

During the past two years, a number of reports of filariasis in the armed forces have appeared in the literature[11]. All describe a similar picture, the outstanding characteristics of which are:

Clinical picture

(1) An incubation period between the first exposure and the first symptoms, averaging nine to twelve months. A few patients had typical symptoms as early as three months after the first possible exposure, and living adult worms have been recovered in biopsy material five and a half months after exposure. This is a considerably shorter period than had usually been thought necessary for the development of adult worms.

(2) Absence of microfilariae in the peripheral blood. They have been found, even after careful and repeated search, in but a handful of patients, and then only in extremely small numbers.

(3) Repeated attacks of pain and swelling of lymph nodes, particularly in the upper extremities.

(4) Recurrent attacks of swelling of the scrotum and its contents.

(5) Lymphangitis which is characteristically centrifugal or retrograde, progressing down a limb against lymph current. The progress of bacterial lymphangitis is centripetal.

(6) Rapid decrease in the severity and number of attacks on removal of the patient from the endemic area.

The symptoms of these early attacks are largely local, consisting of pain, swelling, or redness of an arm or leg, or pain and swelling in the scrotal region. The pain in the extremities is rarely severe, but is usually accompanied by stiffness. The most characteristic swelling is that limited to the medial surface of the upper arm, or the anterior surface of the forearm. The swellings are usually accompanied by enlargement of the epitrochlear nodes or of nodes 2 to 4 inches above the usual site of the "epitrochlear," or by swelling of a node in the antecubital fossa, or of the axillary nodes. Redness occurs diffusely over the area of swelling, or in the form of a streak over a lymphatic channel. The swelling of the scrotum and its contents is usually more uncomfortable, but is still not often accompanied by severe pain. Constitutional symptoms are usually extremely mild. A few patients have chills, fever, malaise, and a headache which may persist for a week and occasionally is quite severe. King[11e] recorded fever in 20 per cent of 268 cases. In only a few patients, however, did it exceed 100 F.

Recurrence of pain and swelling at the

10. Wartman, W. B.: Lesions of the Lymphatic System in Early Filariasis, Am. J. Trop. Med. 24:299-313 (Sept.) 1944.

11. (a) Dickson, J. G., Huntington, R. W., Jr., and Eichold, S.: Filariasis in Defense Forces, Samoan Group, U. S. Nav. M. Bull. 41:1240-1251 (Sept.) 1943; (b) Michael, P.: Filariasis among Navy and Marine Personnel: Report on Laboratory Investigations, U. S. Nav. M. Bull. 42:1059-1074 (May) 1944; (c) Fogel, R. H. and Huntington, R. W., Jr.: Genital Manifestations of Early Filariasis, U. S. Nav. M. Bull. 43:263-270 (Aug.) 1944; (d) Johnson, P. A. G.: Filariasis, Clinical Findings in 189 Cases, U. S. Nav. M. Bull. 43:950-954 (Nov.) 1944; (e) King, B. G.: Early Filariasis, Diagnosis and Clinical Findings; A Report of 268 Cases in American Troops, Am. J. Trop. Med. 24:285-298 (Sept.) 1944; (f) Englehorn, T. D. and Wellman, W. E.: Filariasis in Soldiers on an Island in the South Pacific, Am. J. M. Sc. 209:141-152 (Feb.) 1945.

same site, or, more characteristically, at another site, are to be expected. The interval may be only a few days, but is more often about a month. Symptoms and swelling can often be brought on by exertion, particularly in the heat. We are inclined to discredit a history of recurrent attacks of pain without swelling as evidence of filariasis. Frequently another cause for such complaints is found on examination—arthritis, neuritis, flat feet, an old injury, varicocele, or hernia.

Involvement of the scrotal contents has been the lesion most frequently encountered in all series of cases reported, the incidence varying from 70 to 90 per cent. The involvement may consist of a funiculitis, epididymitis, orchitis, hydrocele, swelling of the scrotum itself, or any combination of these. A not uncommon feature is tenderness over the inguinal canal in association with swelling of the spermatic cord below the external ring. Funiculitis and epididymitis are often associated. The globus major is the portion of the epididymis most commonly involved, the involvement extending into the body. The globus minor is less often affected. In the series reported by Fogel and Huntington[11c], a boggy edematous swelling of the testis was apparently common. These authors point out that the swelling of the spermatic cord is the earliest sign, and is a descending, retrograde, or centrifugal process. It has its counterpart in the visible centrifugal lymphangitis of an extremity.

The genital lesions subside in a week or so, and may leave no demonstrable physical signs. After repeated attacks, however, there remain a definite thickening and fibrosis of the epididymis and vas. One finding, while not constant, is of significance when present. This is a small, shot-like lymph node where the vas has become distinctly palpable from the epididymis. This small gland persists for many months. So far as can be determined, such chronic inflammation does not produce sterility. The relationship of filariasis to varicosities is a question of considerable interest. Certainly, in a number of cases, varicosities have first been noticed after an attack of funiculitis, but whether they occur *propter hoc* or merely *post hoc* is hard to determine. Lymphatic varices were found in a case reported by Michael[11b], and changes in blood vessels have been found at operation and in biopsy material from suspected cases, but it has not been established that these were due to filariasis.

Lymphangitis is perhaps the most striking lesion of early filariasis. It has been about twice as common in the arms as in the legs in all series reported from the Pacific Islands. This finding is the reverse of Grace's[12] report from British Guinea, that four-fifths of the patients showed involvement of the legs first. The lymphangitis of the arms occurs most commonly along the course of the brachial vessels or on the volar surface of the forearm. It may take one of three forms: (1) a red streak of varying length, often with an underlying firm, irregular cord; (2) patches of subcutaneous edema and overlying redness, irregular in outline and of varying size, most commonly occurring on the inner anterior surface of the forearm, just below the elbow; and (3) diffuse edema and erythema of the upper arm or forearm. With erythema, there is local heat, but tenderness is mild or moderate. The most unusual feature of the lymphangitis is its tendency to extend peripherally down the arm or, more rarely, the leg. Local adenopathy often accompanies the lymphangitis, but is not invariably present.

Enlargement of lymph nodes is also more common in the upper extremity than in the lower. Enlargement of the nodes in the upper arm, from the site of the ordinary epitrochlear node to those half-way up the arm, is particularly characteristic. It was present in 53 per cent of King's carefully studied cases. Enlargement of axillary nodes is usually only moderate. The significance of slight or moderate enlargement of inguinal glands in the absence of other symptoms is difficult to appraise, as it may result from a great variety of causes. After an acute attack, the glands decrease in size, but remain palpable for a number of months at least. However, re-examination of a group of several hundred men within the past two months, as compared with the records of examinations made a year ago, furnishes evidence that many glands eventually return to normal size.

Pathologic picture

The pathology of these lesions is known almost exclusively from biopsies of lymph nodes and lymphatics. Descriptions of the

12. Grace, A. W.: Tropical Lymphangitis and Abscesses, J.A.M.A. 123:462-466 (Oct. 23) 1943.

changes have been reported by Michael[11b], Flynn[13], Hartz[14], and Wartman[10].

Only a few worms have been found in any one gland. The maximum number found by Wartman was probably six. This is in contrast to the large numbers found by O'Connor and Hulse[15] in material from more chronic cases. Another point of difference between Wartman's findings and those usually reported is that the tissue reactions were essentially the same whether the worms were alive or dead at the time of operation. No evidence was obtained to indicate that, as has been often stated, only degenerating or dead worms cause reaction in the tissues. Grossly, the lymph nodes were discrete and moderately enlarged, and had thin, intact capsules and firm, slightly bulging, moist, pinkish-gray cut surfaces. Three characteristic tissue reactions occur in lymph nodes in response to the presence of adult filarial worms: (1) granulomatous inflammation, (2) proliferation of the macrophage or reticulo-endothelial system, (3) tissue eosinophilia. All these reactions occur together, and although one of them may be more conspicuous, careful search will often show all three. Collectively, they form a pathologic picture which is characteristic of filariasis. Consequently, the report of a pathologist who is familiar with the disease may be given considerable weight in diagnosis, even if no worms are found. Inguinal nodes are less satisfactory for examination than epitrochlear or axillary nodes, since in the former there are apt to be confusing non-specific, unrelated inflammatory changes.

A word of caution about biopsies in filariasis is in order. They are certainly not to be done promiscuously or radically. Removal of inguinal and femoral glands has in some cases of filariasis, as well as in other conditions, interfered with major lymphatics sufficiently to be followed by persistent enlargement of the leg. This danger, coupled with the common unsatisfactory results of the histological examination, has led us to avoid inguinal biopsies. No complications have been seen to result from cautious epitrochlear or axillary biopsies.

13. Flynn, P. D.: Filariasis Suspects: Review of Cases Admitted, U. S. Nav. M. Bull. 42:1075-1079 (May) 1944.
14. Hartz, P. H.: Contribution to the Histopathology of Filariasis, Am. J. Clin. Path. 14:34-43 (Jan.) 1944.
15. O'Connor, F. W., and Hulse, C. R.: Some Pathological

Biopsies of enlarged lymphatic vessels have disclosed a great variety of lesions, including hyperplasia of the lining endothelium and of the reticular cells, acute lymphangitis, either with or without thrombosis, and fibrous obliteration of the vessel. Occasionally, simple lymph thrombosis has been seen in vessels which otherwise appeared normal.

One way in which obstruction may develop in a lymph vessel was well illustrated in one of Wartman's cases. The affected vessel was greatly dilated, and the entire thickness of the wall and surrounding fibroadipose tissue was acutely inflamed. A living adult worm, presumably a male, lay within the lumen, together with some lymph and a moderate number of lymphocytes. At one place along the wall there was a mural thrombus. This thrombus, which was composed of lymphocytes and coagulated lymph, increased in size by the accumulation of more lymph and other cells until the lumen of the vessel was occluded. Another specimen showed the final stage, where organization and fibrosis of the thrombus had ensued, leaving a dense cord-like structure bearing little resemblance to a lymphatic vessel. It is this lesion, many times repeated, which is presumably the basis for the development of lymph blockage and elephantiasis.

Laboratory findings

Routine laboratory examinations of blood and urine have showed no significant deviation from normal. In one series of nearly 300 patients, the leukocyte count was elevated above 10,000 in one third. This elevation was usually present without fever; it often persisted for several days, and occasionally for a couple of weeks during an attack. On the other hand, many patients with acute lymphangitis and adenitis had a normal white cell count. There was a moderate eosinophilia in about two thirds of the cases. Blood Kahn tests were negative and the sedimentation rate was normal.

Since much of the swelling in early filariasis is probably of an allergic nature, it was natural to attempt to devise skin and serological tests as an aid in diagnosis. The problem of finding an antigen, however, has been a difficult one. It is obvious that obtaining an adequate supply of adult W. ban-

turned to the use of more readily obtainable filariae. The dog heart worm, D. immitis, has been the one most commonly used. Taliaferro and Hoffman[16] in this country and Fairley[17] in London reported independently the results of skin tests with D. immitis in patients with filariasis. A number of additional reports on results obtained with this antigen, and with antigens prepared from other worms, have appeared. The test, however, has not yet been standardized. Taliaferro and Hoffman used a 1:200 dilution of a saline extract of D. immitis, Fairley a 1:1000 dilution; while Bozicevich and Hutter[18], who have examined the test most critically, use a 1:8000 dilution and a protein control consisting of the same dilution of dog blood. A positive reaction consists of a wheal, often with pseudopods, at least 4 mm. larger than the control. Erythema is too variable to be of significance. At the present time I think it is a fair appraisal of the test to say that it is positive in about 90 per cent of patients with proved filariasis or with characteristic early symptoms. Apparently false positives occur in about 5 to 10 per cent of patients who have no history of exposure to infection. A considerable proportion (50 to 60 per cent) of men who have been in an endemic area, but have had no symptoms or only equivocal symptoms, give positive reactions. A positive skin test in these cases may indicate a minimal or past infection, biological rather than clinical. In this respect, it may be compared to a positive trichinella skin test, which is not infrequently positive in asymptomatic individuals but has been shown to be closely correlated with past infection and with the presence of encysted or calcified larvae in the muscles, particularly the diaphragm. From the clinical point of view, the skin test, when weighed with history and physical findings, is helpful in arriving at a diagnosis, but at present it cannot be relied on to establish or exclude filariasis. Several studies of the complement fixation test in filariasis, using antigens prepared from a number of different worms, have been reported. This test is, however, still definitely in the experimental stage.

16. Taliaferro, W. H. and Hoffman, W. A.: Skin Reactions to Dirofilaria Immitis in Persons Infected with Wuchereria Bancrofti, J. Prev. Med. 4:261-280 (July) 1930.

17. Fairley, N. H.: Serological and Intradermal Tests in Filariasis, Tr. Roy. Soc. Trop. Med. & Hyg. 24:635-648 (April) 1931.

18. Bozicevich, J. and Hutter, A. M.: Intradermal and Serological Tests with Dirofilaria Immitis Antigen in Cases of Human Filariasis, Am. J. Trop. Med. 24:203-208 (May) 1944.

Course

What has been the course of filariasis in infected military personnel observed so far? In a group of several hundred men who were sent to an endemic area, the first symptoms occurred five months after arrival. This group left the most heavily infected area after one year. The majority of infected men had their first symptoms two to seven months after leaving the endemic area, or between fourteen and nineteen months after first exposure. A considerable number of these men who are believed to have been infected have returned to duty in the United States, symptom-free. These had their last clinical symptoms four to eighteen months after leaving the endemic area, the majority having no more attacks after they had been out of the endemic area for fifteen months. The number of attacks of adenopathy, lymphangitis, or scrotal swelling suffered by these men varied from one to nine or ten; 87 per cent, however, had four attacks or less. About 14 per cent of this group who are believed to have been infected continue to complain of symptoms of one sort or another twenty months after leaving the heavily infected area. Most of these, however, show little in the way of abnormal physical findings. Such demonstrable scrotal swelling, adenopathy, and temporary diffuse swellings as are present are much more transient and much milder than when they first occurred. No microfilariae have been demonstrated in the peripheral blood. Only about 1 per cent of the men who were in this heavily infested area for a year present lesions which, it is believed, may be more or less permanent, and there has been no progress in the severity of these during the past six months.

Ignorance of the nature and course of the disease and fear of permanent disfigurement, and especially of impotence, created a tremendous emotional problem in these men. Too often the situation was not helped by the medical officers, who frequently were themselves as ignorant and apprehensive as their patients. The importance of explanation and of justifiable reassurance was emphasized by Lt. Rome and Lt. Commander Fogel[19] of the Navy. Men stationed in endemic areas have an understandable tendency to regard every fleeting pain, every

19. Rome, H. P. and Fogel, R. H.: The Psychosomatic Manifestations of Filariasis, J.A.M.A. 123:944-946 (Dec. 11) 1943.

swollen gland, every stiffness after exercise as evidence of the disease, and to inspect and palpate their anatomies for swellings, tender spots, or differences in size of arms, legs, or testicles. A little time and patience spent in explaining the difference between the course of the disease in transient residents and that in natives, with their long period of exposure, lead to a gratifying therapeutic result. It is helpful, also, to point out that pain without swelling may be due to a variety of causes, which, however, do not include filariasis.

Diagnosis

The diagnosis of these early, minimal infestations with filaria is not easy. It must, in the vast majority of cases, be a clinical diagnosis, based on a careful weighing of history, physical findings, and available laboratory tests. Proof of the diagnosis can be obtained only by the demonstration of microfilariae in the blood or of adult worms in biopsy material. As has been pointed out, the microfilariae are either not present in these cases or are so very scarce that the chance of finding one, even with repeated search, is somewhat less than that of finding the proverbial needle in the hay stack. Nor is biopsy a practical routine procedure. The first point in diagnosis is the history of residence in an endemic area. A good history of retrograde lymphangitis is highly important. Swelling of epitrochlear, antecubital, or brachial lymph nodes is more significant than inguinal or femoral adenopathy. Recurrent scrotal swelling, especially of the cord or epididymis, and particularly if precipitated by exertion, is significant. The finding of eosinophilia in the absence of intestinal parasites is helpful, but only occurs in a little more than half the cases. A positive skin reaction is useful corroborative evidence, but in its present state of development this test cannot replace a careful history and physical examination. Other causes of adenopathy—Hodgkin's disease, leukemia, mononucleosis, epidermophytosis—must be ruled out. The genital lesions must be differentiated from gonorrheal infection, non-gonorrheal epididymitis secondary to lower urinary tract infection, and tuberculous epididymitis. Filariasis of the spermatic cord has been mistaken for hernia. The differentiation may not be easy.

Treatment

There is, at present, no specific treatment. Compounds of arsenic, antimony, bismuth, and mercury have all been tried without sufficient evidence of benefit to justify their routine use. The sulfonamides are without effect. Symptomatic treatment, rest and elevation of the affected part, and mild analgesic agents such as acetylsalicylic acid give relief.

CHRONIC, FIBROUS, ENCAPSULATED PERITONITIS (ICED INTESTINE)

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Chronic, fibrous, encapsulated peritonitis (iced intestine) is a well recognized medical entity in Europe, particularly in Germany and Austria, but no recorded cases are to be found in the American literature. The disease is not mentioned in any of the systems or encyclopedias of medicine which were searched. Reports of "iced intestine" found in the Russian literature are discredited by German authors as being probably misdiagnosed cases of polyserositis.

Etiology

Max Richard[1] says that "Chronic, fibrous, encapsulated peritonitis is an end stage of an inflammatory affection of the abdominal cavity." Among the causes for this affection which have been advanced are tuberculosis, syphilis, and even chronic constipation or obstipation. The most generally accepted etiological factor, however, is trauma, which is not necessarily severe and may be almost unnoticed. I think that trauma is the underlying cause of the case which is reported here.

Symptoms

Most of the cases reviewed[1,2] presented symptoms of chronic ileus. Some patients were admitted to the hospital because of abdominal tumors associated with intestinal obstruction. Only 2 were admitted because of symptoms of acute intestinal obstruction

Read before the Eighth District Medical Society, November, 1939.

1. Richard, Max: Zuckerguss peritonitis, Beitr. z. klin. Chir. 140:484-491, 1927.
2. (a) Josa, Ladislaus: Ueber Peritonitis chronica fibrosa incapsulans (Zuckergussdarm), Zentralbl. f. Chir. 54: 1689-1694 (July 2) 1927.
(b) Hochmiller, Richard: Ueber zwei Faelle von Peritonitis chronica fibrosa incapsulans (Zuckergussdarm), Zentralbl. f. Chir. 58:3204-3209 (Dec. 19) 1931.

or acute abdominal disease. In the case to be reported the symptoms were those of an acute abdominal catastrophe.

Pathologic Findings

Sections from tissue removed at operation have revealed fibrous connective tissue and granulation tissue in the process of hyalinization. Elastic fibers have also been demonstrated. Unfortunately I did not remove any tissue from my case for pathological study.

Diagnosis and Prognosis

It is impossible to diagnose this disease except at operation. It cannot possibly be differentiated from chronic intestinal obstruction due to any other cause until the abdomen is opened. This disease must not be confused with polyserositis nor with any localized inflammation, such as cecitis or the commonly seen "frozen pelvis."

The postoperative course of these patients is usually stormy, but nearly all of them recover. In those patients who have later had abdominal sections for some other reason, or who have later come to autopsy, no evidence of this pre-existing disease has been found. The mortality from this disease *per se* is surprisingly low.

Treatment

After the diagnosis is established at operation the treatment is supportive and symptomatic. These patients are usually quite sick. There is obstinate constipation and even obstruction. Excessive vomiting usually causes dehydration, necessitating the free use of intravenous infusions of glucose and normal saline solution. Hot stupes to the abdomen are useful, as is also diathermy. Mineral oil by mouth and by bowel sometimes relieves the constipation. Strong intestinal stimulants such as pituitrin, pitressin, and physostigmin are useful in small doses, but they cause great discomfort to the patient. In the case reported below, novocain injected intraspinally seemed to be effective.

Case Report

G.K., a white male, aged 20, had suffered severe abdominal cramps, lasting from a few minutes to an hour, for three weeks prior to admission to the hospital. These attacks of pain were always relieved by evacuation of feces or gas. During this period the entire abdomen was tender to the touch. On the day of admission to the hospital, after eating lunch, the patient was seized with a sudden, severe, cramp-like pain around the umbilicus which radiated to the entire lower abdomen. At first the pain was intermittent, but after a few hours it became constant. The location and radiation of the pain did not change. Five hours after the onset of the pain he took a large dose of castor oil, and about thirty minutes later began to vomit. The vomiting persisted, and after about two hours became projectile. The vomitus at first consisted of undigested food and water, but it later began to have a fecal odor.

Past history

Two and a half years previously, the patient had had an attack which he described as similar to the present one, for which he was treated by ice packs. (I was told by the physician who treated him at this time that this was a definite attack of acute appendicitis.) Two years prior to the present illness he suffered a severe abdominal injury when he was tackled in a football game. The abdomen was very sore and he says that he kept it tightly strapped with adhesive tape for three weeks. A year later he was thrown from a motorcycle and suffered a second abdominal injury. This time he was sore for three or four weeks and again kept the abdomen strapped. Ever since the last injury he had suffered continuously from obstinate constipation and had had periodic attacks of pain, lasting from a few minutes to an hour and always relieved by evacuation of feces or gas.

This patient said that he drank a few swallows to a half-pint of hard liquor daily and some wine and beer. He smoked 20 cigarettes daily. His eating and sleeping habits were irregular. He took a great deal of purgative medicine.

Course in the hospital

The patient's temperature on admission was 101 F., pulse 118, respiration 24. He was vomiting continuously and was in very great pain, which was not relieved by morphia. There was slight acute bronchitis, with some rales throughout both lungs. The abdomen was moderately distended and was board-like in rigidity; it was impossible to palpate any mass. There was generalized tenderness, most marked around the umbilicus. The percussion note was dull over the

entire abdomen except over the stomach itself, where it was tympanitic.

There were 21,900 leukocytes with 90 per cent polymorphonuclears, 8 per cent small lymphocytes, and 2 per cent transitional cells. The urinalysis was negative.

Since this patient presented the picture of an acute abdominal catastrophe, suggesting a ruptured peptic ulcer or intestinal obstruction, it was decided to operate.

With the patient under spinal anesthesia (150 mg. of novocain), a right rectus incision was made. When the posterior sheath of the rectus was incised the peritoneum appeared to be continuous with a grayish, solid, but semi-transparent mass which filled the entire abdomen. It was as though the abdomen had been poured full of cellophane or some similar substance, which had congealed, enclosing all the abdominal viscera. It was impossible to enter the abdominal cavity. The mesentery was contracted and all the abdominal viscera were pulled to the midline. One could see coils of bowel in the mass and I was able to go between the coils to the root of the mesentery, but was unable to proceed further without making a new incision through the mass. Exploration was made up to the liver and down into the pelvis. A McBurney incision was made on the left side, and the same condition was found there. Two small pockets of fluid were found in the region of the sigmoid colon. The appendix could not be located. The operation consisted entirely of exploration. The incisions were closed in layers, and cigarette drains were left in each incision.

During the course of the operation the bowels moved on the table and a large amount of gas and fecal matter were expelled, along with the previously administered enema.

This patient's postoperative course was stormy. He remained in the hospital twenty-nine days, the temperature gradually subsiding. On the twentieth day he again had symptoms of intestinal obstruction. He was given a large oil enema as high as possible and a small spinal anesthetic (100 mg. of novocain). This was effective in relieving the obstruction. When he was discharged from the hospital on the twenty-ninth day, serous fluid was still draining from the rectus incision. No frank pus was ever seen.

Conclusions

1. Chronic, fibrous, encapsulated peritonitis is a medical entity of obscure etiology which has not been recognized as such in America.

2. This condition can be differentiated from intestinal obstruction and other abdominal emergencies only at operation or autopsy.

3. Spinal anesthesia is valuable in relieving obstruction associated with this disease.

4. Nearly all the patients recover without sequelae, and no recurrence has been reported.

THE TREATMENT OF STATUS ASTHMATICUS

E. G. GOODMAN, M.D.

DURHAM

While many patients with asthma are able to get along with an occasional injection of adrenalin and other symptomatic remedies which they have found to be of value, a number of asthmatics have prolonged attacks of alarming severity. The term *status asthmaticus* is reserved for those cases in which persistent and severe dyspnea lasts for more than three days and fails to respond to the usual remedies. Hospitalization usually is necessary.

Following is an outline of procedure which we have found useful in treating such patients after they are admitted to the hospital.

For Immediate Relief

1. *Adrenalin chloride* (1-1000), 0.25-0.5 cc. subcutaneously. Usually the patient has had repeated injections of this drug previously and is "adrenalin-fast." If definite improvement does not occur within twenty minutes it is needless to give more of this drug.

2. *Aminophylline* (*Searle*), 10-20 cc. (250-500 mg.) intravenously. The "adrenalin-fast" patients may be relieved immediately by this procedure. Within a few minutes respiration becomes easier and the patient soon has an attack of coughing, with expectoration of considerable mucus. If no improvement is noted there is no need to repeat the dose within two hours. Both adrenalin and aminophylline are effective in small doses if they are effective at all. Symptoms of vertigo, tachycardia, sub-

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sternal distress, nausea and vomiting may follow the injection of aminophylline, but they usually subside within a few minutes. Aminophylline is not a dangerous drug in uncomplicated asthma. Since it is essentially a vasodilator, it should not be given in cases of coronary occlusion where the blood pressure has been materially reduced and a further reduction might embarrass the coronary circulation.

3. If no improvement follows the first two procedures, the following mixture may be given intravenously over a period of one hour or more:

1000 cc. of 5 per cent dextrose in saline
20 cc. of aminophylline
0.5-1.0 cc. of adrenalin chloride (1-1000)

To Prevent a Recurrence

Sedation. Sodium amytal, 0.2 Gm. orally, serves to allay the patient's apprehension and encourage relaxation. It is a good plan to give a sedative for several nights at bedtime, to be repeated in two hours if necessary. It is poor treatment to use large doses of sedatives; such drastic measures as the rectal instillation of avertin or ether in oil are rarely necessary, and may be dangerous.

Aminophylline. Suppositories of aminophylline have a delayed and prolonged effect on the bronchial musculature. A suppository at bedtime may prevent a nocturnal paroxysm, although suppositories are relatively ineffective in relieving an acute, severe asthmatic episode. Aminophylline tablets (0.1 Gm.) may be given three times daily and at bedtime—or better, aminophylline may be given with ephedrine sulfate and phenobarbital (see "asthma tablets" below). Powdered aminophylline may be given in a retention enema when oral administration of the drug produces nausea.

Adrenalin. This drug (1-500) in peanut oil gives prolonged adrenalin effect (six to ten hours). The dose is 1 cc. subcutaneously or intramuscularly.

Asthma tablets (A.E.P. tablets, Reaco). These have the ideal combined action of aminophylline (0.1 Gm.) to relieve bronchospasm, ephedrine sulfate (16 mg.) to constrict the vessels of the bronchial mucosa, and phenobarbital (16 mg.) to counteract the stimulant effect of ephedrine on the central nervous system. They are quite effective in preventing recurrences. They should be given every four hours for ten doses, or taken whenever wheezing or tightness is first noted, and repeated in four hours.

Sulfonamides and penicillin. A course of one of these drugs is indicated when there is active sinusitis, pharyngitis or bronchitis (evidenced by leukocytosis, fever, purulent secretions, increased sedimentation rate, and a Weltmann reaction of less than 6). The asthma may completely disappear after a purulent bronchitis is cleared up. Nose drops of neosynephrin, ¼ per cent in saline, are useful in promoting drainage of the sinuses.

Inhalations. Inhalation of vaporized paregoric, tincture of benzoin, or menthol affords soothing relief when the patient has a harrassing cough or a feeling of substernal soreness.

Nasal oxygen. This is indicated when cyanosis is a conspicuous feature, as in patients with pulmonary fibrosis, advanced emphysema, and cor pulmonale, or in cases where the smaller bronchi are obstructed by plugs of tenacious mucus. In a simple asthmatic attack oxygen is unnecessary; it aids the respiratory difficulty but little and tends to annoy the patient, thus preventing him from obtaining much-needed rest. The use of oxygen in uncomplicated asthma is an admission of therapeutic defeat, as efforts should be directed toward relieving the bronchospasm, edema and exudation.

Digitalis. This drug is important in cor pulmonale and so-called "cardiac" asthma. The judicious use of digitalis produces dramatic results in those cases where myocardial weakness is prolonging the dyspnea. When signs of circulatory failure are present and the heart is enlarged, digitalization is indicated.

Other drugs. Theoretically, the iodides and atropine preparations should be effective, but clinically they have been disappointing in our experience. Small doses of magnesium sulfate intravenously relax the bronchospasm and have a sedative effect on the central nervous system.

Abdominal support. Respiration may be improved by a well fitted girdle which pushes the diaphragm up, thus aiding in the expiratory phase of respiration.

Diet. A liquid diet should be given for the first day or two, and after that a regular diet may be given. When a patient has been relieved of the acute attack, it is a good principle to give a soap-suds enema, followed by 15 Gm. of magnesium sulfate orally, in order to rid the gastrointestinal tract of any food allergen that might still be

causing trouble. Foods to which the individual has shown a significant skin sensitivity should be eliminated from the diet. Wheat is a common offender.

Surroundings. Since many asthmatic patients are sensitive to feathers, it is wise to have a dust-proof cover put on the pillow or to use a kapok pillow. Flowers should be prohibited. Air-conditioned rooms are desirable, but unfortunately are not often available at present.

Don't's

1. *Never* give morphine. The patient may go to sleep and not wake up. This danger has already been pointed out by Vaughn and others. Morphine depresses an already overtaxed respiration, increases the bronchospasm, and greatly diminishes the cough reflex, thus promoting stagnation of the bronchial secretions. In addition, the danger of addiction is ever present.

2. Don't over-treat with aminophylline and adrenalin; tachycardia, nausea, headaches and nervousness result.

3. Don't depress all body functions by over-sedation.

4. Don't forget that codeine and aspirin are potentially dangerous drugs, as some allergic patients show a marked hypersensitivity to one or both of these preparations.

Follow-Up Treatment

When the patient has been free of asthma for several days and is able to get along without adrenalin and aminophylline, skin tests should be done in an attempt to find the offending allergens. Elimination or desensitization should then be carried out in a systematic manner. An autogenous vaccine is used alone or in combination with the extrinsic allergens when bacterial allergy is present. The usual method of desensitization is to begin with injections of a dilute solution of the allergens and gradually increase the dosage. Clinical improvement is usually apparent when the patient is able to tolerate a fairly concentrated solution of the allergens. Then a maintenance dose is given weekly or every two weeks until the patient has been asymptomatic for at least six months. If the asthma is seasonal the injections should be continued through the period when attacks are most apt to occur.

HYPERINSULINISM AND HYPOGLYCEMIA

ALBAN PAPINEAU, M.D.

PLYMOUTH

Hyperinsulinism, also called the "hunger disease," is the antithesis of diabetes mellitus (hypoinsulinism), and results from an excessive secretion of insulin by the islands of Langerhans. Although hyperinsulinism has doubtless existed as long as has diabetes, it was not recognized until much later, just as hyperthyroidism for a long time was considered to be a nervous disorder. The first pathologically proven case of hyperinsulinism was reported in 1927 by Wilder[1]. The patient was a physician, aged 40, who had recurring attacks of unconsciousness and convulsions, during which his blood sugar was found to be as low as 30 mg. per 100 cc. An inoperable carcinoma of the islands of Langerhans was found.

Dysinsulinism is a condition associated with uncontrolled secretion by the islet cells, resulting in hyperinsulinism alternating with hypoinsulinism[2]. The existence of this disease indicates a common origin for diabetes and hyperinsulinism.

Contrary to previous belief, hyperinsulinism has of recent years been found to be a rather rare condition, whereas hypoglycemia due to other causes is very common.

Symptoms

The symptoms of hyperinsulinism and of hypoglycemia in general are so many and so bizarre that it is difficult to classify them. They depend somewhat upon the severity of the disease. As in many diseases, the milder forms are harder to recognize. The patient complains most frequently of excessive hunger, weakness, nervousness, anxiety, and irritability, all coming one or two hours after meals, and all relieved by eating. Symptoms suggesting insulin shock, such as trembling, profuse perspiration, and tachycardia, may also be present. Headaches and inability to concentrate on work late in the afternoon are observed. Fatigability, insomnia, vertigo, dyspnea, and smothering spells have also

Read before the Second District Medical Society, Greenville, January 25, 1945.

1. Wilder, R. M., and others: Carcinoma of the Islands of the Pancreas; Hyperinsulinism and Hypoglycemia, J.A.M.A. 89:348-355 (July 30) 1927.
2. Harris, Seale: Neurologic Hyperinsulinism, South M. J. 28:959-965 (Nov.) 1935.

been noted[3]. In these mild cases, the fasting blood sugar is usually between 75 and 60 mg. per 100 cc. This type is not always diagnosed by a single blood sugar determination.

In moderately severe cases, the symptoms just outlined are more exaggerated. Many patients with this type of hypoglycemia, especially men, become obese. Efforts to reduce weight in unrecognized cases may produce symptoms resembling those of severe hysteria or psychosis. Brief mental lapses, resembling petit mal, may occur. The fasting blood sugar level in moderately severe cases usually ranges from 60 to 50 mg. per 100 cc.

Severe hypoglycemia may produce attacks of unconsciousness, sometimes accompanied by convulsions. Delirium occasionally occurs, and strait jackets have been used on some patients. Wilder states that it is probable that many of these cases are diagnosed as hysteria, epilepsy, or schizophrenia. In some cases, severe abdominal pain may lead to operation. The fasting blood sugar in these severe cases is usually below 50 mg. per 100 cc.

Classification of Hypoglycemia

A knowledge of the physiology of hypoglycemia helps us to understand the symptoms. The types of hypoglycemia may be classified as follows[4]:

I. Organic, due to
   A. Utilization of glucose faster than it can be supplied (hyperinsulinism)
   B. Failure of the liver to store, synthesize, or secrete glucose.

II. Functional

Organic

The term hyperinsulinism applies only to hypoglycemia which is caused by the body's utilizing glucose faster than it can be supplied; therefore, unless a tumor of the islet cells or some other cause for over-secretion of insulin is present, it is better to use the term hypoglycemia. The second organic cause of hypoglycemia—hepatic disease—may result in a high plateau type of blood sugar curve similar to that seen in diabetes mellitus, with the exception that the fasting level is usually abnormally low. The liver damage may be due to ascending infectious cholangiolitis, toxic hepatitis, diffuse carcinomatosis, or fatty degeneration. Various tests of liver function and investigation of the gallbladder aid in the diagnosis.

Functional

The functional type of hypoglycemia is not well understood. It is known that the major symptoms in hypoglycemia are due to an inadequate supply of glucose to the central nervous system, which requires the presence of glucose in order to function. Some investigators, notably Portis[5] of Chicago, and others primarily interested in psychosomatic disease, say that fatigue resulting from emotional upsets may cause a disturbance of the carbohydrate metabolism. As evidence of the effects of the emotions on the blood sugar level, Portis pointed out that a large dose of atropine given before a sugar tolerance test raises a hypoglycemic curve to the normal range. Chart 1 shows the average blood sugar curve of 30 normal patients as compared with the average of 55 patients with fatigue. Chart 2 demonstrates the effects of atropine in raising the sugar tolerance curve of fatigued patients.

On the other hand, Reimann of Philadelphia states that it is not clear whether the nervous fatigue alters the carbohydrate mechanism or whether the hypoglycemia causes the nervous symptoms. Anderson[6] reported the histories of two diabetic children who developed mental symptoms associated with hypoglycemia. In the first, the hypoglycemic coma which developed after an excessive dose of insulin lasted four days, and the patient then showed gross generalized dementia. There was only a partial recovery after fifteen months. The second patient was a diabetic boy who had always been sensitive to insulin. He showed a behavior disorder which was most manifest when the blood sugar was low. While in a hypoglycemic state, he stabbed another child. After the blood sugar was regulated, he improved considerably in both intelligence and behavior.

Keating and Wilder recognize the term "nervous hypoglycemia" as referring to hypoglycemia associated with a hyperirritable autonomic nervous system. In many of these cases, however, carbohydrate lessens or removes the nervous symptoms.

3. Greene, R.: Cardiac Neurosis as Manifestation of Hypo-

5. Portis, S. A.: The Medical Treatment of Psychosomatic

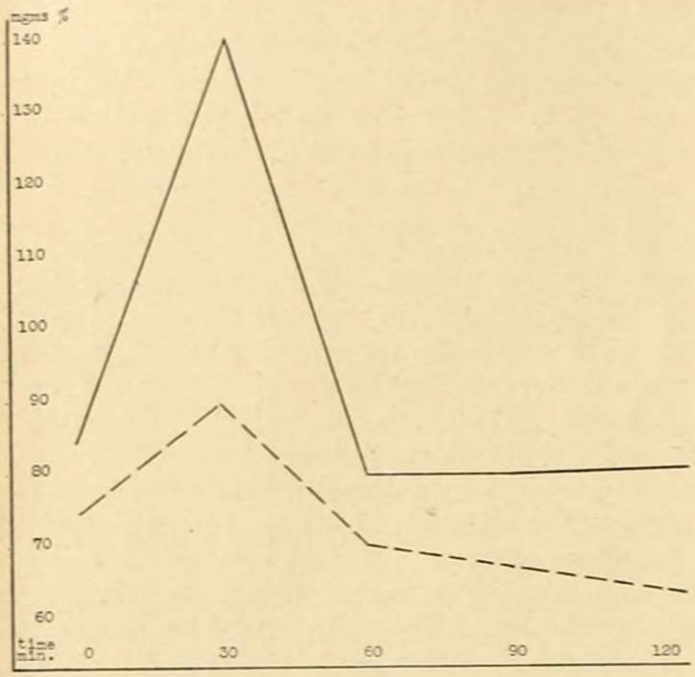

Chart 1. Intravenous glucose tolerance test: solid line, average normal curve of 30 patients; broken line, average of 55 patients with fatigue. (Portis[5])

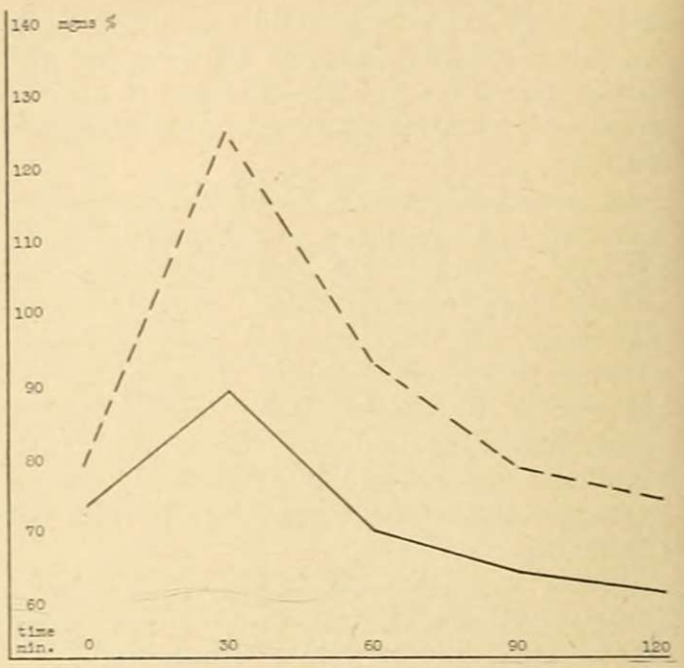

Chart 2. Intravenous glucose tolerance test: solid line, average curve of 55 patients with fatigue; broken line, average curve of 15 of these patients given 1/50 grain of atropine sulfate hypodermically one-half hour before administration of glucose. (Portis[5])

This is the old problem as to which came first, the chicken or the egg. In spite of a large amount of creditable research, agreement is lacking in regard to the mechanism whereby the various hormones control the blood sugar[7].

Michael[8] demonstrated the effects of exercise on blood sugar by determining the blood sugar levels in 30 golfers who played foursomes after an average lunch (chart 3). A definite drop in blood sugar occurred at the ninth hole; the lowest level (an average of 55 mg. per 100 cc.) was reached at the thirteenth hole. Lower levels were found in the more nervous and less accomplished golfers than in the more able and poised golfers. Better scores were obtained when the golfers were fed candy at the ninth hole.

Diagnosis

According to Harris, a tentative diagnosis of hypoglycemia may be made from the history, and if the patient's symptoms are relieved by carbohydrate, the diagnosis may be assumed to be correct. Further study is necessary, however, to differentiate the type. A positive diagnosis can be made only by carbohydrate tolerance tests. The usual drop below the fasting level in this test is due to the stimulating effect of glucose on insulin production. An initial lag in insulin supply results in a high level at first, followed by a fall below the normal level. In many cases the hypoglycemia does not appear until after the fourth hour following the glucose meal. Symptoms should be watched for after the third hour. It has been stated that it is just as possible to have hypoglycemic reactions when, in the course of one to three hours, the blood sugar is brought from a level of 300 to 100 as when the blood sugar is brought from 150 to 50[9]. Variations in diet before the tolerance test may affect the results.

Treatment

Organic hypoglycemia

Indications for exploration of the pancreas[10] are (a) absence of extra-pancreatic causes of hypoglycemia, (b) abnormally low blood sugar levels and rapid relief by dextrose, (c) repeated fasting blood sugar levels below 50 mg. per 100 cc. when the patient has been on an adequate diet, (d) reduction of the fasting blood sugar level to 40 mg. or below by carbohydrate restriction. A fair trial with diet is indicated be-

7. Thomson, D. L.: The Anterior Lobe of the Hypophysis in Intermediary Metabolism, J.A.M.A. 115:2169-2174 (Dec. 21) 1940.
8. Michael, Paul: Blood Sugar Studies on Golfers, J.A.M.A. 115:286-287 (July 27) 1940.
9. Dyer, W. W.: Masked Hypoglycemia, Pennsylvania M. J. 47:1210-1212 (Sept.) 1944.
10. Bell, H. G., Goldman, L., Craig, L. S., and McCorkle, H.: Hyperinsulinism: Report of Surgical Treatment of 3 Patients, Surgery 15:681-692 (May) 1944.

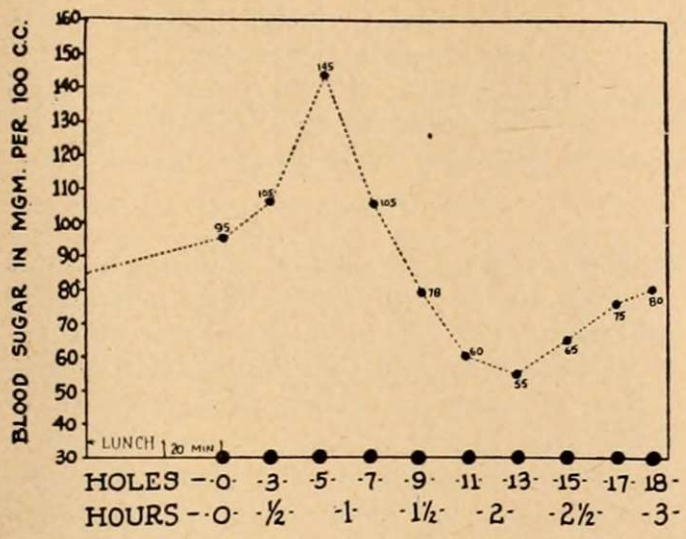

Chart 3. Composite curve of blood sugar readings in a golf foursome taking three hours to complete. A definite drop begins at the ninth hole, reaching its lowest level at the thirteenth. (Michael[8])

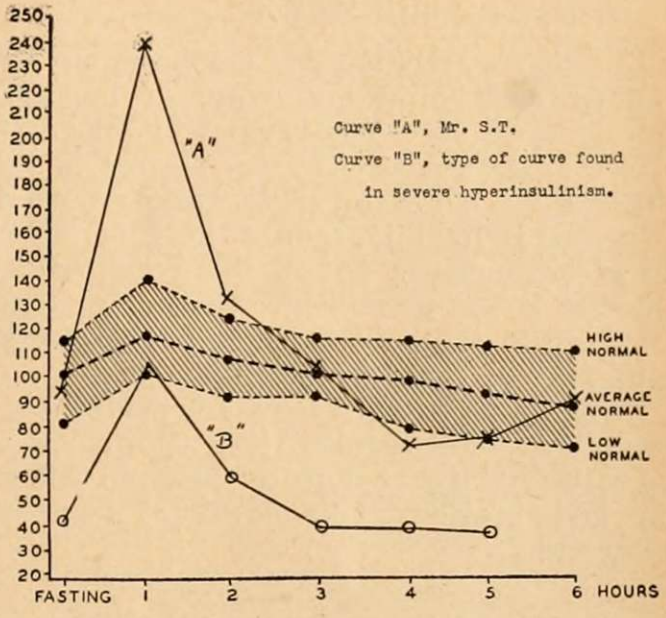

Chart 4

fore operation is decided on. Many of these patients respond to a low carbohydrate, moderately high fat, and high protein diet divided into the usual three meals, with interval and bedtime feedings. If there is associated hypothyroidism or evidence of pituitary dysfunction, these should be treated. When an unquestionable diagnosis of true hyperinsulinism is made, however, the chances of finding a pancreatic abnormality at operation are better than 50-50. Removal of a tumor of the islet cells usually results in cure, if the lesion is non-malignant.

Time will not permit a discussion of the treatment of hepatic disease associated with hypoglycemia.

Functional hypoglycemia

The functional types, where the autonomic nervous system is at fault, may be aided by atropine, a high protein diet, and an attempt to remove the cause of the emotional disturbance. Except in cases where temporary hypoglycemia is brought on by exercise, carbohydrates should not be given to relieve the hypoglycemic attacks. As has been pointed out, carbohydrates raise the blood sugar level temporarily but stimulate the pancreas to produce more insulin, thus creating a vicious circle.

Case Report

Mr. S.T., a white male aged 30, was first seen on October 7, 1944, immediately after he had recovered from a transient loss of consciousness. Earlier in the year he had been seen by a psychiatrist in another state because of weakness, excessive nervousness, and a fear of disaster and impending death. These symptoms later proved to have some relation to meals, and a diagnosis of hyperinsulinism was made on the basis of one fasting blood sugar level. The patient kept sugar tablets with him at all times, and ate them very often throughout the day. They relieved his symptoms for an hour or so, but he had been getting gradually more nervous and having frequent spells of coma.

When this patient was examined on the following day, an unusual type of blood sugar curve was found (chart 4). The patient was very nervous and weak at the time the fasting blood specimen was taken, and had a definite fear of disaster. This left him after the glucose meal, and recurred after the fourth hour, when his blood sugar level was 75 mg. per 100 cc. Going without breakfast for a metabolism test was an ordeal. His fear of impending disaster was so great that he could only be persuaded to go through with it by having a nurse stand over him with a hypodermic of adrenalin and a sugar tablet. He did not require either of these, however, and his metabolic rate was +4. Other routine laboratory tests, including the blood sedimentation rate, were normal. The blood cholesterol was 190 mg. per 100 cc.

This patient's sugar tolerance curve (chart 4) indicates that this may be a case of dysinsulinism. It cannot be said that he has diabetes, and neither does he have typical hypoglycemia; yet carbohydrate relieves his symptoms. A repeated glucose tolerance test showed a peak of only 133 mg. per 100 cc. and a low point of 58 mg. per 100 cc. For three months this patient was kept on phenobarbital and a diet low in carbohydrate and high in protein and fat, with feedings between meals and at bedtime. Any quickly assimilated form of carbohydrate was avoided. The patient showed definite improvement at first, but never lost his weakness and nervousness. Dr. Seale Harris of Birmingham was consulted. He felt that this patient has a definite psychoneurosis and recommended atropine with phenobarbital three times a day. This regimen is proving very helpful. Harris feels, as does Dyer[9], that the rapidity of the fall in the blood sugar level has something to do with the symptoms of hypoglycemia.

Conclusion

In closing, let me lay emphasis on the milder and border-line types of hypoglycemia. Such cases are hardest to recognize. Even slight deviations from normal in the blood sugar curve can cause weakness, nervousness, irritability, and a host of other vague symptoms. Often the symptom of hunger is not prominent. More often than we suspect, insomnia is due to hypoglycemia and may be cured by a bedtime snack.

When a physician becomes hypoglycemia-conscious, he recognizes the condition frequently and relieves many patients whom he had previously diagnosed as hopeless neurotics.

THE MANAGEMENT OF THE DIABETIC PATIENT

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RALEIGH

The successful management of diabetes is dependent on a thorough understanding of the disease and of the patient. The management of the patient is often far more difficult than the management of the disease.

The actual cause of diabetes is not known. Following the introduction of insulin, there was a tendency to attribute diabetes to pancreatic disease; later, that theory was discredited, although it is possible that the pancreas does play a part. The pituitary gland is known to be important as a cause of diabetes—doubtless far more important than the pancreas. The thyroid and suprarenals also seem to be involved. Diabetes affects cholesterol metabolism, causing damage to the vascular system by the deposit of plaques in the intima of arteries; the resultant arteriosclerotic changes lead to occlusion of arteries, gangrene, and other complications.

Incidence

The increased incidence of diabetes during the past few decades appears to have resulted chiefly from the concomitant increase in longevity. Many more persons now reach the diabetic age—45-55 years. Owing to the improved methods of treatment, the average duration of the disease has increased from three years to twenty years or more. This single factor gives us seven times as many diabetic patients per hundred thousand population[1]. The fact that the medical profession has become more interested in the disease and has used better diagnostic methods since the development of insulin has also increased the apparent incidence of diabetes.

Diagnosis

The correct diagnosis of diabetes mellitus depends on the finding of a blood sugar level of 140 mg. per 100 cc. or more when the patient is fasting and two hours after a meal either of average carbohydrate content or containing 75-100 Gm. of glucose. Glycosuria is always an indication for blood sugar determinations, but alone is not sufficient evidence for the diagnosis of diabetes. Unless blood sugar determinations are done, errors in diagnosis will be made. Insulin shock is very likely to result from treating renal glycosuria with insulin. In arteriosclerotic patients this is often serious and may be fatal. The sugar content of the urine may be very high in patients with a normal blood sugar level and no diabetes, while on the other hand patients with a high renal threshold may have no sugar in the urine and a very high blood sugar level. I have found renal thresholds as high as 270 to 400 mg. per 100 cc. in diabetic patients. Joslin reported that of 9000 patients referred to him as diabetics, 15.8 per cent had non-diabetic glycosuria[2]. Such patients are likely to develop diabetes later. They need dietary regulation and correction of obesity.

The onset of diabetes is usually insidious; fulminating cases are rare. Polyuria is usually the first symptom. The patient complains of passing large amounts of urine too frequently during the night. Increased thirst and hunger follow. Weakness is also an early and progressive symptom. Pruritus of the vulva or thighs of the female, or of the glans penis and prepuce of the male, frequently causes the patient to seek the first medical advice. Loss of weight occurs somewhat later, and at about the same time various skin lesions, especially boils and carbuncles, may appear. Pains in the extremities are very annoying to some patients.

Treatment

The present trend in the treatment of diabetes is more conservative than at any time

Presented before the Wake County Medical Society, Raleigh, September 14, 1944.

1. Joslin, Elliott P., Root, H. F., White, Priscilla, and Marble, Alexander: Treatment of Diabetes Mellitus, Ed. 5, Philadelphia, Lea & Febiger, 1935, p. 29.
2. Joslin, Elliott P.: Unclassified Glycosurias; Their Outcome and Significance, Proc. Internat. Assemb. Inter-State Post-Grad. M. A. (1930) 6:330-332, 1931.

in the history of the disease. We hear very little now of such radical measures as starvation, high fat, or high carbohydrate diets. We have learned that it is necessary to treat not only the disease, but the patient as well. Complete cooperation of the patient with the physician is essential for the successful management of the disease. The patient must learn early that he must be honest with himself and with his physician; that cheating will injure him more than the physician.

Diet

Treatment must begin with the diet, and diet will remain the most important part of the treatment. Whatever diet is prescribed must be followed strictly, and no deviation is permissible at any time. The diet prescribed must be conservative and adequate and must be one which the patient can afford and can arrange. It is folly to prescribe a diet that the patient cannot get.

Dietary fads fade out rather quickly and the pendulum swings back to conservatism. The modern, conservative ideas as to diet are illustrated by the following statement from Joslin[3]: "Do not make the fat too high or the carbohydrate too low. Strike a balance. Do not try to treat the diabetic like an epileptic on the one hand or like a normal individual on the other. As for protein, use discretion." We could very well add: "Be conservative and use discretion in everything connected with the treatment of diabetes."

The diet should provide approximately an average dietary arrangement. Even carbohydrates should not be restricted too greatly. An average adult in this climate consumes about 200 Gm. of carbohydrate per day. Farther north, carbohydrate intakes seem to be somewhat higher. Generally speaking, an adult diabetic patient will need about 150 Gm. of carbohydrate a day. The carbohydrate intake must be adequate to furnish glycogen for storage as well as fuel for the immediate metabolic needs of the body.

The daily protein intake of an adult patient should be a little more than 0.5 Gm. per pound of body weight, or about 80 Gm. Enough fat should be allowed to make up the remainder of the caloric requirements, while at the same time keeping the cholesterol metabolism as nearly normal as possible. This will help to protect the gallbladder and to prevent the formation of

The caloric requirement of a patient at rest will be much less than that of the same patient at work. If the patient is overweight, the daily allowance of calories should be low enough to permit him to lose weight slowly until he weighs approximately 10 per cent below the average for his age, sex, and height. The diet must, of course, provide the necessary vitamins and minerals.

Exercise

Exercise is second in importance in the treatment of diabetes. The amount of exercise will necessarily depend to some extent on the occupation of the patient. The patient should take a uniform amount of exercise each day, regardless of work, weather, or other factors. Exercise increases the body metabolism and causes more carbohydrate to be metabolized with greater efficiency. The greater the amount of exercise—within reason—, the less the amount of insulin that will be needed. A sudden large increase in the amount of exercise may well result in insulin shock; similarly, a decrease in exercise is likely to cause an elevation of blood sugar. The type of exercise taken is of little importance; the amount is the principal thing.

Insulin

Insulin should be placed third in relative importance among the therapeutic measures employed. Until diet and exercise have been given a fair trial, no patient should be given insulin except in an emergency, and then with great care. Very often insulin will not be required, as many patients can have high blood sugar levels restored to normal by diet and exercise alone. Such patients are likely to suffer insulin shock if they are given insulin.

After a few days of diet and regular exercise a blood sugar determination should be made and the dose of insulin, if any is required, should be regulated according to the blood sugar level. For most patients, a single daily dose of protamine-zinc insulin will be sufficient[4]. Other patients will need plain insulin or a combination of protamine-zinc and plain (or regular) insulin. If a single dose of insulin, especially the protamine-

4. (a) Hagedorn, H. C., Norman Jensen, B., Krarup, N. B., and Wodstrup, I.: Protamine Insulinate, J.A.M.A. 106:177-180 (Jan. 18) 1936.
(b) Root, H. F., White, P., Marble, A., Stotz, E.: Clinical Experience with Protamine Insulinate, J.A.M.A. 106:

zinc insulin is used, it is usually best to give it shortly before breakfast. Other doses, if required, are spaced according to the needs of the individual patient. For those patients who do not tolerate protamine-zinc insulin well and have insulin reactions in the night, there is a new type of insulin, globin insulin, which keeps the blood sugar at a low level during the day but allows it to rise during the night. Usually, however, protamine-zinc is the insulin of choice, since it keeps blood sugar levels fairly constant at all times throughout the twenty-four hours, except for a natural rise after each meal, with a return to normal within two hours. In this way the natural blood sugar curves of non-diabetics can be approximated. It is well to run blood sugar determinations two hours after meals to see whether the level returns to normal as it should. When there is difficulty in regulating the dosage of insulin, blood sugar determinations should be made frequently throughout the twenty-four hours. Then the dose, type, or arrangement of insulin administration can be altered to suit the patient's requirements.

General measures

Dress and personal hygiene come next in order of importance in the management of diabetes. Extremes of heat and cold may lead to the development of gangrene. Ice caps and hot water bottles must not be used, although warm water bottles are permissible. The patient should always dress warmly enough and as comfortably as possible. Wool socks and gloves should always be worn in cold weather. Shoes should fit correctly and have good thick soles. If the patient should get wet, especially in cold weather, he should lose no time in securing a warm bath and dry clothing.

Strict personal hygiene should be observed, with particular attention to the feet[5]. The feet, being the most dependent part of the body, have the highest blood pressure and are likely to show the earliest signs of arteriosclerotic changes. Thus the volume circulation of blood to the feet is decreased, predisposing to the development of gangrene. A large percentage of diabetic patients have fungus infections of the feet, and we have noted that such infections appear to be worse on the feet of patients who develop gangrene. The feet should be washed each night and dried thoroughly. Corns should be prevented by properly fitting shoes, but if they develop they should have special care. The practice of cutting corns frequently leads, in diabetic patients, to gangrene of the feet. The most frequent causes for the development of gangrene of the feet in diabetic patients are: (1) corns, most dangerous when improperly cut; (2) fungus infections; (3) trauma, to which the feet are very susceptible.

5. Williams, John R., Sr.: Diabetes Mellitus, with Special Reference to Complications Involving the Feet, North Carolina M. J. 4:129-133 (April) 1943.

Obligations of the Physician

The physician has special duties and obligations to the diabetic patient. He should make blood sugar determinations often enough to know that the blood sugar level remains normal. That is the only method by which the complications of diabetes can be avoided. The urine should be examined occasionally with the possibility of nephritis and renal infections in mind, and these should be eliminated as quickly as possible, before much damage can be done. A relatively slight urinary infection may upset the blood sugar level and, unless well controlled, may precipitate coma. Acetone and diacetic acid should not be found in the urine of any patient who is on the proper regimen and is following it scrupulously. If present, they are an indication for a thorough investigation of the entire outline of treatment and for revisions at some point or points.

The physician should make frequent inspections of the patient's feet to see that the patient is taking proper care of them. Fungus infections should be treated conservatively. Whitfield's ointment is ordinarily considered to be contraindicated in diabetes, and some wet application such as potassium permanganate is preferable. Corns, bunions and callouses should receive proper care, and the patient should never be allowed to cut them.

Evidences of disturbances of cholesterol metabolism are often danger signs. Early arteriosclerosis should receive attention and conservative treatment. In the presence of hypertension and arteriosclerosis insulin dosage must be watched much more closely; insulin is usually given in smaller doses.

Among the conditions which may cause the body to require a higher blood sugar than the normal are myocarditis, arteriosclerosis, and other degenerative diseases. In such cases, the blood sugar should not be kept much below 150 mg. per 100 cc., and if the

blood sugar level has been high over a long period, it should be lowered to this point only very slowly and gradually. Such patients are usually elderly, and we should remember that the older a person is, the less damage he is likely to suffer from diabetes.

Complications

The complications of diabetes are numerous, but their incidence will vary in inverse ratio to the care used by the attending physician and the patient. Complications are quite rare if there is proper cooperation between the patient and physician. Should complications develop, early diagnosis and proper treatment will often prevent them from becoming serious. All complications of diabetes require conservative treatment. Radical measures are dangerous.

Infection

Infection in diabetic patients is a complication that requires the physician's closest attention. Insulin is one of our greatest allies in combatting this complication.

The toxic products of infection rapidly produce an increased acidosis. This in turn lowers the tolerance to sugar, and the diabetes becomes greatly aggravated.

The treatment of infection in diabetic patients is identical with the treatment of infection not complicated by diabetes, except that closer attention must be paid to acidosis. A much larger dosage of insulin is required during infections.

After the infection has been controlled, the sugar tolerance can be restored to its previous level after a varying period of careful treatment.

Coma

Coma is especially likely to develop during infections or following indiscretions of diet or in cardiac or circulatory failure. Hospitalization is advisable. The blood sugar level must be determined and frequent moderate doses of plain insulin must be given. Glucose should be given only if it is needed to buffer the insulin to prevent too great a drop in blood sugar. Normal saline should be administered to bolster the circulation and supply fluids and salt. If serum proteins are diminished, they should be supplied by blood plasma or by transfusions of whole blood. Adrenalin, rest, warmth, and cardiac stimulants may be of value. As the patient improves, it is usually advisable to switch to protamine-zinc insulin.

Failures in the treatment of coma with insulin have resulted from a failure to recognize that hyperglycemia *per se* is not the cause of coma but that each etiological agent must be discovered and treated.

Gangrene

Gangrene occurs in about 11 per cent of diabetic patients. It is due to endarteritis with a resultant shutting off of the blood supply, and is usually seen in the feet. The incidence is apparently not influenced by weather or climate. Poor hygiene and neglect are probably the most important factors in its causation. The gangrenous part should be kept dry, warm, and at body level. Free drainage is essential. Peroxide or other oxidizing agents are indicated. Surgery may be required at times, but the dangers from shock are extreme. Conservatism in treatment is probably more important here than in any other complication of diabetes.

Prognosis

The prognosis in diabetes, as in many other diseases, depends chiefly on the treatment and on the attitude and cooperation of the patient. The physician may prescribe a perfect diet and the correct dose of insulin, but unless the patient cooperates fully and follows all directions, very little improvement can be expected.

Complications play an important role in the prognosis of diabetes. The introduction of insulin, however, has brought about startling changes in the prognosis of practically all complications of diabetes.

The mortality from diabetic coma has been reduced from 61 per cent to 20 per cent and there has been a corresponding drop in the incidence of coma.

Tuberculosis associated with diabetes no longer is necessarily fatal. Insulin permits the patient to take a high calorie diet, which formerly would have led to the development of ketosis.

Diabetic gangrene is more easily handled with insulin. It is now almost entirely a medical condition.

The diabetic woman, with the aid of insulin, can go through a more or less normal pregnancy and be delivered of a normal child. The chances are only about 4.6 in 100 that the child will be diabetic.

In contrast to the above picture, however, is the prognosis of arteriosclerosis in diabetic patients. During the past few years

the incidence of arteriosclerosis in diabetes has increased from 15 per cent to 47 per cent. The reason is not known. Joslin has raised the question as to whether a high blood sugar may not at times be necessary to nourish a diseased heart muscle. There are some types of diabetes in which the ordinarily accepted normal level for blood sugar is too low, and in such cases the blood sugar should be maintained at a somewhat higher level.

Conclusion

The outlook for diabetic patients is excellent if the proper treatment is given and if there is good cooperation between the patient and the physician. Blood sugar determinations are essential in order to keep blood sugar levels normal.

The diabetic patient should live a normal life, active and gainfully employed, if possible, and should be trained to be optimistic about the condition. The life expectancy of a diabetic patient is now unlimited, and with proper treatment he can live a long natural life and finally die of some unrelated cause.

THE SYNERGISTIC EFFECT OF ACETONE AND ALCOHOL IN THE PRODUCTION OF SYMPTOMS OF COMA

CHARLES H. REID, JR., M.D.

WINSTON-SALEM

The ingestion of alcohol is known to precipitate symptoms of acidosis or coma in patients with diabetes. The relative importance of alcohol and the ketosis of unregulated diabetes in such cases has received scant attention. The interest aroused in the attending staff of this hospital by the admission of a diabetic patient intoxicated with alcohol stimulated the experimental studies reported in this paper.

Case Report

A 19 year old white male was admitted to the North Carolina Baptist Hospital in a semi-comatose condition. The patient had had moderately severe diabetes since the age of 10 years. At the age of 15, he was admitted to another hospital in mild acidosis. He had otherwise been in good health and had had no known infection. For two years he had indulged in frequent drinking bouts, during which he neglected his diet and insulin. During the twelve hours before admission, the patient had been drinking beer and probably whiskey. He had taken no food for fifteen hours and had received no insulin for three days until two hours before admission, when his mother gave him 75 units of protamine-zinc insulin.

The patient was drowsy and relaxed. Respirations were deep and increased in rate; the breath had a "fruity" odor. Except for dehydration, the remainder of the physical examination was negative. He could be aroused from stupor, but responded slowly to questioning, and exhibited a mild degree of euphoria.

The urine gave a 4 plus reaction for sugar, acetone and diacetic acid. Two hours after the administration of 30 units of regular insulin, the blood sugar was 225 mg. per 100 cc. and the carbon dioxide combining power was 25 volumes per cent.

The patient was vigorously treated with additional insulin and 7 liters of parenteral fluid in the eighteen hours following admission. Clinical improvement was very rapid and the patient was ultimately regulated on a 2,000 calorie diet with a mixture of 35 units of protamine-zinc and 55 units of crystalline-zinc insulin daily.

Factors Producing Coma in Diabetic Acidosis

The acidosis resulting from unregulated diabetes leads to dehydration and the accumulation in the blood of ketone bodies, including acetone, and various phenol derivatives which act as severe toxins to the central nervous system[1]. Any chemical substance which has a toxic or depressant effect on the central nervous system would aggravate the symptoms of acidosis. Alcohol, barbiturates, and inhalation anesthetics are among such substances. The alteration in the metabolism of carbohydrates caused by inhalation anesthetics increases the severity of pre-existing diabetic acidosis[2]. Jetter and McLean[3] produced coma in rats by administering one half the maximal sublethal dose of alcohol, plus one half the maximal sublethal dose of phenobarbital. They found that the same result was produced by the combination as by a maximal sublethal dose of either substance.

A review of the recent medical literature revealed no information regarding the effect on animals or man of combinations of alcohol and acetone — one of the ketone bodies produced in the course of diabetic acidosis. The following experimental study on mice was undertaken in an effort to throw some light on this question.

From the Department of Medicine, Bowman Gray School of Medicine of Wake Forest College, and the North Carolina Baptist Hospital, Winston-Salem, N. C.

1. The Oxford Medicine, New York, Oxford University Press, 1940, vol. 1, p. 71; vol. 4, p. 169.
2. Tice, Frederick: Practice of Medicine, Hagerstown, Md., W. F. Prior Co., Inc., 1941, vol. 9, p. 120.
3. Jetter, W. W., and McLean, R.: Poisoning by Synergistic Effect of Ethyl Alcohol and Phenobarbital, Arch. Path. 36:112-122 (July) 1943.

Table 1

	Animal	Weight (Gm.)	Material Injected	Effect	Final Result
Group A (acetone)	1	33	1.0 cc. 1% acetone	None	----
	2	27	1.0 cc. 10% acetone	Drunk 5 min.	Prompt recovery
	3	33	1.2 cc. 10% acetone	Drunk 15 min.	Prompt recovery
	4	33	1.4 cc. 10% acetone	Semi-coma 10 min.	Slow recovery
	5	35	1.6 cc. 10% acetone	Deep coma 3 hours	Slow recovery
	6	25	1.8 cc. 10% acetone	Deep coma 2 hours	Recovery in 15 hours
	7	28	1.0 cc. 20% acetone	Death in 5 min.	No excess peritoneal fluid found at autopsy
Group B (alcohol)	8		1.0 cc. 9.5% alcohol	Drunk 30 min.	Slow recovery
	9	33	1.2 cc. 9.5% alcohol	Semi-coma 20 min.	Slow recovery
	10	27	2.0 cc. 9.5% alcohol	Light coma 20 min.	Slow recovery
	11	33	2.4 cc. 9.5% alcohol	Deep coma 3 hours	Recovery in 24 hours
	12	33	2.6 cc. 9.5% alcohol	Death in 2 min.	No excess peritoneal fluid found at autopsy
Group C (combination)	13	33	0.9 cc. 10% acetone 1.2 cc. 9.5% alcohol	Deep coma 1 hour	Recovery in less than 15 hours
	14	27	1.0 cc. 10% acetone 1.2 cc. 9.5% alcohol	Deep coma 1 hour	Recovery in less than 15 hours
Group D (control)	15	27	2.0 cc. 0.9% saline	None	----
	16	33	2.0 cc. 0.9% saline	None	----
	17	35	2.0 cc. 0.9% saline	None	----

Experimental Study

Seventeen healthy albino mice weighing between 25 and 35 Gm. were divided into four groups. Group A, consisting of 7 animals, received intraperitoneal injections of acetone diluted with physiological saline solution (0.9 per cent sodium chloride). Group B, consisting of 5 mice, were injected intraperitoneally with ethyl alcohol diluted with physiological saline to make a 9.5 per cent solution. The animals in group C received intraperitoneal injections of a mixture of 9.5 per cent alcohol and 10 per cent acetone. Group D, consisting of 3 animals, received intraperitoneally 2 cc. of saline solution as a control. The results are given in table 1.

Discussion

The symptoms of diabetic acidosis are aggravated by the ingestion of alcohol. The narcotic effect, however, is probably secondary in importance to the loss of the sense of responsibility induced by over-indulgence in alcohol. This mechanism apparently was operative in the case cited. The experiments recorded indicate that alcohol does not increase the potency of acetone, but simply acts as additional ketone body. The tolerance of a diabetic patient for alcohol will be reduced by the extent of any pre-existing acidosis.

The maximal sublethal dose of acetone in mice was found to be approximately 7.2 cc. per kilogram of body weight. The maximal sublethal dose of absolute ethyl alcohol in mice was determined to be approximately 7.6 cc. per kilogram of body weight. A mixture of one half the maximal sublethal dose of each of these substances—acetone and alcohol—affected the state of consciousness in approximately the same degree as did the injection of one maximal sublethal dose of either substance alone.

Summary

1. In the therapy of coma in diabetic patients, the relative importance of the roles played by pre-existing acidosis and possible alcoholism must be evaluated.

2. Experiments in mice indicate that acetone and alcohol have a synergistic effect in inducing coma.

The presence of confidence in the physician as well as its absence is capable of conveying suggestions to the patient. Failure to produce a feeling of confidence in his patients often results from an attitude of inattention and when this is coupled with an appearance of haste and of worry the effect is disastrous. It has been said of Wilmer that he was the greatest authority of his time in the field of ophthalmology, not because he was technically so expert, but because of his interest in people and his understanding of his patients. Out of these attributes he induced in his patients an attitude of serenity and confidence. Such attitudes are not brought about through joshing, sidestepping or clowning; they are the products of genuine interest, of calmness of mind, of clarity of expression and of kindness of disposition.—Paul P. Swett: Suggestion as a Cause of Disease, Connecticut State M. J. 8:687 (Oct.) 1944.

THUMBNAIL SKETCHES OF EMINENT PHYSICIANS

JOSIAH C. TRENT, M.D., *Editor*

ANN ARBOR, MICHIGAN

THE EVOLUTION OF THE ASEPTIC PRINCIPLE IN SURGERY

IX

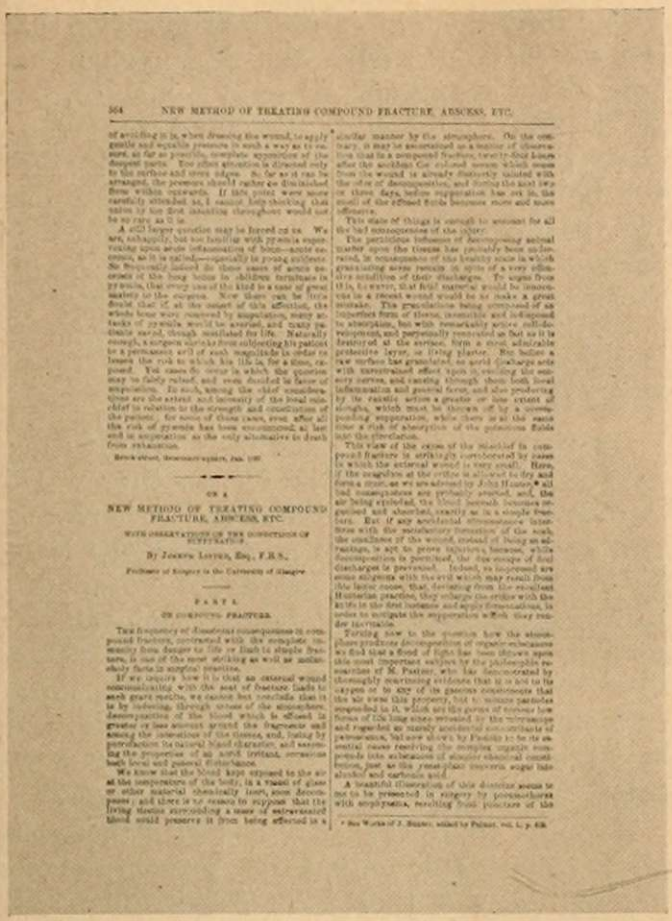
JOSEPH LISTER (1827-1912)

Few events in the history of the world, if judged on a basis of dividends paid in the saving of human life and suffering, rank with the discovery of the antiseptic principle in surgery. With our modern operating rooms and aseptic ritual it is difficult now to visualize the terrible and tragic conditions prevailing eighty years ago, in the pre-antiseptic era. Erysipelas, pyemia, septicemia, hospital gangrene, and tetanus were never absent from the wards, and every operative wound was infected. It is small wonder that "pure" creamy pus, without the tell-tale odor of incipient gangrene, was referred to as laudable. Because of sepsis, little progress had been made during the preceding centuries in extending the scope and indications for surgery, although the number of operations had increased somewhat with the introduction of anesthesia. Even today there are still those who can recall the time when abdominal surgery was hardly thought of, when practically the only operation performed on the thorax was empyema drainage, and when the cranial cavity and spinal cord were virtually unexplored. Amputation, lithotomy, vascular surgery, and the drainage of abscesses made up the bulk of a surgeon's practice. Surgical results were judged by the mortality statistics of amputations, and 25 per cent was considered "very low"; 50 per cent was a more normal figure.

In reviewing the previous sketches in this series on the development of asepsis, we see how few are actually concerned with surgeons or surgery. However, after the cause of fermentation and suppuration had been demonstrated, the surgeons were quick to seize the lead. It fell to the lot of a young English surgeon, Joseph Lister (later Lord Lister), to apply Pasteur's principles to clinical surgery.

Joseph Lister was born April 5, 1827, at Upton, Essex, the son of a well-to-do Quaker wine merchant. He grew up in a scholarly and scientific atmosphere. His father had a sound knowledge of Latin, French, and German and devoted his spare time to the study of optics, a field in which he made great contributions. Lister early attended private schools conducted by the Society of Friends and subsequently proceeded to University College, London, where he was graduated B.A. at the age of 20. He shortly thereafter had a "nervous breakdown," accompanied by a severe depression, which necessitated a long holiday. In 1848 he resumed his studies at the University College Hospital, graduating in medicine in 1852. In 1853 he accepted a position in Edinburgh as assistant to Dr. James Symes and, a year later, married Dr. Symes's eldest daughter. After seven years in Edinburgh, Lister was made Regius Professor of Surgery at Glasgow (1860), and it was here that one of his colleagues, Dr. Thomas Anderson, Professor of Chemistry, first called his attention to the work and writings of Pasteur. To Lister, who had already given much thought to inflammation and suppuration, the knowledge that putrefaction was in fact fermentation, that it was caused by the growth of microorganisms carried on the dust floating in the air, and that it was possible to free the air of these particles by heat, filtration, or chemical action, promised to be the missing link in his search for a method of assuring healing by primary intention. If, indeed, Pasteur's conclusions were correct, the mystery of wound infections would be solved. Lister set about immediately to apply these exciting new ideas to wound healing.

Of the three methods available for destroying the germs in the air, Lister chose the chemical as the most practicable. Fortunately, the first antiseptic which he tried was carbolic acid (German creosote), unpurified but effective. On August 12, 1865, he employed it with complete success in a case of compound fracture, and in 1867 he published his first paper on the subject in the *Lancet*—"A New Method of Treating Compound Fractures, Abscesses, Etc." (fig. 1). Several months later, he read before the British Medical Association in Dublin a paper significantly entitled "On the Antiseptic Principle in the Practice of Surgery," in



554 NEW METHOD OF TREATING COMPOUND FRACTURE, ABSCESS, ETC.

ON A

NEW METHOD OF TREATING COMPOUND FRACTURE, ABSCESS, ETC.

WITH OBSERVATIONS ON THE CONSTITUTION OF SUPPURATION

By JOSEPH LISTER, Esq., F.R.S.,

Professor of Surgery in the University of Glasgow

PART I.

ON COMPOUND FRACTURE.

Fig. 1. The first page of Lister's first paper on the antiseptic system of surgery, which appeared in the Lancet in 1867. (American edition; from the author's collection)

which he described the evolution of the first rational treatment of wounds in the history of surgery, a treatment based on a sound knowledge of the etiology and pathogenesis of suppuration.

"In the course of an extended investigation into the nature of inflammation, and the healthy and morbid condition of the blood in relation to it, I arrived, several years ago, at the conclusion that the essential cause of suppuration in wounds is decomposition, brought about by the influence of the atmosphere upon blood or serum retained within them, and, in the case of contused wounds, upon portions of tissues destroyed by the violence of the injury.

"To prevent the occurrence of suppuration, with all its attendant risks was an object manifestly desirable, but till lately apparently unattainable, since it seemed hopeless to attempt to exclude the oxygen which was universally regarded as the agent by which putrefaction was effected. But when it had been shown by the researches of Pasteur that the septic property of the atmosphere depended, not on the oxygen or any gaseous constituent, but on minute organisms suspended in it, which owed their energy to their vitality, it occurred to me that decomposition in the injured part might be avoided without excluding the air by applying as a dressing some material capable of destroying the life

"The material which I have employed is carbolic or phenic acid, a volatile organic compound which appears to exercise a peculiarly destructive influence upon low forms of life and hence is the most powerful antiseptic with which we are at present acquainted.

"The first class of cases to which I applied it was that of compound fractures, in which the effects of decomposition in the injured part were especially striking and pernicious . . .

"If the severest form of contused and lacerated wounds heal kindly under the antiseptic it is obvious that its application to simple incised wounds must be merely a matter of detail.

"There is, however, one point more that I cannot but advert to—namely, the influence of this mode of treatment upon the general healthiness of an hospital. Previously to its introduction, the two large wards in which most of my cases of accident and of operation are treated were amongst the unhealthiest in the whole surgical division of the Glasgow Royal Infirmary, in consequence, apparently, of those wards being unfavourably placed with reference to the supply of fresh air; and I have felt ashamed, when recording the results of my practice, to have so often to allude to hospital gangrene or pyemia. It was interesting, though melancholy, to observe that whenever all, or nearly all, the beds contained cases with open sores, these grievous complications were pretty sure to show themselves; so that I came to welcome simple fractures, though in themselves of little interest either for myself or the students, because their presence diminished the proportion of open sores among the patients. But since the antiseptic treatment has been brought into full operation and wounds and abscesses no longer poison the atmosphere with putrid exhalations, my wards, though in other respects precisely under the same circumstances as before, have completely changed their character; so that during the last nine months not a single instance of pyemia, hospital gangrene, or erysipelas has occurred in them."

Lister repeatedly emphasized that the success of his treatment was due not to the unique virtues of any one antiseptic, but to the *principle* that putrefaction was caused by microorganisms constantly present in the air and could be prevented by the destruction of these organisms before or sometimes even after they had gained access to the wound. This revolutionary concept was difficult for the profession to grasp, and it met with considerable opposition. Many insisted upon calling it the "carbolic acid treatment," and completely lost sight of the underlying principle necessary for its proper application. It has its champions, however—particularly on the continent—and soon, because of continued improvement, merged into our present-day aseptic system. Some of our earlier ideas have changed, but the original premise upon which Lister based his work is still valid.

In the words of Lucas-Championniere, there are but two periods in surgery—that

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SEPTEMBER, 1945

V-J DAY

It is hard to realize that the greatest war in the history of the world is over. Even though the news of Japan's surrender had been anticipated hourly for four uneasy days, President Truman's announcement that the Japanese emperor had agreed to order his people to lay down their arms seemed almost unbelievable. To the minds of most people, almost before they could grasp the glorious realization that the world is actually at peace, came sobering thoughts to temper the first exuberance of joy.

The first thought is the terrific price that victory cost—not only the staggering national debt that must be paid somehow, but the thousands of lives lost and the many more thousands of bodies and minds that will be forever scarred. Yet the cost to our own nation seems small when we consider the pathetic plight of so many countries in Europe—all looking to the United States as the international Good Samaritan, who is expected to dress their wounds, feed them, clothe them, and warm them.

Another sobering thought is that future wars *must* be prevented—for another world war would destroy civilization. America is in a position where she must play the leading role in preserving peace. The responsibility is staggering, but we can not shirk it now, as we did after the first World War. This time we must keep faith with those who sleep—not only in Flanders Field, but in Africa, in Bataan, in Okinawa, and in other battlefields too numerous to recount.

Happily, there are more cheerful thoughts for V-J Day. One is that the mothers, wives, sisters, and sweethearts of service men can now lie down and sleep in the peace that comes with knowing that their loved ones are no longer in constant danger. Nobody realizes more fully than the doctor how many who have never worn a uniform have been casualties of this war.

Another inspiring thought is the enormous strides made by science—especially in medicine. Apparently it takes the powerful stimulus of war to force scientific discoveries into fruition. Many of these discoveries will continue to bless mankind for generations to come.

Our medical men have acquitted themselves nobly, and have won highest praise. In its gratitude to the members of our State Society who have served their country so well, this JOURNAL can only repeat what was said in its editorial on V-E Day:

"To the North Carolina doctors who are in the armed forces this JOURNAL speaks for all the civilian doctors in North Carolina in offering its thanks for the services you have rendered. You may rest assured that those of us who have 'stayed by the stuff' at home are eagerly looking forward to your return and will do all that is in our power to help you become adjusted to civilian life and civilian practice once more. We know that you have learned much that you can teach us as we gather in future meetings."

THE SERVICE MEN SPEAK THEIR MINDS

Naturally everyone in this country is greatly interested in what our men in service overseas are thinking — about the way things are going at home, about their own experiences in the military forces, and about the future which faces us all. Since V-J Day this interest has been intensified. A few expressions of opinion on these subjects, gleaned from personal letters or from exchanges, are given here.

In the July issue of the Sedgwick County (Kansas) *Medical Bulletin,* Capt. C. T. Frey says in part:

"I wish I could help share the overload for we have here a half-million dollars worth of doctors (at $20,000 per head) doing two bits worth of work.

"The items which come through about socialized medicine are disturbing, to say the least. In Holland I got well acquainted with the Dutch system, organized under the Germans, of compulsory medical insurance for large groups of people. In case you are interested I'll point out a few of the features of the Dutch plan . . .

"From the patient's standpoint, if he becomes seriously ill and finds himself getting worse, losing confidence in his doctor or wishing a consultation, he cannot change doctors except at the trimester or obtain a consultation unless the doctor feels it indispensable. If the patient wishes it anyway, he must pay the bill himself. Also, as to the care received—the swamping of the doctors sometimes necessitates waiting two or three days for a home call after the request has been made.

"From the doctor's standpoint the privilege of everyone on his panel to request a call 'without expense or obligation' results in an almost constant backlog of completely unnecessary calls. The conscientious doctor attempts to give priority on basis of urgency, but it's hard to avoid mistakes. And a hopeless 'What the hell?' attitude is difficult to avoid.

". . . Under our system no one is formally aware of who consults a given doctor, or how frequently, or the nature of the condition. Under the socialized plan the private doctor-patient relationship must be a matter of public record for revenue purposes.

"We should evolve in the States some form of prepayment plan to eliminate the financial tragedy of prolonged illness in a middle class family, but I hope whatever evolves will at least have the following features:

"1. Completely voluntary participation.

"2. Payment to the doctor on the basis of work done, rather than a panel system.

"3. **Some** payment, even if only fractional, by the patient for every call requested.

"4. A minimum of records and forms (the Dutch plan has this because payment is not on the basis of work done). My experience with army medicine has been 50% work and 50% writing about it."

* * * *

The following excerpts are taken from a personal letter which expresses very much the same thought that was contained in the letter from five anonymous doctors published in the *Journal of the American Medical Association* for July 14 (page 815). On Easter Sunday a former house officer in a North Carolina hospital wrote from somewhere in France:

"As we sit here (about 50 idle medical officers) our thoughts turn to the Pacific theater and to the practice of medicine at home. I can write for myself only, but my thoughts are shared by others here. We'd like to know our status in relation to physicians who are just entering the service . . . In our hospital there are no ASTP doctors. Some of our men have been in the army only 6 months . . . but others have been in since 1939 and 1940. When the time comes for cutting down on the number of doctors in the service, we wonder whether the ASTP boys (who are only **beginning** to arrive at Carlisle Barracks for training as officers and for assignments as army doctors) will be given priority for the practice of medicine or whether they will be indoctrinated and sent to relieve us for civilian practice.

"Does this read like the outcry of selfish individuals? We feel that those who paid . . . for the medical education of these doctors (and we are taxpayers too) have a right to ask them to stand guard in turn . . .

"What is this 'standing guard'? It includes **waiting** patiently and impatiently in an isolated atmosphere of uncertainty away from patients, away from medical books, away from journals (I subscribe to 4 or 5 but I've received **no** copy of the **North Carolina Medical Journal** since November 1944 and, in fact, just **one** copy of any journal—the **J.A.M.A.**—since November) and away from societies or any type of stimulating medical thought. It is all right to sit thus if one has no ambition but for young doctors this is ruinous. One is **amazed** to learn how rapidly (I've been thus isolated for 6 months—no patients!!) the very terms of daily hospital conversation can slip away. Yes—I'm in favor of post-war refresher courses. Yes—I'm in favor of anything that can be devised to give me something to do along professional lines. And for 6 months (it's no one's fault; this is a part of the price we pay) we 50 doctors have been stagnating . . .

". . . I hope there will be recognition given to the men who have served faithfully by **painful idleness** —far from the danger zone and **far from their beloved work!** I hope relief will come just as rapidly as the younger men, who were paid to accept their medical education, can be indoctrinated and sent over here and everywhere else."

* * * *

And finally, the *Winston-Salem Journal and Sentinel* for July 8 published a letter from Lieutenant Tom Wood, Jr., to his father, which is reprinted in part below. Tom is not a medical man, but his sentiments will find favor with nearly all doctors, whether in service or in civilian practice.

"I've been reading a lot lately about the socialistic trends and developments of the U. S. We've had a lot of 'bull sessions' about them. Now, it's quite evident that no true Americans want any part of socialism. We don't know just how you're going to stop these things, but we do know that it's up to you to stop them, and now that we've only Japan

to worry about, it won't be as hard to turn your attentions to them. We can't do an awful lot about the situation, either because we're too busy or too far away. But we have a lot of thinking-time on our hands, and we can spur you on in our letters.

"We are going to feel awfully let down if, after winning the war over here in the Pacific, you people back there will have lost the nation to a socialistic regime.

"I don't doubt that there are many of these fifth columnists who have managed to remain in the background, waiting their turn to come into power; but they can be dug out eventually, and given a good hard kick back toward the men who sent them. Meanwhile, there are men who have been exposed as communists or socialists, even Nazi saboteurs, who are either still in positions of power or free to begin again . . .

"Isn't there any sense of responsibility left in America to stop these things? You're busy with a war, you say. Well, you're not that busy."

* * * *

These letters, the NORTH CAROLINA MEDICAL JOURNAL believes, represent a fair cross section of the thought of our men in service. Their opinions are entitled to the greatest respect.

* * * *

ACCELERATING EDUCATION AT THE WRONG END

Some time ago Carl Goerch told over the radio a story that is more true than funny: When a class of university students was asked at the beginning of the war, "What individual, aside from your father and mother, has had the greatest influence on your life?" one bright boy answered, "Adolf Hitler." Certainly Hitler has had a profound influence on the education of our youth. For most of those who are physically fit formal education has been abandoned or postponed; for others the educational process has been accelerated to the greatest possible degree.

The tremendous effort now being made to save six months, a year, or two years in medical education gives rise to several questions: (1) Is it wise to eliminate the so-called humanities or classical subjects from pre-medical education? (2) Have we been wrong in stressing the value of hospital training, since most medical graduates are now being given the responsibility of caring for our service men after only nine months of hospital internship? (3) Is a boy intellectually and emotionally mature enough for the responsibilities of practice less than five years after he has finished high school?

It is true that one may become a skilled operator, a first-class technician, or a clever diagnostician without knowing Plato from pinochle or Shakespeare from Sanskrit. There is little doubt, however, but that the time-honored "broad cultural foundation" gives any doctor a greater insight into that most fascinating of all problems, human behavior; that it gives him more self-respect; and that it helps to insure that he will achieve the highly respected place in the community that is traditionally the physician's birthright.

It is also true that in the early days of American medicine men like J. Marion Sims could become leaders in the profession without prolonged hospital internships or residencies; but the field of medical knowledge has broadened so greatly since then that it is increasingly important for young doctors to have from one or two to five years on the resident staff of an approved hospital if they expect to attain the top of the ladder professionally. Certainly nine months of rotating internship—which is the maximum allowed two-thirds of our present-day graduates—is far too short a time to qualify a medical graduate as an expert surgeon or internist.

Finally, it is no reflection upon the present generation to suggest that a boy who, after leaving high school, spends fifteen or sixteen months in a pre-medical course, three years in a medical school, and nine months in a hospital is hardly seasoned enough to exercise the calm judgment expected of a medical practitioner.

At the risk of tiresome repetition, may this JOURNAL again call attention to an opportunity to save time at the other end of a youth's education—namely, in the primary and early elementary grades. The waste of time in these grades is appalling, and the more to be deplored because it inculcates slovenly habits of study. As was pointed out in a former editorial[1], an average child can, with less than an hour's instruction a day, cover the work done in the first two primary grades in a single school year. If time becomes so valuable after high school, why should it not be saved in the primary grades?

1. Editorial, Acceleration of Primary Education, North Carolina M. J. 5:556 (Nov.) 1944.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

A white, married, 25 year old housewife was admitted to the obstetrical service of the North Carolina Baptist Hospital on January 18, 1945. Her chief complaints were swelling of the legs (duration, four weeks) and almost constant backache which at times had been excruciating (duration, one week). The last menstrual period was on October 15, 1944.

The patient had always been in good health prior to her marriage in 1942. When she became pregnant that year, she was bothered with dysuria and incontinence, both of which disappeared after the spontaneous abortion of a three-months fetus. The second pregnancy occurred in 1943 and was attended by backaches, swelling of the feet and legs, and severe headaches. Her local physician told her that she had high blood pressure, and put her to bed for two months prior to delivery. All of her complaints disappeared immediately after delivery of twin girls at term. In September, 1944, her knees and ankles began to hurt so badly that she was unable to walk; later the joints of the hands became swollen and painful. The joint involvement improved slowly during the next six weeks, and late in October, 1944, the patient again became pregnant. Her headaches and backaches returned almost immediately. Her feet began to swell about Christmas and continued to do so until the patient was admitted to this hospital.

The past history revealed no evidence of syphilis or gonorrhea. Her average weight prior to pregnancy had been 118 pounds; on admission to the hospital she weighed 132 pounds. The review of systems was noncontributory.

Physical examination

The temperature was 99.2 F., the pulse 90, respirations 20, blood pressure 180 systolic, 110 diastolic. The patient was very pale and was lying quietly in bed without orthopnea. Marked puffiness about the face and pitting edema of the feet and ankles were noted. There was no lymphadenopathy. The skin was warm and dry, and over the bridge of the nose and cheeks there was a dark, erythematous lesion which was not raised. Examination of the eyes, including the optic fundi, was normal, although one examiner reported arteriolar spasm in the eyegrounds without exudate or scarring. Oral hygiene was poor, and there was slight hyperemia of the pharynx. The tongue appeared rather smooth and atrophic about the edges. The thyroid gland was palpable but not enlarged. The lungs were clear. The heart was enlarged to the left just beyond the midclavicular line. The rhythm was regular except for occasional extrasystoles. Blowing systolic murmurs were heard at the apex and over the pulmonic areas. The uterine fundus was palpable 5 cm. above the symphysis pubis. Slight tenderness in the right flank was noted by one examiner.

Accessory clinical findings

A catheterized specimen of urine was grossly bloody and contained innumerable white blood cells and red blood cells and 3 to 5 granular and hyaline casts per high power field; there was a 4 plus reaction for albumin; the benzidine test was positive. The Addis count showed 440,000 casts, 22,000,000 red cells and 14,500,000 white cells.* The Esbach test showed an average of 5.5 Gm. of albumin per liter. The urea clearance test showed 24 per cent of normal function. A phenolsulfonphthalein test showed 5 per cent excretion in one half hour and a total of 5 per cent in two hours.

The hemoglobin was 10.4 Gm., the red cell count 3,740,000, the color index 0.99. The sedimentation rate, corrected, was 28 mm. in an hour. The hematocrit was 25 volumes per cent, the mean corpuscular volume 70 cubic micra, the mean corpuscular hemoglobin content 27.8 x 10^{-12} Gm. There were 9,800 white blood cells with 65 per cent segmented polymorphonuclears and 8 per cent non-segmented polymorphonuclears, 2 per cent large lymphocytes, 23 per cent small lymphocytes, 2 per cent monocytes. Platelets were numerous.

The nonprotein nitrogen was 37 mg. per

* The normal values for the Addis sedimentation count are as follows:

Element	*Normal Range*	*Average*
R.B.C.	0 to 425,000	65,760
W.B.C. and epithelial cells	32,400 to 1,000,000	322,550
Hyaline casts	0 to 5,000	1,000
Epithelial casts	Very rare	—

100 cc., the total serum proteins 3.4 Gm. per cent (albumin 2 Gm., globulin 1.4 Gm.). The carbon dioxide combining power was 31 volumes per cent. The prothrombin time was 13 seconds as compared with a control of 13.5 seconds. The clotting time was 3 minutes, the bleeding time 1.5 minutes. Clot retraction was complete in 9 hours.

A blood Kahn test was negative. A brucella agglutination test was positive in a dilution of 1 to 20. Agglutination for Proteus OX-K was positive in the same dilution; for typhoid H, in a dilution of 1 to 10. Agglutinations for paratyphoid A and B were negative. The first two blood cultures were negative; the third and fourth blood cultures were positive for beta hemolytic streptococci and Escherichia coli respectively, both of which were thought to be contaminants; three subsequent blood cultures were negative. A throat culture showed Staphylococcus albus and Bacillus aerogenes. Urine culture was positive for Esch. coli, negative for acid-fast bacilli.

Fluoroscopy of the chest showed the lungs clear. There was moderate cardiac enlargement, predominantly left ventricular hypertrophy. Pulsations of the heart were slow. An electrocardiogram showed the PR interval .20, QRS time .06, an inverted T_4, and low voltage P and QRS complexes; ventricular premature beats were noted; there was no axis deviation.

Course in the hospital

The temperature and pulse rate were relatively normal until the fifth hospital day, at which time the temperature rose to 100.4 F. On the following day the temperature gradually rose to 103.6. The patient received a total of 1750 cc. of plasma during the first week, but the total serum proteins remained unchanged. On the twelfth hospital day the patient was started on sulfanilamide, 3 Gm. daily. She was digitalized and placed on accessory vitamin therapy and ferrous sulfate. The temperature continued to spike daily, running as high as 103.6 F., with an average of approximately 101. The nonprotein nitrogen gradually rose to 104 mg. per 100 cc. and the total serum proteins to 4.4 Gm. per cent. Blood chlorides fell to 84 milliequivalents per liter. The blood cholesterol was found to be 245 mg. per 100 cc. on January 24.

On February 2 the patient expelled a macerated fetus, measuring 3½ inches from crown to rump. She bled rather freely for a while, but after the placenta was expelled the bleeding ceased.

On February 3 the patient was transferred to the medical service. Her blood pressure at that time was 200 systolic, 135 diastolic. The nonprotein nitrogen was 102 mg. per 100 cc., the blood calcium 7.1 mg. per 100 cc., phosphorus 7 mg. per 100 cc. Physical signs of pulmonary consolidation in the left lower lobe were present, and fluoroscopic examination showed atelectasis of the left lower lobe. On February 5 penicillin was started (10,000 units every two hours intramuscularly), and the patient was placed in an oxygen tent because of marked dyspnea. A transfusion of 200 cc. of whole blood was also given on this day without causing elevation of temperature. The patient became more and more dyspneic and expired quietly twenty-five minutes following completion of the blood transfusion. Blood chemistry studies on the day of the patient's death showed the nonprotein nitrogen 154 mg. per 100 cc., serum proteins 5.3 Gm. per 100 cc., carbon dioxide combining power 33 volumes per cent, sulfonamide level 4.6 mg. per 100 cc., cholesterol 236 mg. per 100 cc. The hemoglobin was 6.5 Gm. and there were 1,800,000 red cells. The white cell count was 26,400, and there was a shift to the left in the differential count. A blood culture made two days before the patient died was reported as negative.

Discussion

DR. GEORGE T. HARRELL: In summary, this 25 year old woman had a fatal illness of two years' duration which was associated with three pregnancies. The *past history* was entirely negative. The *present illness* began with the first pregnancy in 1942, which was attended by dysuria and incontinence and ended in a spontaneous abortion at three months. A second pregnancy the following year went to term, but was associated with symptoms suggestive of urinary disease—backache and edema. The third pregnancy again caused the same symptoms. The type of renal disease cannot be predicted from the history. Hypertension, suggesting cardiovascular involvement, was discovered during the second pregnancy. In September, 1944, before the last pregnancy, acute symptoms referable to the skeletal system were noted—pain in the knees and ankles, and swelling and pain in the hands.

The backache noted the previous year could also have been caused by a skeletal abnormality.

The *physical examination* showed tenderness in the right flank (kidney?), edema of the feet, puffiness of the face, and pallor. Involvement of the cardiovascular system was indicated by the blood pressure of 180 systolic and 110 diastolic, by the arteriolar spasm in the optic fundi, and by the left ventricular enlargement, extrasystoles, and apical and pulmonic systolic murmurs. The lesions over the bridge of the nose were consistent with those found in lupus erythematosus, a disease which involves the small blood vessels. That the vascular lesions were of relatively recent origin was shown by the absence of exudate and hemorrhage in the optic fundi. Involvement of the respiratory tree was shown by the hyperemia of the pharynx, though the lungs were clear on admission. Atelectasis of the left lower lobe of the lung subsequently developed.

The *accessory clinical data,* particularly the progressively severe low-color-index anemia, suggest a chronic lesion of the kidneys. The grossly bloody urine, massive albuminuria, poor urea clearance, and greatly reduced phenolsulfonphthalein excretion indicate serious impairment of renal function. The rise in the nonprotein nitrogen from 37 to 154 mg. per 100 cc. indicates steady progression of the process. The etiologic agent appears to be Escherichia coli, which was recovered by culture from the urine.

The rise of the white blood cell count to 26,400, with a shift to the left in the differential count, also suggests a progressing infection. The presence of beta hemolytic streptococci in the third culture and Escherichia coli in the fourth culture of the blood suggests transient bacteremias, since the first, second, fifth, sixth and seventh cultures were sterile. Transient bacteremias may occur following respiratory or urinary infections; the streptococcus was not cultured from the throat, but Esch. coli was cultured from the urine.

The drop in blood calcium was secondary to a rise in blood phosphorus, which resulted from the inability of the kidney to excrete phosphate. As acidosis developed from the retention of acid phosphates, and the carbon dioxide combining power dropped to 33 volumes per cent, the body compensated by excreting calcium as well as other base. The blood chlorides were low, as one would expect them to be following vomiting or excessive sweating.

X-rays showed the atrophic arthritis of the lumbar spine and sacro-iliac joints suggested by the history.

The thread of the story traced through the history, physical examination, and accessory findings leads inevitably to the urinary tract as the seat of the difficulty. Gross hematuria may occur in renal tuberculosis, but there was no x-ray evidence of tuberculosis in the lungs, and acid-fast organisms were not demonstrated in the urine. Disseminated lupus erythematosus may cause skin lesions similar to those presented by this patient, hypertension, red cells in the urine, and a heart lesion, but the course of the disease in this case was too violent and the hematuria too gross. An acute glomerulonephritis is suggested by the absence of findings in the eyegrounds, but the history of three years' duration strongly suggests a preceding renal lesion.

The differential diagnosis, therefore, lies between an acute exacerbation of a chronic (or subacute) glomerulonephritis and an acute flare-up of a chronic pyelonephritis. The low serum proteins and slightly elevated cholesterol, with the massive albuminuria and edema, would favor subacute glomerulonephritis (nephrotic syndrome). On the other hand, the blood pressure is higher and the hematuria greater than would be expected in subacute nephritis.

All of the findings could be accounted for by a *progressive* urinary tract infection such as pyelonephritis. The chief characteristic of pyelonephritis is its great variability and lack of any constant picture[1]. Pyelonephritis would be less likely to give lesions in the eyegrounds. The violence of the terminal infectious process suggests a terminal septicemia due to the organism cultured from the urine and once grown from the blood—Esch. coli. Unless blood for culture had been taken within the last few hours of life, a terminal septicemia could not have been demonstrated.

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times we don't know what the results will be. We know that it is possible to give a person red cells and to recover them quantitatively in the blood stream. The same is not true for plasma. There are large plasma stores which seemingly must be filled, at least in part, before there is any material rise in the level of serum proteins. Consequently, one may give quite large amounts of plasma without getting a rise in serum proteins. One must bear in mind also that plasma contains not only proteins but also all of the salts that are present in blood. Three or four liters of plasma contain a sizable quantity of sodium, which, in the person with congestive failure, may cause trouble. There is also some evidence that large amounts of proteins may make nephritis worse. This effect has never been proven in patients but has been pretty definitely shown in the treatment of experimental nephritis in animals. Such being the case, it is probably wise to give plasma or blood to patients with nephritis only when it is absolutely necessary.

DR. FRANK LOCK: I recall having seen this patient during life. Her family physician informed me that her blood pressure remained elevated betwen her pregnancies. This information is of utmost importance in the evaluation of a hypertensive pregnant woman. Pregnancy complicating chronic kidney disease with hypertension is one of the chief causes of maternal deaths. The concept that hypertension due to nephritis progresses steadily during pregnancy is usually true. The obstetrical literature, however, contains scattered reports of a decrease in blood pressure occurring in nephritic patients during pregnancy, followed by a very rapid exacerbation of the hypertension following delivery. In experimental animals this occurrence is the rule rather than the exception[2]. The fall in blood pressure which occurs in such cases, and which apparently occurred early in this patient's pregnancy, is apt to give a false sense of security regarding the management of a known hypertensive patient who becomes pregnant, or misleading information about a hypertensive patient observed for the first time during early pregnancy.

Although it is not stated in the record, this patient had not felt fetal movements and no fetal heart sounds could be heard, in spite of the fact that the patient had been pregnant for more than twenty weeks. A missed abortion was strongly suspected, and the fact that the patient failed to improve in spite of this is one of the strongest points favoring chronic and acute nephritis as the cause of her hypertension. The toxemias of pregnancy almost invariably improve strikingly when death of the fetus occurs.

The use of intravenous protein in the form of plasma was based on this patient's profound hypoproteinemia and the fact that she was too ill to receive an urgently needed substance any other way. Plasma was selected because it is a whole protein and because plasma and blood provided the safest way of administering protein. A serum protein level of 3.5 Gm. is well below the edema level. We are often faced with the problem of hypoproteinemia in pregnant women, particularly in those with toxemia. We much prefer to administer protein by mouth in the patient who is able to assimilate it. We resort to intravenous protein in the form of whole blood or plasma only when we feel that the need for protein is great enough to outweigh the disadvantages of this method of administration. The parenteral administration of amino acids is not without danger, and it was our opinion at the time of this patient's treatment that plasma offered the greatest hope of correcting her badly disturbed fluid balance.

Dr. Harrell's Diagnoses

1. Acute and chronic pyelonephritis due to Esch. coli (with hemorrhage from renal arterioles, renal functional failure, uremia, acute and chronic loss of protein in the urine, and subsequent edema secondary to hypoproteinemia).
2. Terminal septicemia, Esch. coli.
3. Nephritic toxemia of pregnancy.
4. Secondary hypertension with left ventricular cardiac hypertrophy (extrasystoles).
5. Pulmonary atelectasis with terminal bronchial pneumonia, mixed flora.
6. Atrophic arthritis.

Anatomical Discussion

DR. W. C. THOMAS: The kidneys showed

2. (a) Rodbard, S. and Katz, L. N.: Effect of Pregnancy on Blood Pressure in Normotensive and Hypertensive Dogs, Am. J. Obst. & Gynec. 47:753-763 (June) 1944; (b) Page, E. W. and Ogden, E.: Blood Pressure of Pregnant Rabbits and Its Response to Pitressin, Proc. Soc. Exper. Biol. & Med. 42:770-771 (Dec.) 1939; (c) Harrison, T. R., Grollman, A., and Williams, J. R., Jr.: Anti-Pressor Action of Renal Extracts and Their Capacity to Reduce Blood Pressure of Hypertensive Rats, Am. J. Physiol. 128:716-724 (March) 1940; (d) Goldblatt, H., Kahn, J. R., and Hanzal, R. F.: Studies on Experimental Hypertension, J. Exper. Med. 69:649-674 (May) 1939.

a typical example of a purely proliferative type of reaction in the glomeruli with an infiltrative lesion of the interstitial tissue. Grossly, they appeared to be enlarged and weighed 225 Gm. each. The capsules stripped with ease, revealing pale surfaces covered with numerous petechiae—the so-called "flea-bitten" kidneys. On section, the cortical portions were seen to be pale and thickened; they were the chief sites of the hemorrhages. The pelves were slightly dilated and the walls of the ureters were thickened.

Microscopic examination of the kidneys revealed the classical lesions of glomerulonephritis[3]. All of the glomeruli presented marked proliferation of the capsular epithelium, which in some cases seemed to obliterate the capillary tufts. There was also proliferation of the endothelial cells of the capillaries in the tufts. Occasional hemorrhages were seen in the glomeruli and in the interstitial tissue. The kidney tissue about the pelves showed an abundance of lymphocytes. These cells were also seen in other parts of the tissue as well. Leukocyte casts were noted in some of the tubules. The ureters showed lymphocytic accumulations about the lymphatic vessels. Lymphocytes were seen in the mucosa of the urinary bladder.

The lower lobes of the lungs showed an acute lobular pneumonia.

Anatomical Diagnoses

Acute glomerulonephritis
Chronic pyelonephritis
Bronchopneumonia

3. Bell, E. T.: Pathology and Pathogenesis of Clinical Acute Nephritis, Am. J. Path. 13:497-552 (July) 1937.

Upjohn Company Health Messages Published in Book Form—"Your Doctor Speaks" Publication Destined for Doctors' Reception Rooms

Every physician in the United States will receive during the coming months copies of a handsome new publication, "Your Doctor Speaks", issued by The Upjohn Company, one of the Nation's leading manufacturers of pharmaceuticals. This handsomely designed book, 14½ inches by 11 inches in size, contains a series of health messages, part of The Upjohn Company educational health campaign, which have been appearing monthly in the Saturday Evening Post, Time, Life, Newsweek, Hygeia and Parents Magazine.

Physicians who have not yet received their copy of "Your Doctor Speaks" are invited to write Upjohn, Kalamazoo 99, Michigan.

CASE REPORTS FROM THE TUMOR CLINIC

North Carolina Baptist Hospital

Case 6

Mrs. W., a 56 year old housewife, was first seen here in July, 1941. Her chief complaint was of a "growth" on the vulva, with associated perineal pain and pruritis. The patient experienced excruciating vulvar pain each time she voided. These symptoms were of approximately four months' duration, and she had not noticed the tumor of the vulva prior to that time. She had no complaints referable to other systems.

Physical examination revealed a thin, elderly woman. Her temperature, pulse, and respiration were normal. Her blood pressure was 185 systolic, 84 diastolic. The heart was slightly enlarged to the left, and there was a soft, blowing apical systolic murmur. Lungs were clear to percussion and auscultation. The abdomen was scaphoid in type, and there were no areas of tenderness or palpable organs or masses present. The only enlarged lymph nodes were small, shotty, non-tender, bilateral inguinal nodes. There was a hard, nodular, discrete lesion, 3 x 3 cm., on the left labia majora, approximately at the junction of the anterior and middle thirds of the labia. The lesion was indurated and tender on palpation, but it was not ulcerated or attached to the ramus of the pubis.

The blood count and urinalysis were within normal range. A biopsy of the lesion revealed it to be a squamous cell carcinoma of grade III malignancy.

On July 29, 1941, radium needles were implanted around and through the base of the lesion. A total dose of 960 milligram-hours of radium was given.

The patient tolerated this therapy well. She was re-admitted to the hospital on September 24, 1941, still complaining of local pain and pain upon voiding. The tumor now appeared to be an infiltrating ulcerative lesion, approximately 4 cm. in diameter. Moderate edema was present, and post-irradiation atrophic changes were noted in the adjacent skin. There was marked infiltration in the mucosa adjacent to the urethral orifice, and the pararectal and inguinal glands were enlarged, discrete and firm.

On September 26, 1941, a vulvectomy was

performed, with wide dissection of the underlying soft tissue and removal of all the mucous membrane to within 2-3 mm. of the urethral orifice. Pathologic examination showed that the tumor area about the urethra was carcinomatous.

Twelve days after the vulvectomy, a bilateral Basset resection of the affected lymph glands was performed. Pathological examination revealed metastatic squamous cell carcinoma in one of the nodes examined. Mrs. W.'s postoperative course was smooth after each procedure, and she was discharged after spending thirty days in the hospital. She received deep x-ray treatment to the inguinal region bilaterally during the latter part of her hospital stay. A total of twenty treatments were given.

About one year after her second admission, Mrs. W.'s left lower leg began to swell slightly. This swelling was entirely painless and was not associated with any inflammatory reaction until she injured her foot and developed a localized cellulitis. She was admitted to the hospital for treatment of this condition. After this infection cleared up, the original slight non-tender swelling in the left lower leg continued. The surgeon's opinion was that the patient had elephantiasis resulting from the radical lymph node resection.

During the ensuing three years, Mrs. W. has been back for regular check-ups, and has had no complaints other than the chronic swelling of her left leg. Repeated examinations have revealed no sign of local or distant metastases or recurrence of the malignancy. It has now been four years since she was treated for squamous cell carcinoma of the vulva.

Examination reveals a well-healed scar at the junction of the vaginal mucosa and adjacent skin, and the introitus admits two fingers for examination. There is no induration or abnormality of the vulva.

Tumor Clinic Discussion

PATHOLOGIST: Review of sections from the first biopsy specimen shows an irregular squamous epithelial growth in the subcutaneous tissue. These epithelial growths infiltrate in all directions, and are composed of anaplastic epithelial cells. There is marked mononuclear infiltration. Many epithelial pearls are seen, and this tumor is classified as an epidermoid or squamous cell carcinoma of the vulva, grade III.

The sections of tissue examined following operative removal of the vulva show fibrosis and other evidences of irradiation, with tumor cells present in large numbers in the tissue adjacent to the urethra.

The tissue provided for examination of the lymph nodes is studded throughout with lymph nodes, and section of one of the nodes shows about 50 per cent of the normal tissue replaced by the same type of malignant epithelial tumor that was seen in the original biopsy specimen from the vulva. Our final diagnosis in 1941 was squamous cell carcinoma of the vulva, grade III, and squamous cell carcinoma of the inguinal lymph nodes, metastatic.

RADIOLOGIST: The use of irradiation in the treatment of carcinoma of the vulva is of value primarily as a palliative measure. Irradiation dosage of sufficient intensity to cure a carcinoma is frequently complicated by reaction in the form of vulvitis and vaginitis, which may be quite painful. The use of localized irradiation in the form of interstitial radium or radon is associated with good palliative results, and healing of the local area is usually accomplished in this way.

By surgical treatment alone in selected cases, statistics show approximately 10 per cent five-year survivals, whereas by combined radiation and surgery the five-year survivals are doubled—20 per cent. These figures indicate that irradiation is of distinct value. It should also be remembered that in the far advanced and inoperable cases conservative methods of treatment by radiation often give considerable relief and prolongation of life.

The trend in the treatment of carcinoma of the vulva has been toward the combination of irradiation and surgery. This was the method used in the management of this patient. We are usually not successful in destroying metastatic lesions such as those of the inguinal gland.

GYNECOLOGIST: The outstanding work in the management of carcinoma of the vulva in our field has been done by the late Dr. Fred Taussig[1] of St. Louis. In 1940, he reported a series of 155 patients treated in his clinic for this condition, with an over-all five-year survival rate of 32 per cent. Forty-one of these patients were treated by vulvectomy and Basset gland resection, with a

1. Taussig, Fred J.: Cancer of the Vulva: Analysis of 155 Cases, Am. J. Obst. & Gyn. 40:764-779 (Nov.) 1940.

five-year survival rate of 58.5 per cent.

He classified the patients into the following groups:

Group I: Patients without palpable metastasis, tumor 1-3 cm. in diameter.

Group II: Patients without palpable metastasis, tumor 4-7 cm. in diameter.

Group III: Patients with tumor over 7 cm. in diameter, or smaller tumors with evidence of still movable metastasis.

Group IV: Patients with extensions to the vagina or suprapubic space, or with large, fixed lymph glands.

Group V: Far-advanced cases with broken-down lymph glands and cachexia.

According to this classification, Mrs. W. would fall in Group III at the time of her original treatment, since metastasis to the inguinal lymph nodes had occurred.

Dr. Taussig states that the determination of lymph gland metastasis before operation is not easy, because in practically every case a few enlarged lymph glands can be felt in the groin. He found involvement of the lymph glands in 21 per cent of the patients classified on clinical examination as belonging in group I, in 42 per cent of those in group II, in 59 per cent of those in group III, and in all of those in groups IV and V. The presence or absence of palpable nodes, therefore, is not a reliable indication of lymph gland involvement, and we feel that bilateral dissection of the glands is indicated in every case. Dissection of the glands must be bilateral, because drainage from the vulva is bilateral, regardless of which side is involved.

In this clinic, we have treated 3 patients with carcinoma of the vulva. Two of them had hopelessly advanced tumors when they were first seen, one falling in group IV, the other in group V, according to Taussig's classification. Mrs. W. is the only patient we have seen in whom adequate treatment was possible, and we are, of course, extremely proud of her four-year survival without evidence of recurrence.

SURGEON: It is hard to explain the chronic lymphedema which this patient has had. The removal of the superficial lymphatics would not ordinarily produce this condition.

GYNECOLOGIST: The Basset procedure combines resection of all the inguinal lymph nodes with resection of any palpable iliac node and of the obturator lymph nodes through an extraperitoneal approach.

Lymphedema of an extremity occurs very infrequently, and the late appearance of this condition must mean that there was some secondary obstruction of the deep lymphatics of the leg in this patient. It is unlikely that the condition is related to the primary carcinoma, inasmuch as three years have elapsed since its onset, and no palpable evidence of recurrence of the tumor is now found.

Tumor Clinic Opinion

Recommendation: Continued observation.
Prognosis: Good.
Credit: (1) Cooperation from the patient.
(2) Adequate treatment.

MEDICOLEGAL ABSTRACT

J. F. OWEN, M.D., LL.B.
RALEIGH

JOINT AND SEVERAL LIABILITY: *Where two physicians serve with each other in the treatment of a patient each is answerable for his own conduct and for that of the other which he observes or, in exercise of reasonable vigilance, should observe.*

A case illustrating joint and several liability is one in which two doctors were sued for alleged malpractice in the treatment of a fracture of the plaintiff's leg. After the injury the family physician was called to render treatment, and another physician was called to assist. The record shows that the assistant or consultant was called in with the family doctor on three occasions to aid in the care of the injured person. The family physician also visited the patient on occasions when the consultant was not present.

At the trial in Superior Court both physicians were found to have been negligent in the treatment of the patient; judging from the verdict rendered, however, the culpability was considered by the jury to be in different degree. The jury, because of a misunderstanding of the judge's charge, first awarded $6,000 damages against the family doctor and $2,000 against the consultant. This decision indicated that they considered the family physician to be jointly and severally liable, and the consultant to be jointly liable at one or all three of the times when he visited the patient in company with the family doctor. At the request of the judge, however, the jury retired to the jury room

again, and upon reconsideration brought forth a verdict assessing the lump sum of $6,000 against both doctors.

When appeal was made to the Supreme Court, this tribunal was of the opinion that the first verdict indicated joint and several liability as to the family physician, and only several liability as to the assistant. Therefore, the second verdict was held to be erroneous insofar as it related to the consultant. Upon the basis of this decision, the consultant was awarded a new trial.

The point to remember in connection with this case is that, when two or more doctors assume the responsibility of caring for a patient, each is responsible for his own conduct as well as for the wrongful acts or omissions of the other, or others, which he observes or which, in the exercise of ordinary vigilance, should come to his notice. (V. 262 N.W. Reporter p. 409. Fall term, Michigan Supreme Court, 1933)

TUBERCULOSIS ABSTRACTS

A Review for Physicians

ISSUED MONTHLY BY THE NATIONAL TUBERCULOSIS ASSOCIATION

VOL. XVIII SEPTEMBER, 1945 No. 9

ANY evidence which helps to answer the question of whether or not an individual under treatment for tuberculosis is a source of danger to others is of vital value to the physician, the patient and the public. The examination of gastric contents for the presence of tubercle bacilli is rapidly becoming an essential procedure in those cases in which other tests fail to give a clear-cut answer.

TUBERCLE BACILLI IN GASTRIC CONTENTS

Examination of gastric contents for tubercle bacilli in the fasting patient, while a routine procedure among children at Muirdale Sanatorium since its inception, has only gradually been extended to adults. The now demonstrated importance of the procedure in aiding diagnosis, in guiding therapy, and in the evaluation of the patient before discharge has come to be recognized rather slowly.

Examination of gastric contents for tubercle bacilli is used by the author on all patients who deny raising sputum or whose sputum is negative. It is also used in cases where there is doubt as to the source of the sample presented. Since a single negative gastric aspiration is not considered conclusive, repeated aspirations are performed at intervals. Some patients have cultures of both sputum and gastric contents. Such a procedure expedites the diagnosis of cases with suspected active lesions.

The material used for examination consists of undiluted gastric contents aspirated from fasting patients the first thing in the morning. Previous to 1941, culture and cultures are used since they are very accurate and the difference in the results of the two procedures did not warrant continued use of the guinea pig. All specimens are cultured on three slants of Petragnani's medium, and contamination is reported when all three tubes are involved, an infrequent occurrence.

One cannot rely on smears of concentrated specimens of gastric contents for the detection of tubercle bacilli—the number of positives is always small. In certain diagnostic cases animal inoculations, in addition to cultures, are necessary.

The patient who has negative sputum cultures, but who has tubercle bacilli only by gastric examination, is not a so-called innocuous patient. In our survey we observed 21 such patients who on subsequent sputum examination were positive on concentrated smear or culture. Therefore, these patients can and do develop subsequent positive sputum. A patient with a positive gastric content should be treated exactly like a patient with a positive sputum.

Before the author's patients are dis-

sputum. This is done to avoid the discharge of active cases. In order for a patient to be discharged with medical advice as inactive he must have at least five successive negative examinations. If negative on those examinations, and if other findings warrant it, the patient is discharged as having no evidence of active disease.

During the past five years, 868 adults at Muirdale Sanatorium had a total of 4,204 examinations of gastric contents. Of these, 404 (46.4 per cent) had negative gastric contents; they received 1,338 examinations. The remaining 464 (53.6 per cent) cases had 2,866 examinations, of which 1,271 (44.3 per cent) were positive. The number of examinations per case varied, the average for the negative group being 3.3; for the positive group 6.2 per case. The number of repeats depends upon the individual case, just as in sputum examinations.

Thus there are two groups of patients—those with positive and those with negative gastric contents. Each of these groups in turn is divided into three subgroups: The no-sputum group, the negative-sputum group and the positive-sputum group.

No fine line of distinction can be drawn between these three subgroups. Occasionally patients deny raising sputum and yet the specimen they send in contains tubercle bacilli. Also, there are patients who state they raise sputum, when the sample is only saliva, or secretions from a chronic nasopharyngitis common in the locality. It is realized that, if numerous and timely sputum examinations were done, a small percentage would have proved positive. This is not deemed economically advisable, as valuable time may be lost. Instead, a simple reliable gastric aspiration can be done with culture results known in a few weeks.

Significantly, 21 out of 282 patients (7.5 per cent) became sputum-positive after being positive at first only on gastric aspiration. This occurred on the average of about six months later. This small group of patients reveals an important fact because, as has been previously pointed out, these cases cannot be considered as harmless, and careful observation and timely sputum examinations will find that some of these cases are sputum-positive.

It is important to do consecutive gastric examinations on adult patients in whom it the sputum, if present, is negative. If five consecutive aspirations are negative on culture, it is most likely that there is no evidence of active pulmonary tuberculosis.

Of the 404 patients in our series who never had a positive gastric aspiration there were 224 who had either no sputum or negative sputum. In spite of the diagnosis of pulmonary tuberculosis on admission the author feels justified in recording a case as having no evidence of active tuberculosis if a series of gastric aspirations is negative as well as sputum cultures.

The remaining 180 of the 404 with negative gastric contents had, at some time, tubercle bacilli in the sputum. The main reason that there were no positive aspirations in this goup is because, in most of these patients, the examinations followed by some ten months a positive sputum, and many of these cases were on the road to recovery.

It is possible, however, to have a negative gastric content and a positive sputum, which does not invalidate the reliability of this procedure. There were several patients who became gastric-content-negative and sputum-negative and then later became sputum-positive. Unstable cases of tuberculosis are likely to fluctuate like this.

In the past year and one-half it has been the author's policy to do five consecutive aspirations on negative cases. If these examinations are negative by culture, the individual is considered as having no evidence of active pulmonary tuberculosis. In the majority of cases it is wise to hold these patients for observation until the cultures are completed. Of the cultures, over 95 per cent, where positive, will show growth within six weeks. However, the cultures are kept until eight weeks. The patient is then re-X-rayed and his case is reevaluated. Most of these are discharged with no clinical evidence of active tuberculosis.

The Significance of Tubercle Bacilli in Gastric Contents, David D. Feld, M.D., The American Review of Tuberculosis, December, 1944.

Air-Borne Anti-Malaria Program

The largest air-borne anti-malaria program yet launched in Europe will soon be undertaken by UNRRA in Greece in cooperation with the Greek Government. As part of an all-out drive against the critical increase of malaria in Greece, UNRRA is

CORRESPONDENCE

July 27, 1945.

Dr. Ivan Procter
Secretary, Medical Board
226 Hillsboro St.
Raleigh, N. C. RE: Telephone narcotic orders.

Sir:

I have just received a communication from Commissioner of Narcotics H. J. Anslinger, dated July 23, 1945, to which was attached a copy of a report of the Federal Grand Jury sitting at Muskogee, Oklahoma, dated June 26, 1945, concerning the taking of narcotic prescriptions over the telephone by druggists.

I am attaching hereto a copy of the Grand Jury report, and it is suggested that it be reprinted in your State Medical Journal.

Respectfully,

B. M. MARTIN, *District Supervisor*
Treasury Department
Bureau of Narcotics

REPORT OF THE FEDERAL GRAND JURY AT MUSKOGEE, OKLAHOMA, DATED JUNE 26, 1945

"We also beg to report that we have made a partial investigation of a report concerning laxity in the dispensing of narcotics by some of the medical profession and some of the druggists. The facts developed disclosed a rather shocking disregard of the law. In some instances it appears now that some druggists fill telephone prescriptions for narcotics and later take the prescriptions to the doctor for his signature. It also appears now that an unnecessarily large quantity of narcotics is being dispensed by some druggists and physicians to persons who are well known addicts. The investigation thus far reveals an astounding condition in this respect. We do not wish to place ourselves in a position or attempt to determine when or under what manner, or in what quantities a person may need narcotics for the alleviation of pain and suffering, but we feel that we are in position to say that the conditions above referred to are intolerable and wholly unwarranted, and if continued can only result in an indictment wherever warranted. It has been stated in defense of this condition that the doctors are overworked and prescriptions by telephone are time savers. We are conscious of the overworked condition of most of our physicians, but we disagree with the contention that such practice is warranted in order to save time. It is a matter of obeying or violating the law.

"We are making this report at this time in the hope that these abuses, as well as any others not mentioned herein, may be speedily corrected. We propose to pursue this investigation further when next called and will then take such action as the facts and circumstances warrant at that time."

BULLETIN BOARD

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

Mrs. Claudia J. Hurt of Raleigh has just joined the State Office staff as a field worker.

* * * *

The Committee on X-Ray Apparatus and Technique of the American Trudeau Society is developing a series of reproductions of interesting chest x-rays. They will be printed on heavy, glossy paper, 8½ x 11, and will be prepared for binding in a loose-leaf folder. This series shows the effect of three different exposure techniques on the visibility of tuberculosis at the top of the left lung. All pertinent data appear on the back of each reproduction. This series should be of great value to physicians doing x-ray work, and especially valuable to x-ray technicians.

The price will be between 5 and 10 cents per set. Send order direct to the State Office in Raleigh.

* * * *

The USPHS has sent one of their 35 mm. machines into Cabarrus County to do a mass x-ray project. They plan to x-ray the general population, beginning first with the employees of the Cannon Mills at Kannapolis. Dr. T. F. Vestal, Director of the Division of Tuberculosis Control, N. C. State Board of Health, is cooperating in this project and will read the films. The staff, with the exception of the x-ray technician, is being furnished by local health agencies under the direction of Dr. M. B. Bethel, County Health Officer, and board member of NCTA.

* * * *

Dr. Herman F. Easom, Medical Director of the Eastern North Carolina Sanatorium, advises us that Dr. Paul V. Joliet, Cleveland, Ohio, Senior Assistant Surgeon, USPHS, and Dr. W. H. Mills, Greenville, N. C., Past Assistant Surgeon, USPHS, are working with him at the Sanatorium for the months of June, July, August and September. These men are at the Sanatorium for the purpose of gaining experience in the treatment of tuberculosis.

SUPPLEMENTAL RULES CONCERNING EMIC PROGRAM

A service man's wife may now apply for maternity care and care for her baby, under the Emergency Maternity and Infant Care Program, even after her husband has been honorably discharged, promoted, or demoted, **provided** she was pregnant during the period when he was in one of the four lowest pay grades of the services, or was serving as an aviation cadet. On the same basis, she may apply if the husband and father is a prisoner of war, missing in action, or dead.

Similarly, if the father of an infant whose mother did not receive care under the program was in one of those grades at any time during the infant's first year of life, the infant's eligibility for care under the program is established.

News Notes from the Bowman Gray School of Medicine

Dr. J. E. Hawkins, formerly instructor in physiology and special research associate in the psychoacoustic laboratory at Harvard Medical School, has joined the faculty of the Bowman Gray School of Medicine as assistant professor of physiology and pharmacology.

* * * *

Dr. R. P. Morehead, associate professor of pathology, has been appointed director of the Department of Pathology and Bacteriology to succeed Dean C. C. Carpenter, who asked to be relieved of the direction of the department because of the pressure of administrative duties. Dr. Carpenter will continue to be a member of the staff of the department, assuming the title of professor of legal medicine and director of the laboratory of clinical pathology.

* * * *

Mr. Ray E. Brown resigned as administrator of the hospital on September 1, 1945, to assume the position of assistant director of the University of Chicago Clinics. Mr. Reid Holmes, assistant superintendent of Duke Hospital, has been elected administrator to succeed Mr. Brown.

* * * *

Dr. W. H. Fishman, assistant professor of biochemistry, has resigned his position effective October 1, 1945, and accepted the position of research associate in the Departments of Surgery and Biochemistry at the University of Chicago School of Medicine.

* * * *

Dr. Charles M. Norfleet, Jr., has received his discharge from the army after serving three years in India and has resumed his position as instructor in urology.

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The North Carolina Pathological Society met as the guests of the Department of Pathology on September 7, 1945. Dr. Frank W. Konzelmann, president of the American Society of Clinical Pathologists, was guest speaker. His topic was, "The Economics of the Practice of Pathology."

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The John and Mary R. Markle Foundation has awarded a grant of $7,000 for research in the Department of Internal Medicine under the direction of Dr. George T. Harrell, Jr.

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The Council on Pharmacy and Chemistry of the American Medical Association has awarded a grant of $400.00 to support the research of Dr. Harold D. Green in the Department of Physiology on the influence of environmental temperature on ischemic compression shock.

Edgecombe-Nash Counties Medical Society

Major Samuel Eason Way of Rocky Mount was guest speaker at the August meeting of the Edgecombe-Nash Counties Society, held in Rocky Mount on August 8, 1945.

Martin-Washington-Tyrrell Counties Medical Society

The quarterly meeting of the Martin-Washington-Tyrrell Counties Medical Society was held in Plymouth on August 8. The principal speakers were Lt. Cmdr. Lyman H. Hoyt, USNR, of the Edenton Auxiliary Air Station, and Captain Thomas Stringfield of the Marine Corps. Dr. Hoyt spoke on "The Medical Duties of a Physician Aboard a U.S. Navy Hospital Ship" and Dr. Stringfield spoke on "The Peleliu Campaign." Dr. Claudius McGowan is president of the society.

Wake County Medical Society

Dr. Robert P. Noble addressed the Wake County Medical Society at its August meeting, on the subject "X-Ray—Past, Present and Future." Dr. Hubert A. Royster discussed Dr. Noble's paper.

Cancer Committee

The Cancer Committee of the State Medical Society met in Raleigh on August 26 to discuss the development of a cancer control program for the state. The committee voted to invite the Field Army of the American Cancer Society to hold its regional meeting in North Carolina in October. Dr. Ivan Procter of Raleigh is chairman of the committee.

North Carolina Radiological Society

The following program has been arranged for the fall meeting of the North Carolina Radiological Society, to be held at Watts Hospital in Durham on October 5 and 6:

Friday, October 5

9:30 A.M. Business Session
Report on Industrial Commission by J. P. Rousseau, M.D., Winston-Salem, N. C.

11:00 A.M. Case Report
C. L. Gray, M.D., High Point, N. C.

11:15 A.M. Case Report
James E. Hemphill, M.D., Charlotte, N. C.

11:30 A.M. Effects of X-Ray Therapy in Experimental Virus Pneumonia
George Baylin, M.D., Durham, N. C.

11:45 A.M. Experiences in the Army of the U. S.
G. B. Murphy, M.D., Asheville, N. C.

12:00 Noon Fifteen Minute Intermission

12:15 P.M. Boeck's Sarcoid
Paul P. McCain, M.D., N. C. State Tuberculosis Sanatorium, Sanatorium, N. C.

1:00 P.M. Discussion of Cutaneous Manifestations of Sarcoid
J. Lamar Callaway, M.D., Durham, N. C.

1:15 P.M. Discussion of Bone Lesions in Sarcoid
Robert J. Reeves, M.D., Durham, N. C.

1:45 P.M. Lunch—Watts Hospital

3:00 P.M. Diagnosis of Bone Lesions in Childhood
Vincent Archer, M.D., Professor of Radiology, University of Virginia, Charlottesville, Va.
Discussion to be opened by A. H. London, M.D., Durham, N. C.

4:15 P.M. Treatment of Carcinomas of the Larynx
Hugh F. Hare, M.D., Radiologist, Lahey Clinic, Boston, Mass.
Discussion to be opened by James R. Harrill, M.D., Winston-Salem, N. C.

6:30 P.M. Social Hour
At the residence of Dr. Robert J. Reeves, 920 Anderson Street, Durham, N. C.

8:00 P.M. Dinner, Washington Duke Hotel

Saturday, October 6

2:00 P.M. Duke-Navy Football Game
Duke University Stadium, Durham, N. C.

Officers of the Society are Dr. W. W. Vaughan, Durham, president; Dr. Allen Tuggle, Charlotte, vice president; and Dr. Major I. Fleming, Rocky Mount, secretary-treasurer. Dr. James E. Hemphill of Charlotte is chairman of the program committee.

Centers for the Treatment of Tropical Skin Diseases

Two army hospitals in North Carolina have been designated as centers for treatment and research on tropical skin diseases. They are the Moore General Hospital at Swannanoa and the United States Army General Hospital at Camp Butner, near Durham.

BULLETIN BOARD CONTINUED ON PAGE 435

AUXILIARY

HYGEIA

Hygeia, named for the goddess of health, is the only magazine for laymen published by the American Medical Association. To members of the Auxiliary that fact speaks for itself. It is a magazine we should be ashamed *not* to have in our homes and in our husbands' offices. Most of you know that it contains reliable information each month concerning the health of the individual from the prenatal period to the end of life.

Hygeia makes a most appropriate gift for the doctor and his wife to send to relatives and friends. Since subscriptions are limited, it is wise for you to enter your subscriptions now. Remember that the Auxiliary receives commissions only on those subscriptions sent through the *Hygeia* Chairman.

If you are not a subscriber to *Hygeia,* now is the time to become one. I believe you will soon desire to see that others also have access to the magazine. If you are already a subscriber, surely this article need not have been written for you. You will not overlook your renewal, and you are helping to build up the circulation of *Hygeia* in the state.

MRS. D. M. ROYAL,
Hygeia Chairman,
Salemburg.

* * * *

We are pleased to quote an excerpt from the historian's report in the May issue of the *Bulletin* of the Auxiliary to the American Medical Association:

"It was hard to choose an outstanding achievement from among so many accomplishments, but I came upon it tucked away in the report from North Carolina: 'A newly organized committee of medical officers' wives has made life more interesting for the women whose husbands are now in service, and has assisted the wives and families of those members of the armed forces now residing in the state to find living accommodations, secure household help, and obtain baby beds, strollers, etc. In general, they have helped out in many emergencies and have made life more comfortable for these people away from home.'

"For those of us whose sons are in the armed forces, whose daughters and grandchildren are living away from home, North Carolina has done a Christ-like deed. It was our Lord who said, 'For as much as ye have done it unto the least of these, ye have done it unto me.'"

* * * *

The Auxiliary Advisory Committee from the State Medical Society is composed of the following physicians:

Dr. Rachel Davis, Chairman, Kinston
Dr. Annie Louise Wilkerson, Raleigh
Dr. Eleanor B. Easley, Durham
Dr. H. H. Foster, Norlina
Dr. Lester A. Crowell, Jr., Lincolnton

MRS. RALPH L. FIKE,
Publicity Chairman

BOOK REVIEWS

Recent Advances in Endocrinology. By A. T. Cameron, M.A., D.Sc. (Edin.), F.R.I.C., F.R.S.C., Professor of Biochemistry, Faculty of Medicine, University of Manitoba; Biochemist, Winnipeg General Hospital. Ed. 5. 415 pages with 73 figures, including three plates. Price, $5.00. Philadelphia: The Blakiston Company, 1945.

Cameron's **Endocrinology** has long been an accepted text. The first edition appeared in 1933, and this, the fifth edition, has been almost completely rewritten. Dr. Cameron has given much attention to the clinical aspects of endocrinology in this book, without sacrificing any of the fundamental material it contains.

The division of the material and the excellent index make this volume a ready reference book, since a clear and concise discussion of almost any subject related to the field of endocrinology can be found in a few moments. Each section has a full bibliography. Dr. Cameron uses sound judgment in the clinical material he presents. An example is the discussion of estrogen-androgen relationships to cancer on page 283, in which he presents the experimental and clinical evidence concerning this relationship. He finally concludes: "While the clinical relationship between the steroids and carcinogens such as benzpyrene and methylcholanthrene suggests that some steroids must have carcinogenic potentialities, and while this is fully borne out by the experimental work just quoted, there is no evidence that when used in proper therapeutic dosage there is danger that androgens or oestrogens (including the synthetic compounds) may produce cancer."

This book fully meets the high standards that the previous editions have set, and is recommended to the student and physician.

Rypins' Medical Licensure Examinations. Edited by Walter L. Bierring, M.D., F.A.C.P., M.R.C.P., Edin. (Hon.), member, National Board of Medical Examiners; Secretary, Federation of State Medical Boards of the United States. Ed. 5. 546 pages. Price, $6.00. Philadelphia: J. B. Lippincott Company, 1945.

The medical undergraduate faced with acceleration of the medical course and with the modern trend in revision of the curriculum finds it impossible to master all details formerly required; likewise the young graduate finds little time for a systematic review. Since the examination conducted by the national and state boards of medical licensure must of necessity be on the level of "knowledge sampling," Rypins' compilation of questions and answers should be most useful to the examiner and the candidate for licensure.

A Guide on Alcoholism for Social Workers. By Robert V. Seliger, M.D., Assistant Visiting Psychiatrist, Johns Hopkins Hospital. 94 pages. Price, $2.00. Baltimore: Alcoholism Publications, 1945.

The author approaches alcoholism as a public health problem and recommends attack along lines which have proven effective in tuberculosis and syphilis. He recommends establishment by the state of an alcoholism program associated with mental hygiene clinics and acute psychopathic hospitals, with the addition of farms for non-compulsory rehabilitation, where social and psychiatric aid can be given. The role of the social worker here is discussed. Throughout the book it is stressed that the alcoholic is a sick man. The author explores the thesis that alcoholism is a product of our culture, which reacts fully on a pre-alcoholic personality. The effects of social legislation in reducing the number of arrests for alcoholism in England are discussed in this volume.

My Second Life. An autobiography by Thomas Hall Shastid, M.D. 1174 pages. Price, $10.00 and $12.00. Published by George Wahr, publisher to University of Michigan, Ann Arbor, Michigan, 1944.

This collection of memoirs by Thomas Hall Shastid, an ophthalmologist of the Middle West, is lengthy but interesting. It is full of anecdotes about doctors and contains some information of historical value, particularly concerning Lincoln. Dr. Shastid uses incidents and memories of his childhood, youth, and maturity to weave a picture of the practice of medicine during the last seventy years.

FOR SALE—Eye, ear, nose and throat instruments. Can be seen at 201 N. Park Drive, Greensboro, N. C. Mrs. Casper W. Jennings.

BULLETIN BOARD

(CONTINUED FROM PAGE 433)

News Notes

Dr. W. C. Davison, Dean of the Duke University School of Medicine, has been appointed medical advisor for the re-education program in the European occupied countries, with headquarters probably to be in Germany.

* * * *

Dr. Clyde R. Hedrick of Lenoir has been elected president of the Caldwell Hospital to succeed Dr. J. D. Rudisill, co-founder of the hospital, who died on July 28. Dr. Fred Hubbard of North Wilkesboro, Dr. L. N. Glenn of Gastonia, and Dr. Frank Jones of Newton will take care of the surgery at the hospital until arrangements can be made to secure the services of a resident surgeon.

* * * *

Dr. Vance P. Peery of Kinston has retired from practice because of a heart ailment. He was head of the eye, ear, nose and throat department of Memorial General Hospital and one of the founders of the Kinston Clinic.

* * * *

Lt. F. G. Jarman, Jr., of Roanoke Rapids, was a member of the six-man team which parachuted on a Japanese prison camp in Peking on August 17 to rescue four of the fliers who carried out the first air raid on Tokyo. Dr. Jarman joined the OSS in 1944 and went overseas in May, 1945.

* * * *

Dr. R. F. Roberts of Asheville has been promoted from the rank of major to that of lieutenant colonel.

* * * *

Major Harold M. Horack of Durham, formerly Chief of Dissemination Branch, Medical Intelligence Division, Preventive Medicine Service, has left the Office of the Surgeon General for an assignment at Carlisle Barracks, Pa.

BULLETIN BOARD CONCLUDED ON PAGE 436

INDEX TO ADVERTISERS

American Meat Institute XXXII
AR-EX Cosmetics, Inc. XLI
Ayerst, McKenna & Harrison XXX
Bilhuber-Knoll Corporation XLI
Borden Company XXI
Broadoaks Sanatorium XXXVIII
Burroughs Wellcome & Company ..... XVI-XXV
S. H. Camp and Company XIV
Charlotte Eye, Ear, and Throat Hospital XXXVI
Cheplin Laboratories XXVI
Coca-Cola Company XXXV
Cook County Graduate School of Medicine XXXIII
Crumpton, J. L. XI
General Electric X-Ray Corporation XV
Glen Alpine Rest Home XLI
Glenwood Park Sanitarium XXXVII
Charles C. Haskell and Company V
Hynson, Westcott & Dunning XXXIV
Inter-Ocean Casualty Company XXIV
Eli Lilly and Company ..... Insert and XXII
Luzier's, Inc. VIII
M & R Laboratories XXIX
Mead Johnson & Company XLIV
Parke, Davis and Company ..... XLII-XLIII
William Perske XXXV
Philip Morris & Company, Ltd., Inc. II
Physicians Casualty Association
Physicians Health Association XXXIV
Pinebluff Sanitarium III
Powers and Anderson, Inc. XXIV
R. J. Reynolds Tobacco Company ..... VI-VII
Saint Albans Sanatorium XXXIX
Schenley Laboratories, Inc. XXVIII
Schieffelin & Company XXXIX
Julius Schmid, Inc. IX
G. D. Searle & Company XXIII
Smith, Kline & French ..... XVIII-XXVII
Southern Dairies XXX
Spencer Corset Company XXXIII
E. R. Squibb XIX
Stuart Circle Hospital XXXVIII
Thompson Homestead School XLI
Tucker Hospital XXXVII
United Drug Company XII
Upjohn XVII
Wachtel's, Inc. XXXIV
Wander Company XX
Westbrook Sanatorium XXXVI
Winchester Surgical Supply Company
Winchester-Ritch Surgical Company III
Winthrop Chemical Company, Inc. XIII
Wyeth, Inc. ..... Insert

American Board of Ophthalmology Important Announcement

Because of transportation difficulties the examination of the Board, originally scheduled for Chicago, October, 1945, has been postponed to January 18 to 22 inclusive, 1946.

1946 Examinations: Chicago, January 18 through 22; Los Angeles, January 28 through February 1; New York, May or June; Chicago, October.

Orientation Course in Allergy

The School of Medicine, University of Pittsburgh, offers an Orientation Course in Clinical Allergy, under the sponsorship of The American Academy of Allergy, for five days, October 1 to 5, 1945, inclusive, at the School on Bayard Street, Pittsburgh, Pennsylvania. Fee $40.00; for veterans, service men, and residents $10.00. Registration for evening round table conferences only by special arrangements.

Inquiries should be addressed to William S. McEllroy, M.D., Dean, School of Medicine, University of Pittsburgh, Pittsburgh 13, Pennsylvania.

Medical and Surgical Relief Committee of America

The latest report of the Medical and Surgical Relief Committee indicates that postwar medical relief for Europe is still a most serious problem. Appeals more numerous than ever reach Committee Headquarters. These appeals have been answered by sending overseas $20,740.20 worth of medical and dental equipment during the six months period extending from January through June, 1945. The Medical and Surgical Relief Committee has also helped in the cure and prevention of disease in our own country by donating $23,187.57 worth of supplies over the same period of time. Mr. Arthur Kunzinger, treasurer of the Committee, announced that total donations to date equal $734,559.97.

In addition to its fixed purpose of providing medical relief, the Medical and Surgical Relief Committee is again concentrating on the collection of medical and dental literature written within the last five years to be distributed for the benefit of European professional men who have been unable to keep abreast of wartime scientific progress. Anyone who has access to such literature is urged to get in touch with the Medical and Surgical Relief Committee, 420 Lexington Avenue, New York City.

Front Line Psychiatry Effective

Approximately 90 per cent of combat exhaustion cases are returned to duty largely as a result of prompt detection of symptoms and skilled handling of the patient, it was announced by the commission of outstanding civilian psychiatrists which recently completed an 11-week survey of psychiatric conditions in the European Theater of Operations.

Combat exhaustion cases, known as shell shock in the last war, and sometimes referred to as combat fatigue or operational fatigue, are being treated more successfully in this war because of the high quality of personnel in the field and better methods and techniques. Of the greatest importance is the fact that our psychiatrists are doing some of their most effective work right up near the front at the clearing stations.

Tryptophane

How tryptophane, one of the essential amino acids, may be used in improving human and animal nutrition is described as "a challenge to modern research" in a review of published studies on this dietary supplement issued to the trade by the Special Chemicals Division, Winthrop Chemical Company, Inc., Rensselaer, N. Y.

Entitled "Recent Research on Tryptophane", the publication includes a bibliography of 68 papers dating back to 1906. Most of the studies referred to, however, are dated 1943 and 1944. The review concludes that "the potentialities of tryptophane are vast."

Penicillin Discoverer Anticipates New Drugs To Aid War on Disease

World medicine appears to be approaching the threshold of a brilliant new era of discovery in which some of mankind's most dreaded diseases may be wiped out through the use of penicillin and equally dramatic microbe-killers yet to be found, it was indicated in an address delivered July 3 by Sir Alexander Fleming, famed British bacteriologist who discovered penicillin and gave it to the world.

Sir Alexander's address, his first introduction to an American radio audience, was heard at the conclusion of the Schenley Laboratories' program, "The Doctor Fights," which is dedicated to physicians and surgeons serving in the armed forces and on the home front. The particular dramatization, retitled "The Magic Drug," was built around his discovery of penicillin and the life story of Dr. Fleming, whose part in the radio play preceding the address was portrayed by Ronald Colman, British-born celebrity of the theater.

"The Doctor Fights" is heard weekly over 77 stations of the CBS coast-to-coast network, on Tuesdays at 9:30 p.m., EWT.

The Danger of Small Doses of Penicillin

Dour, white-thatched Sir Alexander Fleming, discoverer of penicillin, is fearful of the consequences of uncontrolled distribution of his "baby." In a breakfast interview with the editor of the Bulletin, Sir Alexander remarked that there was danger of "educating the microbe to resist penicillin". In his talk at a dinner tendered him by penicillin producers the following evening he again referred to this fear. "The greatest possibility of evil in self-medication is the use of too small doses so that instead of clearing up the infection, the microbes are educated to resist penicillin and a host of penicillin-fast organisms is bred out." But he went on to express the hope that this danger could be averted. (This can be done with the knowledge and controls already available. Production is ample, and very large doses of penicillin have not produced any serious effects. It is only necessary to be sure the dosage indicated on packaged penicillin is heavy enough to give bacteria a lethal dose in any particular instance.)

The grave-eyed, modest hero of healing described some early difficulties in isolating and identifying **Penicillium notatum** mold after the chance discovery of its powers. He recalled that the original strain of **Penicillium notatum** was isolated by a Swedish pharmacist named Westling, from decaying hyssop. The earliest reference to penicillin might be the portion of Psalm 51 that says, "Purge me with hyssop that I shall be cleansed."

—Office of Pharmacal Information

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CHANGING IDEAS IN THE TREATMENT OF PULMONARY TUBERCULOSIS

CHARLES HARTWELL COCKE, M.D., F.A.C.P.†

ASHEVILLE

Although the figures for the current year are not yet available, I venture the assertion that the death rate from pulmonary tuberculosis in the United States will not far exceed 42 per 100,000 of population. When one contrasts this figure with the mortality rate of 186 per 100,000 which prevailed a brief thirty years ago, one is amazed at the progress made in the fight against this disease. This encouraging result has not come about by virtue of improvements in treatment alone, gratifying as these have been; in honesty one must point out other essential factors which have played their part in it.

To begin with, the incidence of the disease, as was demonstrated many years ago by Newsholme, bears a definite relationship to the economic status of a people and to their housing and sanitary facilities. The more concentrated the population and the lower the economic stratum, the higher the incidence of the disease is found to be. The improved economic status of the American public, its better housing conditions, greatly improved habits of sanitation and hygiene, and a diet vastly superior to that of our forebears have played an important part in reducing the incidence of tuberculosis in this country. Control of plagues, pestilences, epidemics, and debilitating diseases which predispose to tuberculosis is increasingly accepted as a factor in the prevention of tuberculosis. Training in dental hygiene, posture, and physical education has raised the health standards of our youth and has made the going tougher for the tubercle bacillus.

Crusades of all sorts by tuberculosis organizations, national, state and local, have aroused public attention, and early recognition campaigns have uncovered many cases of tuberculosis in the curable stage. The enormous expansion of sanatorium facilities has served a dual purpose: first, protection of the well members of the family by isolation of the infectious cases; and second, a much better opportunity for competent treatment of the sick.

Doubtless many other factors have played important parts in lowering the tuberculosis death rate. All these factors together, however, would hardly have been so successful had there not been a concurrent improvement in our methods of treatment. It is my purpose tonight to discuss briefly—and, I fear, inadequately—the changes which have brought about this improvement. Tuberculosis holds a unique place among diseases in that, itself an unchanging disease, it has gone through so many revolutionary eras of treatment.

It was not so long ago that about the only advice a physician could give a tuberculous patient was to go west, or else seek the Appalachian Mountains. There, as a result of activity and lack of proper supervision, he all too frequently reached the inevitable end of his trail. The sanatorium idea, imported from the institutions of Brehmer and Dettweiler, took root when Trudeau built the Little Red Cottage in the Adirondack Mountains, which was the beginning of the now well-known Trudeau Sanatorium.

The essential features of the treatment in these early institutions were rest in the open, exercise under controlled conditions, and a nourishing diet. While we have developed refinements of treatment, three factors remain as fundamental. These are, in order

Presented at the Great Lakes Naval Hospital, Chicago, Ill., War-Time Graduate Meeting, October 15, 1943.

† Deceased.

of importance, rest, food, and fresh air.

As sanatoria were built, it was quite natural that they would be located in sections more or less noted for the purity of the air and the salubrity of the climate. This is not the place to debate the value of climate in the treatment of tuberculosis. While treatment in the resort community offers the decided advantage of separating the patient from his business, friends, and family during the period of his enforced bed rest, the patient who cannot, because of the financial strain, live away from home in relative comfort and peace of mind is much better off at home. As Osler put it, care without climate is much better than climate without care. No one today denies that tuberculosis can be cured in any climate. I feel that some climates, however, by providing greater physical comfort, may well offer superior chances of a cure to patients who can afford to live in them.

Soon after he made his epic discovery of the tubercle bacillus in 1882, Koch developed tuberculin, which he believed at first to be the long-sought specific therapeutic agent. I need not recite here the tragic disappointments that followed its development. Suffice it to say that at present tuberculin is used largely, if not entirely, for diagnostic purposes.

It was Forlanini of Pavia who contributed more to the treatment of tuberculosis than any man since Trudeau, by introducing pneumothorax therapy. While suggestions along this line had been made by others much earlier, Forlanini's work laid the foundation for what is now perhaps our most valuable method of compression. Pneumothorax has saved many patients who otherwise would have died, and the indications for its use have been so greatly extended within the last fifteen or twenty years that this method of treating tuberculosis has become almost commonplace. At first it was indicated only in patients whose lesions were largely unilateral. Increasing use of the roentgen ray has shown how infrequently this criterion can be met, and alternating pneumothorax or bilateral pneumothorax has been undertaken with increasing success in properly selected patients with bilateral lesions. There has also been a tendency to extend the application of pneumothorax to earlier lesions, although the original concept was that its use must be confined to the case which was progressive in its downhill course under conservative rest treatment. Pneumothorax is indicated for the control of hemorrhage and spreading infiltrations, for the closure of cavities not too close to the periphery or apex of the lung, and incidentally for sputum conversion. When satisfactory compression is possible, it is undoubtedly the quickest way to control a lesion.

While it is of great value in wholly ambulatory patients who cannot afford to stop work, pneumothorax does not, as a general rule, absolve the patient from obtaining the proper amount of rest and taking care of himself. Pneumothorax may be compared to a plaster cast on a broken limb; it does not heal, but it gives nature a better chance to effect healing. It is well that this point be impressed upon the patient taking pneumothorax, who often assumes liberties he otherwise would not take.

Pneumothorax has its limitations. Pleural adhesions, which cannot be definitely ascertained by any known method of investigation until air is put in, may prevent proper compression and closure of cavities. In a certain number of such cases intrapleural pneumonolysis or severing of the adhesions by cautery has greatly enhanced the value of the method. In some instances a phrenic crush enhances the success of pneumothorax, causing cavities to close. Separation of adhesions by open operation is a far more formidable procedure and its usefulness is much more restricted.

The most frequent complication of pneumothorax is the formation of fluid. In my experience this occurs some time during the course of treatment in 50 to 80 per cent of the patients. Frequently a small amount of fluid that neither the patient or I had suspected is found on fluoroscopic examination. These small amounts are often so evanescent that, unless fluoroscopic studies are made at frequent intervals, they may be missed. The proper handling of fluid which persists or increases or becomes purulent is a subject that might well occupy a whole evening, and cannot be discussed here.

A less frequent but serious complication is spontaneous pneumothorax resulting from the rupture of an adhesion and sometimes followed by the development of pyopneumothorax if the patient survives the first crisis. Shifting of the heart, mediastinal structures, trachea, and diaphragm (particularly in certain left-sided cases) may cause grave respiratory, circulatory, and

gastric difficulties. Such occurrences can readily be shown by the fluoroscope, which I find to be an invaluable guide in the management of pneumothorax cases. I make a fluoroscopic examination both before and after each pneumothorax refill when possible. Mediastinal hernia is another complication which may be met with, but it should be readily recognized under the fluoroscope. Of the more bizarre and terrifying complications, air embolism and pleural shock certainly take first rank. Theoretically, embolism is always preventable; pleural shock is not completely understood, despite the work of Capps[1] and a few others, who have recognized the condition as an actual entity.

Up to a certain point pneumothorax is reversible. Pneumothorax therapy, however, especially if there has been much fluid, sometimes leaves the patient with a complete dextrocardia, a fishhook trachea and misplaced mediastinum, emphysema or fibrothorax, or a fixed diaphragm. In such cases, even though the patient recovers from tuberculosis, his vital capacity is pitifully low, and he is capable of little if any physical activity and usefulness.

A few years ago extrapleural pneumothorax had quite a vogue. I believe that its field of usefulness is much more limited than was first claimed. Certainly the hazards of it far exceed those of intrapleural pneumothorax. Infection, travelling through the lung and resulting in either a tuberculous or a mixed pyogenic infection of the pleural cavity, has frequently occurred in spite of all possible surgical precautions. On the whole I have found the ultimate results disappointing.

Oleothorax has a limited field of usefulness in those cases where one hopes to sterilize an empyema, where the lung has a stubborn tendency to re-expand before cavity healing has occurred, or where the patients have to come considerable distances for their refills. I feel that the use of this method is on the wane.

While I have several patients who still carry their paraffin packs, which closed cavities when all other methods suitable to their cases had failed, the thoracic surgeons have so vastly improved their technique for thoracoplasty that this procedure may soon be in the discard.

Paralysis of the phrenic nerve, either temporary or permanent, has a definite place in cases with either unilateral or bilateral involvement in which pneumothorax is impossible. Combined with pneumothorax, it frequently gives sufficient relaxation to permit the closure of cavities in a formerly unsuccessful pneumothorax. I prefer the temporary crush, later to be made permanent if that is desirable. I have never seen the uncomfortable and at times disastrous results that followed the earlier methods of exeresis.

The use of bilateral elevation of the diaphragm, or pneumoperitoneum, when other methods of compression fail has been advocated with most zeal in this country by Banyai[2]. While I have had some patients who obtained relief from this method, I have little enthusiasm for the measure generally, and on the whole have found the ultimate results disappointing.

Thoracoplasty and its variants offer a means of permanently closing cavities that can be closed no other way. When Sauerbruch first popularized the method, a mortality rate of 25 to 50 per cent was not uncommon. This appalling rate has been lowered until the immediate operative mortality in properly selected patients is now comparable to that found in acute appendicitis—truly an astonishing triumph for the thoracic surgeon! The operation is one of degrees and stages. The number of upper ribs removed may vary from one to eleven. In limited areas bilateral thoracoplasty may be performed, or a unilateral operation may be done successfully while the patient is still undergoing pneumothorax for the contra lateral lung. It may cause little or no external deformity, or it may be quite deforming, leaving the patient with a drooping shoulder, a shrunken chest wall, and a twisted spinal column. Its effects are more or less irrevocable.

Various ancillary operations have been devised in an attempt to provide greater physiological rest for the diseased lung. Apicolysis, scaleniotomy, and the multiple intercostal paralysis operation of Alexander perhaps have more importance in this group than the other less well known and technically difficult variants.

A few years ago Monaldi published rather stimulating reports on his method of closed cavitary drainage. The technical difficulties and poor end results have been discourag-

1. Capps, J. A.: Air Embolism Versus Pleural Reflex as the Cause of Pleural Shock, J.A.M.A. 109:852-854 (Sept. 11) 1937.

2. Banyai, A. L.: Principles of Pneumoperitoneum Treatment of Pulmonary Tuberculosis, Dis. of Chest 7:402-406 (Dec.) 1941.

ing, however, and at present the method has definitely limited application.

Lobectomy has been successfully done for pulmonary neoplasm and bronchiectasis and, in a few instances, for tuberculosis. Difficulty in proving the complete integrity of the other lung and the formidable nature of the operation are the chief drawbacks to the use of this procedure. As one raised in the conservative school of thought, I would have some hesitancy in recommending the procedure for a tuberculous lesion no greater in extent than the confines of a single lobe.

When Moellgaard introduced sanocrysin (gold and sodium thiosulfate) some years ago, interest in the chemotherapeutic approach to the treatment of tuberculosis reached a high point. Though some careful workers in this country, notably Matson[3], have found it useful, it has not met with much popular acclaim. I cannot evaluate its usefulness, as I have had slight experience with it. While some may be hopeful that some of the sulfonamide group of drugs may be the answer to the prayer for a specific agent against the tubercle bacillus, the limited experiences with promin published so far have not been encouraging.

In a recent publication on "Trends in Frequency and Types of Surgical Procedures in the Treatment of Tuberculosis," Drolet[4] reports that one hundred Canadian and American tuberculosis sanatoria and hospitals, most of them having a bed capacity of 300 or more, at the end of 1937 were utilizing some form of collapse therapy in 49 per cent of patients, while in 1941 the figure was 48 per cent. From these figures, it would seem that the use of collapse therapy, which was rapidly increasing one or two decades ago, has about become stabilized. This state of affairs I believe is proper, for I have never been one to subscribe to the theory that tuberculosis is primarily a surgical disease.

Summary

Tuberculosis is a curable disease. Under proper conditions of care and rest it has a great tendency to resolution and healing. When the patient is seen relatively early, this treatment may be all that is necessary. Should the disease be progressive or cavitation occur, collapse therapy of a suitable nature should be used. The method that has proven of greatest value is intrapleural pneumothorax; this must often be supplemented by intrapleural pneumonolysis, however, and less often by phrenic paralysis. Thoracoplasty is now a relatively safe procedure, and is being used with increasing frequency. It has the disadvantage of causing frequent deformities and of being irreversible.

(Slides illustrating the different procedures and the results obtained in an unselected group of patients were shown on the screen.)

3. Matson, R. C.: The Treatment of Pulmonary Tuberculosis, J.A.M.A. 115: 1620-1624 (Nov. 9) 1940.
4. Drolet, G. J.: Collapse Therapy: Trends in Frequency and Types of Surgical Procedures in Treatment of Pulmonary Tuberculosis, Am. Rev. Tuberc. 47:184-215 (Feb.) 1943.

PERIBRONCHITIS

FREDERIC M. HANES, M.D.

DURHAM

Although the pulmonary lesion to which attention is directed in this brief paper is an entity with very characteristic features, it is not always recognized as such. It is usually diagnosed as bronchopneumonia (acute or subacute), sometimes as "nontuberculous bronchopneumonia," or again as "delayed resolution." Not infrequently it is mistaken for basal tuberculosis, and the patient is subjected to prolonged treatment for this disease. Since the lesion under discussion is a definite morbid entity, with an easily recognizable natural history, it deserves a distinctive name. The term *"peribronchitis"* seems best, since it is based upon the pathology of the condition.

That the cardinal and distinctive features of *peribronchitis* are not as familiar to students as they should be is not surprising, for it is seldom described as a separate entity in the textbooks or systems of medicine. This lack of specificity has resulted in confusion of thought and inexactitude of diagnosis.

Pathogenesis

Peribronchitis is the result of repeated infection of the lung from lesions in the upper respiratory tract, either acute—as in the common cold or influenza, with secondary pyogenic invasion of the mucous membranes—or chronic, from sinus disease or infected tonsils. As a rule one of the lower lobes of the lung, usually the left, is involved, and with each succeeding infection this area of lowered resistance shows signs of activity. One entire lobe, or a large part

From the Department of Medicine, Duke University School of Medicine, Durham, North Carolina.

of one, usually is involved, and it is uncommon to find involvement in both lungs.

The smaller bronchi, or bronchioles, become inflamed, causing bronchial exudation, which may result in an astonishingly profuse mucopurulent expectoration suggesting in its amount a bronchiectasis. Fibrosis of the peribronchial tissues results from the organization of peribronchial inflammatory exudate, and a chronically impaired area of lung gradually develops. This constitutes a *locus minoris resistentiae* for the localization of subsequent infections. The peribronchial fibrosis is not a gross affair and can not, as a rule, be detected by x-ray studies.

Symptoms and Signs

Peribronchitis is characterized symptomatically by the recurrence of febrile attacks of only a few days' duration, accompanied by malaise, aching and considerable prostration. Cough is severe and results in the production of mucopurulent sputum, which may be blood-tinged. The fever may rise sharply several degrees, but subsides within three or four days. There may be a mild leukocytosis. Examination of the sputum reveals a scanty number of the pyogens usually found in acute bronchitis. The entire attack, at least in the early stages of the disease, may last less than a week, and the patient usually regains quickly his former well-being. Through the years, however, the attacks may become more severe and *localized bronchiectasis may result.*

It will be noted how closely the condition simulates a basilar tuberculous lesion, and the grave possibility of making this mistaken diagnosis is always present. Repeated examinations of the sputum for tubercle bacilli and fungi should be made. X-ray studies help, as a rule, only in a negative way.

When the patient is quite free of symptoms and is up and about and feeling well, one is astonished at the persistence of a great abundance of moist rales over the area of involvement. *This is the most characteristic sign of peribronchitis.* Impairment of percussion resonance is slight or absent and the respiratory murmur is normal, but on inspiration one hears a profusion of small moist rales over the lobe involved. These may persist for months or, when some bronchiectatic dilatation occurs, even years. On the other hand, healing and restitution to normal may occur even after many attacks. The danger of recurrence is always present, however, with any respiratory infection, even years after the initial attack. The attacks repeat themselves in a stereotyped way, with a reappearance of the symptoms and signs first observed.

Diagnosis

Peribronchitis has a characteristic natural history which makes the diagnosis relatively easy. The history of recurring febrile bronchitic attacks of short duration, the rapidity with which the constitutional symptoms disappear, the persistence of signs which suggest extensive lung disease after the patient feels well, and the absence of radiographic evidence of pathologic lesions in the lung constitute a clear-cut syndrome. Tuberculosis or fungus infection may and should be suspected—for, as is well known, basilar tuberculosis is not rare—, but careful and repeated negative examinations of the sputum and the absence of serious constitutional symptoms in the presence of signs of extensive lung involvement make the diagnosis clear. The important thing is to know that such a syndrome as has been described does occur not infrequently and that it may be diagnosed mistakenly as tuberculosis or fungus infection.

Treatment

Treatment consists, first of all, in the utilization of all measures which may prevent the recurring attacks of febrile bronchitis. The entire upper respiratory tract, the nasal sinuses, tonsils and adenoids, and teeth should be searched minutely for infection and, where possible, any infected foci should be eradicated. Such foci may not be discovered, and in this case unintelligent mutilation of the patient is not indicated. The great seriousness of upper respiratory infections should be explained carefully to the patient, and bed-rest should be insisted upon when such infections occur. Personally, I believe that the use of sulfadiazine, or possibly penicillin, prophylactically at the very beginning of a bronchitic attack is fully justified, though others may not agree. The inherent dangers of promiscuous sulfonamide medication are known to all, and are not to be minimized, but these seem to me to be outweighed by the danger of repeated peribronchitic attacks. Experience has shown that the attacks are rendered less severe and prolonged by sulfadia-

zine therapy. The dosage need not exceed 12 Gm. given over a period of three days, a level teaspoonful of sodium bicarbonate being given with each four-hourly dose of 1 Gm. of sulfadiazine.

Now that penicillin is available to all, this drug, either alone or combined with sulfadiazine, may be the treatment of choice. The necessity of administering penicillin hypodermically throughout the twenty-four hours, however, lessens its usefulness as a prophylactic, unless the patient is hospitalized. If penicillin is used it should be given every three hours hypodermically in doses of 5,000-10,000 units. Very recently some suggestive evidence has been produced that penicillin given orally, with tri-sodium citrate as a buffer, is absorbed from the intestines. Penicillin inhaled in a finely nebulized state, administered hourly in a concentration of 20,000 units to the cubic centimeter, may prove beneficial.

SOME NOTES ON THE PRACTICAL USE OF DIGITALIS

ROBERT L. MCMILLAN, M.D.

WINSTON-SALEM

Digitalis is one of the most useful but most abused drugs commonly prescribed. In spite of 160 years' experience in its use, physicians often fail to select potent preparations and to prescribe adequate initial and maintenance doses. The all too frequent observation of these errors led to the preparation of this paper.

Indications and Limitations

The single important condition for which digitalis should be employed is congestive heart failure. The usual indications of this condition are cardiac enlargement and dilatation, gallop rhythm, dyspnea, orthopnea, edema, hepatic enlargement, rales in the lung bases, and auricular fibrillation. Combinations of these findings establish the diagnosis of heart failure and indicate at once the need for digitalis.

In patients with paroxysmal auricular fibrillation adequate and continued administration of digitalis results in definite improvement and often precludes the attacks. It is very important that the drug be given in full dosage in such cases and that the patient be kept on a maintenance dose, since paroxysmal fibrillation may become continuous if not controlled and prevented. This disorder of the cardiac rhythm may, even if of short duration, produce crippling or fatal emboli. Quinidine as well as digitalis may be necessary to prevent or treat the attacks.

Although one may encounter heart failure in patients with thyrotoxicosis, many of these cases will not respond satisfactorily to digitalis therapy unless the thyrotoxic condition is treated by iodine or surgery. In functional cardiac disorders such as effort syndrome and marked sinus arrhythmia (which are often associated with sighing respirations, palpitation, and some anxiety state), and in paroxysmal tachycardia, digitalis is not usually indicated, although some cases of paroxysmal tachycardia seem to be benefited by the prolonged administration of digitalis.

Dosage

The gravest and most common errors encountered in the use of digitalis are inadequate initial dosage and failure to provide the patient with a maintenance dose. Patients frequently object to taking digitalis, contending that if they once begin it, they must take it the rest of their lives. It is the physician's duty to convince the patient that digitalis is the simplest, surest, and best means of sustaining the failing heart muscle, of giving him comfort and physical well being, and of prolonging his life.

"Digitalizing dose"

The amount of digitalis necessary varies from patient to patient. In general, however, the average amount of the drug required for initial digitalization is 1 U.S.P. unit (1½ grains or 0.1 Gm.) of the dried leaf per 10 pounds of the patient's normal body weight. This amount should be given over a twenty-four to forty-eight hour period, the rapidity of administration being governed by the severity of the heart failure. To be certain that an adequate digitalizing dose is given, the drug should be administered until the patient's clinical improvement is satisfactory or until certain symptoms and signs of intoxication appear. Loss of appetite, nausea, vomiting, and blurring or dimness of vision are the usual symptoms. Bigeminy or coupled beats, due usually to premature ventricular contractions occurring after every other beat, and bradycardia are also signs of intoxication. Electrocardiographic evidences of digitalis

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intoxication are early auriculo-ventricular block and alteration of the T waves and S-T intervals, but the electrocardiogram should not be relied upon as a criterion of digitalization. The clinical improvement of the patient as manifested by slowing of the heart, reduction of dyspnea, orthopnea and edema, increase in vital capacity, decrease in pulse deficit, and loss of weight (due to diuresis) is the most important criterion for judging the amount of the drug to be given.

It is seldom necessary to digitalize a patient so rapidly that one must prescribe more than 4 or 5 U.S.P. units in one dose. However, if the heart failure is of such gravity as to demand larger doses, one must be positive that the patient has not had digitalis, squill, or strophanthus recently, as it is quite possible in such cases to produce ventricular standstill by a single large dose of digitalis.

Maintenance dose

When one is sure that the patient has been properly digitalized, further doses should be discontinued for that day and the maintenance dose of 1 or more U.S.P. units a day should be instituted the following morning. In chronic or acute heart failure, there is never any indication for discontinuing digitalis after a "few doses." Withering's only error in the use of digitalis was his failure to administer a maintenance dose.

The average patient will excrete 1 U.S.P. unit of digitalis each twenty-four hours, and this amount must be replaced daily in order to maintain the state of digitalization. The maintenance dose varies from patient to patient as does the "digitalizing dose" and must be altered to suit the individual requirement of the patient. In many cases it is necessary to give a maintenance dose of 1.5 or 2 U.S.P. units a day.

The following table gives the average estimated amounts of digitalis ordinarily required for individuals of various body weights. As has already been stated, there is no fixed calculable dose.

Average body weight before edema (pounds)	*"Digitalizing dose" (U.S.P. units)*	*Daily maintenance dose (U.S.P. units)*
100	8 to 10	1
120	10 to 12	1
140	12 to 14	1 to 1.5
160	14 to 16	1 to 1.5
180	16 to 18	1.5
200	18 to 20	1.5 to 2.0

Types of Digitalis

The choice of the type of digitalis to be employed is of exceptional importance. It has been established for some years that tincture of digitalis is unstable and that its strength does not remain constant. Many tinctures have been assayed and found to vary from 33 per cent to 444 per cent of the U.S.P. standard strength.

There are several so-called digitalis compounds marketed under trade names and dispensed in tablet and liquid form. Their use is obviously unsound. Some contain three or more separate drugs such as squill, strophanthin, and apocynum, each of which has a digitalis-like effect on the heart. Apocynum also acts as a purgative, and when it is employed in such compounds the patient, in self defense, often discontinues the medication. One compound often encountered in inadequately treated cases of cardiac failure has been found to contain nitroglycerine, tincture of digitalis, tincture of strophanthin, and tincture of belladonna; another, digitalis, strophanthin, and cactus. Patients subjected to such "shotgun" prescriptions surely fall into the class of those who have "suffered much of many physicians." In by far the majority of cases proper administration of digitalis alone is adequate to treat cardiac failure. If purgatives, coronary vasodilators, sedatives, or diuretics are needed, they may be administered separately as such.

There are many glycosides of digitalis which have been found to be effective in the treatment of cardiac failure. These drugs are increasing in popularity and will probably be more widely used in the future. At present, however, powdered leaf tablets or capsules are still the digitalis preparations of choice, and are better understood as regards dosage. Prescriptions should specify these tablets or capsules and the amount in U.S.P. units, grams, or grains (1 U.S.P. unit = 0.1 Gm. or 1.5 grains). By this means one may have reasonable assurance of employing a potent drug, the therapeutic effects of which may be anticipated in the majority of patients.

Summary

1. Digitalis is one of the most abused drugs in the Pharmacopoeia, the common tendency being to give too little rather than too much.

2. The single important condition for

which the drug should be employed is congestive heart failure.

3. "Partial digitalization" or the use of "a few doses" of digitalis is never indicated in cases of acute or chronic heart failure.

4. Although digitalis glycosides are of uniform, measurable potency and are gaining in popularity, powdered digitalis leaf, in tablets or capsules, is still preferred by most internists and cardiologists.

5. Compounds of digitalis and tincture of digitalis should never be employed.

CHRONIC NON-CALCULOUS CHOLECYSTITIS

C. T. Smith, M.D.

Rocky Mount

Chronic non-calculous cholecystitis is the chief organic cause of "chronic indigestion." Some patients with distressing symptoms may have little pathologic evidence of disease in the gallbladder, while others with few, if any, symptoms will be found to have extensive cholecystic disease.

The function of the gallbladder and the mechanism of the pain associated with cholecystitis have been ably described by Carter, Greene, and Twiss[1]. They have compared the functions of the gallbladder to those of the intestine—namely, absorption, secretion, and motor activity. Bile is stored during the period of digestive inactivity and supplied during the digestive period as an aid in the absorption of fatty foods. In the process of storing bile the gallbladder absorbs some of the water and thus concentrates it. Pribram, upon the basis of his experimental work, has concluded that a secretion from the wall of the gallbladder, rather than the bile itself, is an essential factor in the digestion of fats.

Emptying of the Gallbladder

The presence of acid or of fatty substances in the upper portion of the small intestine causes the formation of a hormone, cholecystokinin. It is the action of this hormone that stimulates contraction and emptying of the gallbladder.

In addition to the hormonal control, there is a nervous factor. The autonomic system sends parasympathetic motor and sympathetic inhibitory fibers to the gallbladder. This innervation explains certain reflex symptoms as well as those due to autonomic imbalance.

The direct application of magnesium sulfate to the region of the sphincter of Oddi will cause a relaxation of that sphincter and a flow of bile.

The Mechanism of the Pain

When the gallbladder contracts and the sphincter of Oddi fails to relax, pain is induced. Ergotamine tartrate and nitroglycerin are supposed to relax the spasm of the sphincter, and thus relieve the pain. Morphine and other preparations of opium relieve the pain but do not relax the sphincter. Apparently some types of pain which are initiated by the biliary tract are not due to the gallbladder. Such pain is probably due to pylorospasm or cardiospasm, and persists after the diseased gallbladder has been removed.

Pathology

The early stages of chronic cholecystitis are characterized by round cell infiltration, congestion, and edema, with enlargement of the organ. After recurrent infections, the gallbladder may be small, encysted, and fibrotic. Cultures of the gallbladder bile are likely to be sterile. The positive culture is more frequently obtained from the wall of the gallbladder or from adjacent lymph nodes[2]. This fact suggests that the route of infection is probably through the blood stream or lymph vessels rather than through the lumen of the ducts. It is not often, however, that a history of either systemic or alimentary infection preceding chronic inflammation of the gallbladder can be obtained.

Symptoms and Signs

Intolerance to fried foods, epigastric discomfort following meals, nausea, eructations, fear of eating, "biliousness," and even loss of weight may be noted. If the patient complains that cooked vegetables give him indigestion, it is probably the smoked meat or grease used for seasoning that is the disturbing ingredient. He may be able to eat the same vegetables cooked in clear water without any discomfort. Pain may be severe enough to seem to require a hypodermic. In a series of 78 patients at Park View Hospital

Read beore the Regional Meeting of the American College of Physicians, Chapel Hill, November 3, 1944.
From the Park View Hospital, Rocky Mount, N. C.

1. Carter, R. F., Greene, C. H., and Twiss, J. R.: Diagnosis and Management of Diseases of the Biliary Tract, Philadelphia, Lea & Febiger, 1939.

2. Boyd, William: Pathology of Internal Diseases, Philadelphia, Lea & Febiger, 1935, p. 374.

who were found at operation to have chronic gallbladder disease, more than half had received hypodermic injections for pain.

Physical examination may reveal tenderness to pressure in the right hypochondrium, particularly on inspiration. There is no rigidity. The cholecystogram may show a faint shadow or no shadow at all, or it may show a filled gallbladder which does not contract after a fatty meal. The other laboratory examinations are non-relevant. In the series of cases at Park View Hospital gastric analysis was usually within normal limits, although cases of both hypochlorhydria and hyperchlorhydria were found. There was no jaundice or history of jaundice in any case.

Differential Diagnosis

It is not always possible to rule out nervous indigestion resulting from autonomic imbalance, even though the cholecystogram indicates disease. Both conditions sometimes respond to the same treatment. An atypical peptic ulcer may simulate chronic cholecystitis, but the typical ulcer is easily recognized. Lesions about the right side of the diaphragm are usually too acute to be confused with chronic cholecystitis.

The early stages of coronary heart disease may be very difficult to exclude. The failure of the gallbladder to concentrate the dye does not rule out heart disease. Both conditions may be present, and studies should be continued until the presence or absence of heart disease is proved.

The gastric symptoms of early pregnancy may simulate chronic cholecystitis. The finding of pregnancy does not always clear up the diagnosis, for the symptoms may persist during the entire pregnancy.

Treatment

The plan of treatment is to relieve biliary stasis by relaxing the sphincter of Oddi. A diet which will not cause violent contraction of the gallbladder may give complete relief of symptoms. The diet usually prescribed is low in fat and cholesterol; highly seasoned foods should not be allowed, since they stimulate gastric acidity.

A saline mixture containing equal parts of sodium sulfate, sodium phosphate, and sodium bicarbonate[3] has been found to be helpful. A teaspoonful of the mixture in a glassful of warm water should be taken before breakfast. To relax spasms of the cardiac or pyloric sphincter, phenobarbital combined with extract of Hyoscyamus or atropine is rather popular.

Chronic non-calculous cholecystitis may be considered a medical condition, although a certain number of such cases will require surgery. If a patient has repeated attacks of painful indigestion, and his gallbladder fails to take the stain, one cannot be certain that there is not a stone in the cystic duct. For such a patient operation must be considered.

3. Rehfuss, Martin E. and Nelson, Guy M.: The Medical Treatment of Gallbladder Disease, Philadelphia, W. B. Saunders Company, 1935, p. 287.

THE ORGANIZATION OF A COMMUNITY HOSPITAL

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Winston-Salem

The subject you have asked me to discuss is one that has interested me greatly for a number of years, because all of my medical life has been spent in hospitals. Furthermore, I am convinced that the level of medical care in any community is established by its hospitals and not by individual practitioners.

The following remarks are in no way directed toward any individual or individuals, but are entirely impersonal and might well apply to any community hospital. Many of you may disagree with these ideas, but you can be assured that they are not merely my own views, but are based on practices employed today in the better hospitals. My only interest in your proposed project for a new hospital is the improvement of medical care throughout this section of North Carolina.

Building Plans

It is necessary that you do your planning and thinking before you build—not after. Make a full survey of existing conditions, including the population to be served, subgroups of the population, and public health needs. Adequate provisions should be made for the care of both white and colored patients in the hospital and outpatient clinics. It has been said that every hospital should be built with completely portable walls,

Read before the board and staff members of the High Point Memorial Hospital.

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doors, and windows, and experience supports that statement. Since such a hospital is not practicable at present, planning must be careful and prolonged, and the actual construction should be in the hands of a recognized hospital builder of proved ability.

Financial Responsibility of the Community

It is a known fact that no good community hospital is self-supporting; there is always an annual deficit if patients receive the care they should. Of course, private institutions can break even or make a profit if they are well managed, but that profit comes mostly from professional fees and not from the hotel-keeping part of the organization. To realize the truth of this statement, one has only to recall the financial plight of almost all hotels until very recently. And hotels do not provide twenty-four hour intern, nursing, and orderly services, or various laboratory and dietary services. Furthermore, no one has heard of a hotel which takes in charity guests who can pay nothing. In a community hospital obviously none of the professional fees can be used to make up a deficit.

Some hospital administrators and some board members boast that they can run their hospitals without a deficit. That boast is an admission of gross ignorance as to what constitutes good care for sick people. Upon visiting such hospitals it is at once apparent why there is no deficit. A hospital never stands still; it goes either forward or backward. In order for it to go forward, financial outlay is necessary. A niggardly financial policy is costly in the long run, both to the patient and to the hospital. Therefore, those in control of the city budget should expect some deficit each year and be prepared to meet it. Or better still, after the hospital is built and equipped, efforts should be made to obtain more funds for an endowment to take care of current expenses. Many hospitals have, over a period of years, built up sizable endowments for such purposes.

Responsibilities of the Profession

Physicians are notorious for being individualists and for developing cliques and jealousies, often traceable to some doctor's cutting fast financial or ethical corners or listening to patients' unfavorable comments. It is likely that the profession in this community is not different from that in similar communities elsewhere. Those traits that have been mentioned are apt to be the greatest stumbling blocks to the achievement of a really first-rate institution.

A community hospital, by its very name, should be operated for the communal good. No individual should expect to profit financially from such a project, and no individual or group should attempt to gain control of it. Good financial and professional direction are absolutely essential, and will in some instances necessitate the staff members' relinquishing certain previously held privileges. One should not expect the same freedom when he becomes part of an organization that he had when he was on his own. If everyone connected with a hospital did just as he pleased and, for example, tried to be internist, obstetrician, and surgeon, a state of chaos would result and the patient would be the one who paid—sometimes with his life. Every member of a hospital staff should have the interests of the institution at heart and place them before his own. It has always been hard to understand how so many men fail to realize the benefits which they derive from being part of a good institution. A good institution has infinitely greater drawing power than any individual, and as a part of that institution each staff member is bound to share in it. The proper care of sick people is no longer the job of an individual; it requires the combined efforts of many, and can reach its optimum only in a well equipped and properly staffed hospital. It necessitates some "giving and taking" and a recognition of the other fellow's abilities.

These ideas may sound somewhat utopian and impossible of realization, but it is certain that unless there is a good deal of thinking and acting along these lines any community project becomes a farce and the building and running of a community hospital will meet with only mediocre success if not downright failure.

Components of a Community Hospital

So far only broad principles have been mentioned, and there is probably some agreement on them. When we become a little more specific, apparent difficulties at once arise, but they can be overcome if there is a real desire to elevate the level of medical care in this community.

Board of trustees

The board of trustees has a very real duty

to perform. Unfortunately some boards do not seem to realize that. Some trustees feel that their financial support is enough; others accept the position merely because it does them honor. But a real board can and usually does establish standards in a hospital. If members attend meetings regularly and take an active interest in plans and policies, the future of their institution is pretty well assured. On the other hand, if the board is lackadaisical and perfunctory, the nursing and professional staffs are apt to be the same. A small board, consisting of certainly not more than five members, and preferably three, is most efficient. Board members should not be picked solely because they occupy a high social or financial position. They must be vitally interested in the hospital and be willing to give unlimited time to it. It is not an easy job to be a good trustee.

Superintendent

Perhaps the most important individual in a hospital is the director or superintendent. His duties are well known. He must be trained as an administrator in both the professional and business phases. He is as much a specialist as is the surgeon, internist, or obstetrician. A good hospital administrator is worth his weight in gold. The ideal man is a physician, trained in hospital administration, and preferably one who has taken a course in hotel management such as is given at Cornell. Hospital administration is definitely a career job and not one for some physician who has not been too successful in the practice of medicine. Certain hospitals have directors. If a physician is not available, the hospital-trained layman makes a good second choice. He will help to keep up the standards of the hospital and at the same time will save many times enough to pay the difference between his salary and that of a mediocre man.

Hospital services

There are certain essential hospital services which are more important to the welfare of the patient and the institution than is any individual staff member. Such services are the clinical laboratory, the laboratory of pathology, and the roentgenology and anesthesia services. These departments must be well equipped and should be directed by competent physicians working on a full-time basis. It is impossible to diagnose and treat patients properly unless these services are available and are dependable. Incidentally, these departments can support themselves and even show a profit for the hospital if they are efficiently handled.

Clinical departments

The most difficult problem will be the management of the various clinical departments. Without proper organization and supervision of these it is impossible to have a good hospital, no matter how fine a building may be erected. Most communities have enough good doctors to staff a hospital properly. To obtain best results, however, many physicians will have to limit their work to a special field. Almost any physician can become proficient in a specialty if he practices and studies it enough to the near exclusion of other branches of medicine. This statement is not intended to belittle the general practitioner who makes many house calls; he is perhaps more valuable to a community than many men who limit their work to a given field. But, by the very nature of his work, he is not of much help in hospital organization and administration. Certainly there is not a good hospital in this country that is staffed primarily with general practitioners.

It is becoming increasingly clear that the supervision of a clinical service in a hospital of any size requires much time and thought, and that the chiefs of the major services should have offices in the hospital and be available to the intern and nursing staffs as well as to the members of the visiting staff. The inefficient custom of having members of the visiting staff rotate and become chief of the service for a certain number of months should be avoided if possible. It is followed usually for the sole purpose of keeping good will. How long would a business or industrial plant last if a new manager or president were appointed every three to six months? The associate chiefs, however, must of necessity rotate, so that the work is more or less evenly divided.

The rub comes in deciding who are to be the chiefs of the services. Except in a very few instances, it is not wise to import outsiders. It remains, then, for the chiefs to be chosen from among the local doctors. Probably the most satisfactory way of making the selection would be by a majority vote of the active members of the profession, with a majority approval by the board of trustees. There doubtless are other ways of making the choice, but that would be democratic and

would be apt to satisfy more people. Once men have been selected to head the various clinical services, a big hurdle is passed. It then is essential for every other staff member to agree with the selection in deed, whether or not he agrees in thought. Each member should affiliate with the service of his choice and practice accordingly.

It is mandatory that you set up standards which must be met before any newcomer is allowed to practice in your hospital: certification by one of the specialty boards, membership in a well-recognized national specialty organization, a certain period of practice in the community, or some other requirement which will eliminate unqualified men. Many of these organizations have become significant only in recent years; therefore the younger members of your staff should be encouraged to qualify for certification by one of the boards or membership in some recognized specialty organization. The older local men cannot be expected to do so. Remember, the young doctors of today will be your chiefs tomorrow; pick them well.

Conclusion

Only the high spots have been touched in this brief presentation of the modern concepts of hospital organization and management. It may sound too idealistic and impossible of achievement. It is certain, however, that if you do not follow some such scheme of organization and if you are not willing to place the welfare of your patients and the reputation of your hospital above your individual interests, you will have just another hospital.

Total Streptomycin Production Only Fourteen Ounces a Month

Streptomycin, the new wonder sister drug to penicillin, is being used in thirty Army general hospitals over the country, but is so difficult to obtain that the total output of the four companies now making it has been only fourteen ounces a month.

Major General Norman T. Kirk, Surgeon General of the Army, said the Army was receiving many requests for the drug for use in treatment of urinary and other infections caused by gram-negative bacteria which do not respond to penicillin, but that these cannot be met since the Army neither controls the supply nor can get enough for its own needs in treatment of battle-wounded soldiers. General Kirk said that the four companies, Merck, Upjohn, Abbott and Squibb, were the principal manufacturers of the new product, but that other concerns were working at experimental production at pilot plants and that any civilian request for streptomycin naturally would go to these companies.

UVEOPAROTITIS: CASE REPORT

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BURLINGTON

The relative rarity of the condition known as uveoparotitis (uveoparotid fever or Heerfordt's disease) justifies the report of an additional case. This disease was first diagnosed and accurately described by Heerfordt[1] in 1909, and until 1940 only 100 cases had been reported. Twenty of these were from the United States.

Uveoparotitis is a definite clinical entity characterized by bilateral uveitis and parotitis. The prodromal period lasts for weeks or months and is characterized by malaise, drowsiness, weakness, nausea, vomiting, weight loss, and low-grade fever. The disease runs a chronic course, frequently ending in spontaneous recovery. Paralysis of the cranial nerves—usually the peripheral portion of the seventh nerve—, erythema, xerostomia, aching pains, polyuria, and night sweats are often associated with uveoparotitis. There may be general glandular enlargement, particularly of the lacrimal, submaxillary, and sublingual glands, but the affected glands are not tender, and never suppurate. The conditions to be considered in the differential diagnosis are epidemic parotitis, teratoma, lues, Hodgkin's disease, and sarcoid. The histologic picture is uniformly that of hyperplastic or epithelioid tuberculosis without caseation.

The prognosis is good. Recovery usually occurs spontaneously in about three to twelve months. Only four deaths have been reported, and three of these were attributed to tuberculosis.

The etiology is still obscure, but the majority of the writers tend to identify the condition with tuberculosis, particularly the anergic or sarcoid form. This relation has never been proved.

Case Report

W. W., a white male, came to me on January 21, 1945, with a history of sore throat, lacrimation, photophobia, blurred vision, and redness of the eyes, all of several days' duration. These symptoms persisted for about two weeks, at which time there developed a bilateral non-tender swelling of both

1. Heerfordt, C. F.: Ueber eine Febris uveoparotidea subchronica an der Glandula parotis und der Uvea des Auges lokalisiert und haufig mit Paresen cerebrospinaler Nerven kompliziert, Arch. f. Ophth. 70:254-273, 1909.

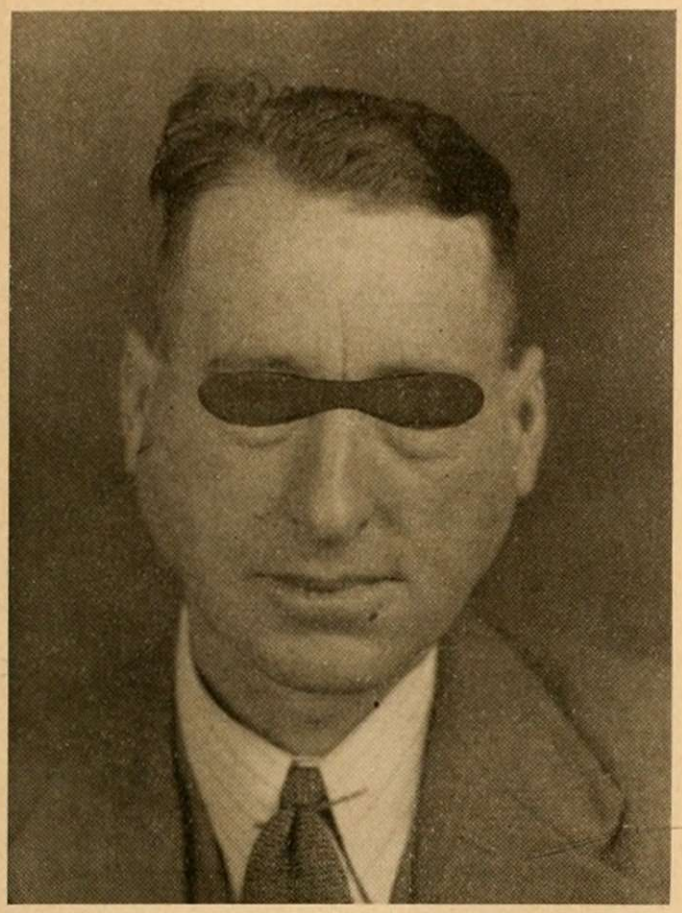


Fig. 1. Photograph made February 10, 1945 — about one month after onset —, showing marked bilateral parotid swelling.

glands in front of his ears, associated with malaise, lassitude, and a dry mouth. Physical examination was negative except for a temperature of 100 F., uveitis, and bilateral swelling of the parotid and submaxillary glands. The past history was non-contributory. The patient had recovered uneventfully from the usual diseases of childhood, including mumps on both sides at the age of 7. A tuberculin test was negative. The white blood cell count was 8600, with 74 per cent polymorphonuclears, 20 per cent lymphocytes, and 6 per cent monocytes. Urinalysis was negative, and a Kahn test was negative.

The patient was given 30 mg. of thiamin chloride daily, and no other treatment. On March 9, 1945, the swelling of the left parotid and submaxillary glands began to subside, and on March 25, 1945, these glands were almost entirely normal. The right parotid and submaxillary glands began decreasing in size about this time. On April 1, 1945, the tuberculin test was repeated and was again negative. On April 9, 1945, the right submaxillary and parotid glands were entirely normal. The whole illness ran a course of approximately three months. No complications developed, and there was no cranial nerve paralysis such as frequently occurs in this disease.

THUMBNAIL SKETCHES OF EMINENT PHYSICIANS

JOSIAH C. TRENT, M.D., *Editor*

ANN ARBOR, MICHIGAN

THE EVOLUTION OF THE ASEPTIC PRINCIPLE IN SURGERY

X

ROBERT KOCH (1843-1910)

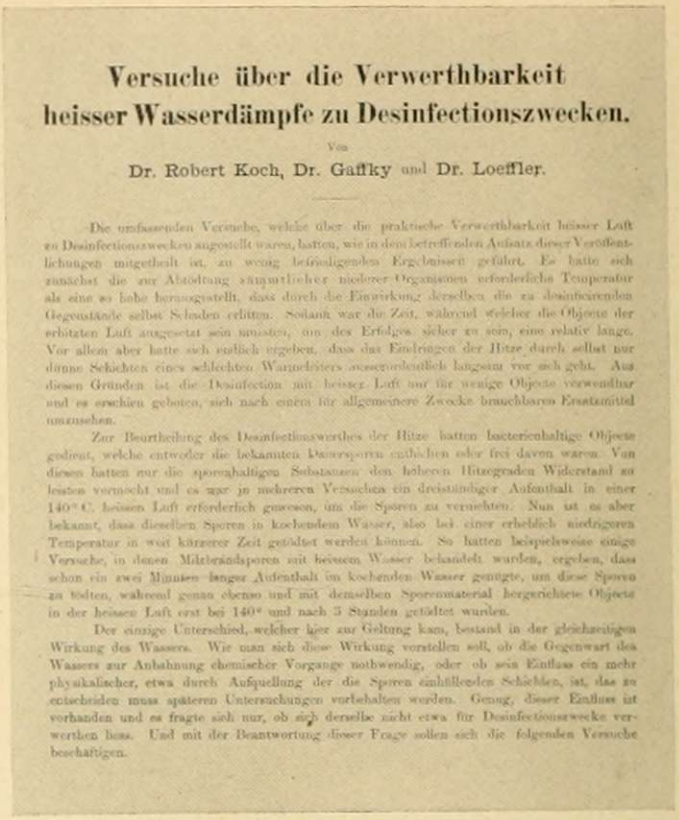
Pyemia and septicemia—one disease or two? In the first part of the nineteenth century this question provoked heated arguments. As late as 1869 a prolonged discussion on the subject of purulent infections took place in the Academy of Medicine in Paris, a discussion which did nothing more than demonstrate again the utter chaos prevailing among the leaders of the profession with regard to this question. The germ theory was just coming into its own, by virtue of Pasteur's work on fermentation[1] and Lister's remarkable antiseptic treatment of wounds[2]. Bacteriology as a science was still unknown. Pure cultures of bacteria were unobtainable. Is it any wonder that confusion existed as to the causative agent of surgical sepsis? The results achieved by Lister seem all the more remarkable when we consider the meager knowledge of the infective agents then available. His experiments, carried out under the assumption that the germs in the air produced sepsis, led him to believe that sepsis was to be avoided by preventing the access of germs to wounds. It is clear, as we look back, that his early work was based upon an incomplete knowledge of the etiology of infections. The modern view of wound infection had its true beginning when Robert Koch, in 1878, published his epoch-making work on the etiology of traumatic infective diseases.

1. See Sketch VIII.

2. See Sketch IX.

Koch was born in Klausthal, Hanover, on December 11, 1843, one of thirteen children. He attended the Klausthal Gymnasium and later the University of Goettingen, where he obtained his doctor's degree in 1866. Here Jacob Henle, the anatomist, made a profound impression on him and undoubtedly inspired his later work. Koch served as a surgeon in the Franco-Prussian war. On his return he secured the position of district physician in the town of Wollstein, where he carried on a busy country practice for several years. Why he did not follow the line of least resistance and lapse into that respectable mediocrity which his position called for we shall never know. We do know that upon his arrival in Wollstein he improvised a laboratory which contained a microscope, microtome, and incubator. While carrying on his practice he conducted numerous detailed experiments on anthrax, and in April, 1876, he reported to Ferdinand Cohn of Breslau that he had worked out the complete life history of the anthrax bacillus. A week later, at Cohn's invitation, Koch gave a three-day demonstration of his culture methods and results in the presence of Cohn, Weigert, Auerbach, Traube, and Cohnheim[3]. Cohn immediately published Koch's results, which were later confirmed by Pasteur. In 1877 Koch published his method of fixing, drying, staining, and photographing bacterial films. A year later, while still carrying on his practice at Wollstein, he completed his experiments on wound infections and published his famous memoir, *Investigations into the Etiology of Traumatic Infective Diseases* (*Untersuchungen ueber die Aetiologie der Wundinfektionskrankheiten*). Such men as Billroth and Klebs had maintained that the same microorganisms could cause diverse diseases, such as pyemia, septicemia, puerperal fever, diphtheria, and smallpox. Koch reported six different kinds of surgical infections artificially produced in animals; he clearly demonstrated that each was due to a different microorganism which bred true in pure culture through many generations and thus was capable of indefinite propagation.

The three papers mentioned above established Koch as one of the leaders of medical science and resulted in his appointment in 1880 to a position in the Imperial Department of Health (Kaiserliches Gesundheitsamt) with Loeffler and Gaffky as his assistants. Here he produced his important paper upon the poured-plate method of obtaining organisms in pure culture, a contribution regarded as his greatest achievement; until this time no effective method had been devised for obtaining pure cultures from mixtures. At the Department of Health he devised a method of steam sterilization, and in 1881, with Loeffler and Gaffky, published his method and results in the *Mittheilungen aus dem Kaiserlichen Gesundheitsamte* (fig. 1). From this method has grown the modern autoclave, so integral a part of our present-day operating room.



Versuche über die Verwerthbarkeit heisser Wasserdämpfe zu Desinfectionszwecken.

Von

Dr. Robert Koch, Dr. Gaffky und Dr. Loeffler.

Die umfassenden Versuche, welche über die praktische Verwerthbarkeit heisser Luft zu Desinfectionszwecken angestellt waren, hatten, wie in dem betreffenden Aufsatz dieser Veröffentlichungen mitgetheilt ist, zu wenig befriedigenden Ergebnissen geführt. Es hatte sich zunächst die zur Abtödtung sämmtlicher niederer Organismen erforderliche Temperatur als eine so hohe herausgestellt, dass durch die Einwirkung derselben die zu desinficirenden Gegenstände selbst Schaden erlitten. Sodann war die Zeit, während welcher die Objecte der erhitzten Luft ausgesetzt sein mussten, um des Erfolges sicher zu sein, eine relativ lange. Vor allem aber hatte sich endlich ergeben, dass das Eindringen der Hitze durch selbst nur dünne Schichten eines schlechten Wärmeleiters ausserordentlich langsam vor sich geht. Aus diesen Gründen ist die Desinfection mit heisser Luft nur für wenige Objecte verwendbar und es erschien geboten, sich nach einem für allgemeinere Zwecke brauchbaren Ersatzmittel umzusehen.

Zur Beurtheilung des Desinfectionswerthes der Hitze hatten bacterienhaltige Objecte gedient, welche entweder die bekannten Dauersporen enthielten oder frei davon waren. Von diesen hatten nur die sporenhaltigen Substanzen den höheren Hitzegraden Widerstand zu leisten vermocht und es war zu mehreren Versuchen ein dreistündiger Aufenthalt in einer 140° C. heissen Luft erforderlich gewesen, um die Sporen zu vernichten. Nun ist es aber bekannt, dass dieselben Sporen in kochendem Wasser, also bei einer erheblich niedrigeren Temperatur in weit kürzerer Zeit getödtet werden können. So hatten beispielsweise einige Versuche, in denen Milzbrandsporen mit heissem Wasser behandelt wurden, ergeben, dass schon ein zwei Minuten langer Aufenthalt im kochenden Wasser genügte, um diese Sporen zu tödten, während genau ebenso und mit demselben Sporenmaterial hergerichtete Objecte in der heissen Luft erst bei 140° und nach 3 Stunden getödtet wurden.

Der einzige Unterschied, welcher hier zur Geltung kam, bestand in der gleichzeitigen Wirkung des Wassers. Wie man sich diese Wirkung vorstellen soll, ob die Gegenwart des Wassers zur Anbahnung chemischer Vorgänge nothwendig, oder ob sein Einfluss ein mehr physikalischer, etwa durch Aufquellung der die Sporen einhüllenden Schichten, ist, das zu entscheiden muss späteren Untersuchungen vorbehalten werden. Genug, dieser Einfluss ist vorhanden und es fragte sich nur, ob sich derselbe nicht etwa für Desinfectionszwecke verwerthen liess. Und mit der Beantwortung dieser Frage sollen sich die folgenden Versuche beschäftigen.

Fig. 1. The first page of Koch's article on steam sterilization, published in the Mittheilungen aus dem Kaiserlichen Gesundheitsamte, Volume I, Berlin, 1881. (Author's collection.)

The year 1881 marked the close of the inventive period in Koch's life. From this time on he merely applied the methods he had perfected in the decade following the Franco-Prussian war. He investigated numerous diseases and revolutionized many existing concepts.

Two achievements of this great man—the establishment of the etiology of wound infections, and the introduction of steam sterilization—brought us nearer to our present-day practice of aseptic surgical technique.

J. C. T.

3. "Dr. W. H. Welch was working in Cohnheim's laboratory at this time and states that Cohnheim's enthusiasm over Koch's discovery made a profound impression upon all the men in the Pathological Institute." (Ford, William W.: The Life and Work of Robert Koch, Bull. Johns Hopkins Hosp. 22:419 (Dec.) 1911.)

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OCTOBER, 1945

HARRY AITCHISON

Harry Aitchison died on September 27 at 1:45 p.m. Although he was known to few of the doctors of the state, he had served the medical profession of North Carolina with devotion and skill for the past six years. As vice president and general manager of the Penry-Aitchison Printing Company, he had been the godfather of the NORTH CAROLINA MEDICAL JOURNAL since its inception in 1940. With endless patience he answered the many questions put to him by a novitiate editor and assistant editor, and with unfailing tact and good judgment he offered solutions of the many problems which arose as the JOURNAL passed through its infancy and the trying period of war. His interest in the JOURNAL was so personal that his family always referred to it as his baby. A real artist—though he would have been the first to deny it—Harry took an artist's pride in the appearance of each month's issue. The September number, which was mailed out the day before he died, is the first one he failed to inspect personally.

When the famous architect, Sir Christopher Wren, died, his body was buried in St. Paul's Cathedral, recognized as his masterpiece. His resting place is marked by a tablet which says: "If you would see his monument, look about you." North Carolina doctors who want to see the monument of their friend, Harry Aitchison, need only to look over the past numbers of the NORTH CAROLINA MEDICAL JOURNAL; and because he has instilled into those who worked with him his solicitude for it, each future number will also be a memorial to him.

* * * *

SAMUEL GOMPERS VS. THE WAGNER-MURRAY-DINGELL BILL

In the *Journal of the American Medical Association* for September 22 is reproduced an address delivered December 5, 1916, by Samuel Gompers, who was then president of the American Federation of Labor, and who was one of the greatest leaders labor ever had. Although this address was given nearly twenty-nine years ago, it would be hard to conceive a more powerful argument against the Wagner-Murray-Dingell Bill. It is to be hoped that all our subscribers have read the full text of the address for themselves. Lest some may have overlooked it, however, a few quotations from it are given here.

"There has never yet come down from any government any substantial improvement in the conditions of the masses of the people, unless it found its own initiative in the mind, the heart and the courage of the people. Take from the people of our country the source of initiative and the opportunity to aspire and to struggle in order that that aspiration may become a reality, and, though you couch your action in any sympathetic terms, it will fail of its purpose and be the undoing of the vital forces that go to make up a virile people. Look over all the world where you will and see those governments where the features of compulsory benevolence have been established, and you will find the initiative taken from the hearts of the people.

"There are certain species of compulsory social insurance that by their mere statement carry with them the conviction of their self-evident necessity and justice, into which the element of depriving the

people of rights cannot enter—such as workmen's compensation and old age pensions. But when compulsory health insurance and compulsory unemployment insurance are proposed, the question arises at once, What are the conditions and regulations to be imposed by the government to regulate the conduct of the supposed beneficiaries? . . .

"Social insurance cannot even undertake to remove or prevent poverty. It is not fundamental and does not get at the causes of social injustice. The only agency that does get at the cause of poverty is the organized labor movement . . .

"Then again, the first step in establishing compulsory social insurance is to divide people into groups, those eligible for benefits and those considered capable of caring for themselves. The division is based on earning capacity. This governmental regulation must tend to fix the citizens of the country into classes, and a long-established insurance system would tend to make those classes rigid.

"Governmental power grows upon that on which it feeds. Give an agency power, and it at once tries to reach out after more. Its effectiveness depends on increasing power . . .

"The introduction of compulsory social insurance in cases of sickness, or compulsory social insurance in cases of unemployment, means that the workers must be subject to examinations, investigations, regulations and limitations. Their activities must be regulated in accordance with the standards set by governmental agencies. To that we shall not stand idly by and give our assent . . .

"There is in the minds of many an absence of understanding of the fundamental essentials of freedom. They talk freedom and yet would have bound upon their wrists the gyves that would tie them to everlasting bondage. And no matter how sympathetic or humanitarian is the gloss over the plan and the scheme, I again bid you beware. We know not when or how this great struggle going on in Europe will terminate, or what it shall mean for the future of those countries; but at least let the people of the United States hold their liberties in their own hands, for it may come to pass that our America, the America whose institutions and ideals we so much revere, may be the one nation to hold the beacon light of freedom aloft and thus aid in relighting the torch, rekindling the heart flame of the world's liberty . . .

"For a mess of pottage, under the pretense of compulsory social insurance, let us not voluntarily surrender the fundamental principles of liberty and freedom, the hope of the Republic of the United States, the leader and teacher to the world of the significance of this great anthem chorus of humanity—liberty!"

Let us hope that the people of America will heed the warning of this justly famous spokesman for labor, and will not sell their birthright for the mess of pottage offered them by Messrs. Wagner, Murray, and Dingell.

"A WASTE OF MEDICAL SERVICE"

In the "Correspondence Department" of this issue there is published a letter from a member of the State Medical Society which will be of interest to all our readers. It is typical of numerous other expressions of opinion, both written and verbal, from medical men who have served in the armed forces. Now that the war is over—even though the "duration" is not—men feel much more free to speak their minds.

An Associated Press dispatch from Washington (Sept. 21) quoted an army medical officer, Col. W. Paul Holbrook, as testifying before a group of senators that "the army had not fully utilized the services of its physicians." Colonel Holbrook stated that the average division had one doctor for 300 men —"far too many for simple medical care and preventive medicine on a group of healthy young men." Democratic Senator Downey commented that there had been "a vast and unwarranted waste of medical service" during the war.

A few months ago, Captain Irving S. Schipper wrote to a Chicago paper that "For every physician caring for patients nearly eight see no patients at all . . . Yet the country must bear this excessive cost to keep the army medical corps overstrength, so that the table of organization for regular army medical corps officers will give them rank and salary . . . there are very few satisfied physicians in the army."

The dentists are in the same boat with the doctors. A sailor who was recently home on leave told of his experience with a navy dentist. Because a small cavity was found in a tooth, he was sent to the dentist's office. He got in the chair at 7:55 p.m., and by 8:03 the work was done. When he started to dismount from the chair, the dentist bade him wait until 9:30, saying that the regulations required that he keep someone in the chair until then, and he did not care to do any more work. The sailor sat more or less patiently until closing time, while the dentist worked on a crossword puzzle. This sailor doubtless voiced the feeling of many when he said, "If socialized medicine is not enacted before the service men get home, there will be no need to worry about it. They have seen all the regimentation of medicine they care for."

MORPHINE ADDICTION

In the *Journal of the Medical Association of Georgia* for August Dr. Joseph G. Massee has an excellent article on the treatment of morphine addiction, based largely upon his experience in dealing with addicts in the Federal Prison, Atlanta. Here Dr. Massee had the advantage of being able to control his patients far better than can be done in private practice. From these prisoner addicts he learned much of value to the private practitioner.

One important lesson is that morphine may be withdrawn abruptly without any more serious consequences than an emotional upheaval and frequently a bout of nausea. The usual rule in the Federal Prison is to give the addict "a saline purge and a sedative of the barbiturate group to relieve symptoms, and let him sweat it out." The saline purge is given to get rid of the morphine, which "is re-excreted into the gastrointestinal tract no matter in what form it is introduced into the body." Paraldehyde, given to the point of deep sedation, helps carry the patient over the stage of acute withdrawal symptoms.

Dr. Massee stresses the absolute necessity of having the patient in an institution for treatment, since "you can not treat a patient for drug addiction in his home." He learned from his experience with prisoners that "when the patient realizes that he is not to get any more drug regardless of what happens to him, a good part of the struggle is over and he resigns himself."

Another point made by Dr. Massee is that 5 grains a day is usually sufficient for the control of pain. "More than that may be simply catering to drug addiction." Furthermore, if an addict can persuade a doctor to prescribe more than 5 grains a day, he may satisfy his craving with that amount and sell the balance for enough to net a profit—possibly as much as a dollar a grain.

Another interesting observation is that addicts may take advantage of tattooing on their arms to hide the marks of repeated needle punctures.

Only about 10 per cent of prisoner addicts who served short terms remained cured. In a much greater proportion of those serving five years or more the cure was permanent. The results with private patients treated in hospitals were much better than those with prisoners.

Because the morphine habit is so insidious and so prevalent, it is well to know that there is virtually no real danger in withdrawing the drug, no matter how vigorously the patient protests.

* * * *

THE BEST MEDICINES IN 1945

Dr. Morris Fishbein recently stated in the *American Weekly* that, according to a survey of outstanding physicians of the country, the major medicinal aids of 1945 are: (1) penicillin (shares credit with sulfa drugs as medicinal drug leaders), (2) morphine, (3) blood plasma, (4) ether, (5) quinine, (6) digitalis, (7) diphtheria antitoxin, (8) insulin, (9) iron, (10) vitamins.

It is interesting to note that six of these ten remedies were listed in 1910: ether, morphine, digitalis, diphtheria antitoxin, iron, and quinine. The other four members of the 1910 group were smallpox vaccine, iodine, mercury, and alcohol. Doubtless there are some excellent physicians who would put up an argument for iodine and alcohol even now. Both are valuable for external use, and it would be hard to do without iodine in dealing with the thyroid gland. Alcohol is also considered by many as the best vasodilator.

In spite of the apparently small net gain in "best medicines" in thirty-five years, it should be noted that the new group includes the tremendously important penicillin, the whole line of sulfonamide derivatives, and the host of vitamin preparations. The chemotherapeutic agents and the vitamins alone have been chiefly responsible for the passing of the era of therapeutic nihilism and the coming of the day of therapeutic optimism. Never have medical men had more cause to rejoice in their profession.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

A 48 year old white housewife entered the hospital on August 3, 1941, complaining of severe precordial pain and shortness of breath. The patient was in acute distress, and for this reason the history and physical examination were limited.

The patient was told three years ago that she had diabetes mellitus. However, no insulin was administered and the urine was "cleared up" by diet. She had followed the diet prescribed only haphazardly, but with no apparent untoward effect.

The *present illness* began when the patient awakened on the morning of August 1 with a feeling of pain localized in both shoulders and a sensation of weight over the sternum and precordium. This pain was constant, knife-like in character, and worse on inspiration. She vomited on one occasion. The pain increased in severity during the day. A hypodermic injection administered by her physician relieved her so that she was able to rest on the first night after the onset of the pain. The severe pain in the precordial region recurred on the following afternoon and was associated with dyspnea and orthopnea. She found that the pain was made easier when she sat up to breathe. The increasing intensification of the pain caused her to seek hospitalization on the third day of her illness.

Physical examination revealed an extremely ill, dyspneic, middle-aged white woman weighing about 275 pounds. The family reported her height as 5 feet. She was slightly cyanotic, was perspiring profusely, and complained bitterly of pain beneath the sternum. The skin was cold and clammy. The temperature was 102 F. rectally, pulse 118, respiration 28. There was a definite acetone odor to the breath. The heart was slightly enlarged to the left. A loud to-and-fro friction sound was noted at the extreme apex and over the entire base of the heart. A slight systolic blow was heard over the aorta. The lungs showed numerous coarse, moist rales. The liver was enlarged two fingers' breadth below the right costal margin. There was no edema of the extremities.

Accessory clinical findings: On admission the urine was cloudy, yellow, and acid, with a specific gravity of 1.028, no albumin, and a 4 plus reaction for sugar, acetone, and diacetic acid; microscopic examination was negative. There were 4,860,000 red blood cells, 94 per cent hemoglobin, and 19,650 white cells, with 70 per cent neutrophils and 30 per cent lymphocytes. The blood sugar was 222 mg. per 100 cc. An electrocardiogram showed marked deformities of the T waves in the ST segments, apparently due to massive myocardial infarction.

Course in the hospital: With insulin therapy the diacetic acid and acetone disappeared from the urine and the sugar content varied from a trace to 1 plus. The pain was relieved by the use of morphine. The blood pressure on August 4 was 97 systolic, 74 diastolic, and the pulse was 88 per minute. The pericardial friction rub was gone. The patient appeared comfortable but complained at intervals of indigestion and asked for soda. On August 5 the patient's temperature (taken rectally) was 99.8 F. and her pulse 90. She refused to eat breakfast, but was given a small amount of milk and orange juice. At 10:30 a.m. she was turned on her right side for an alcohol rub. Her color became suddenly quite cyanotic, and her pulse irregular and weak. She was markedly dyspneic and her body was cold and clammy. During the next half hour the pulse remained unchanged, although the heart sounds became quite distant. At about 10:55 the heart sounds were no longer audible and blood pressure and pulse could not be obtained. Respirations became more labored and the patient expired at 11 a.m.

Discussion

DR. JOHN R. WILLIAMS, JR.: In summary, we have a 48 year old woman who had been a known diabetic for three years and who had never taken adequate care of her diabetes. She apparently had not had hypertension. Two days before admission she had a severe, knife-like pain under her sternum, aching in both shoulders, and a feeling of constriction in her chest. The pain was relieved only by a hypodermic injection. It recurred the next day in the precordial region, associated with dyspnea and orthopnea. The pain was easier when she sat up; it was increased by breathing. The following day she was admitted to the hos-

pital because of increasing pain and shortness of breath.

Physical examination revealed a very obese woman who apparently had both heart failure and peripheral circulatory failure, and whose breath had an acetone odor. A friction rub was noted over her heart and a soft systolic blow over her aorta.

The laboratory findings showed her to have diabetes. She had a white cell count of 19,600, and the electrocardiogram showed changes apparently due to a massive infarct.

After she was admitted, the diabetes was controlled with insulin and diet. The pain was relieved by morphine, and she apparently was getting along reasonably well, though her blood pressure was low and she had some indigestion. Five days after admission, she suddenly became cyanotic. Her pulse was irregular and weak and she was markedly dyspneic. Her body was cold. This condition persisted for half an hour, and then her heart apparently stopped. Shortly thereafter her respiration ceased.

Among the possible causes of severe pain in the chest are esophageal hiatus hernia, cascade stomach, pancreatitis, gallbladder disease, perforated duodenal ulcer, scalenus anticus syndrome, cervical disc, pleurisy, and arthritis of the spine. However, none of these conditions are ever associated with sudden death. There are five disorders that cause pain in the chest which are associated with sudden death. These are angina pectoris, ruptured aorta, pulmonary infarct, dissecting aneurysm, and coronary thrombosis. Several of these possibilities can be ruled out fairly easily.

While angina pectoris can cause the sort of pain that the patient had and can also be responsible for sudden death, the pain with angina pectoris does not generally persist over any prolonged period of time. One does not see elevations of the white count with angina pectoris, and angina pectoris would hardly be responsible for congestive heart failure. Therefore, I think we can exclude it.

Rupture of the aorta without a dissecting aneurysm can and does occur. It would be associated with very severe pain, with heart failure, and with sudden death. However, rupture of the aorta causes heart failure because of the derangement of the aortic leaflets and the resulting marked aortic insufficiency. Since this patient showed no signs of aortic insufficiency and yet developed heart failure, I think we can exclude rupture of the aorta.

Pulmonary infarction is a fairly common cause of death, and at times is extremely difficult to diagnose. Electrocardiographic changes can occur in pulmonary infarction, but they can be distinguished from the changes that one sees in myocardial infarction. I believe that if such changes had taken place in this patient, they would have been noted in the record. Almost invariably the patient who has a pulmonary infarct gives a history of a cough, and usually he spits up frothy, blood-tinged sputum. The presence of a friction rub over the heart, in this case, along with the absence of a story of cough, is good evidence against pulmonary infarction.

This leaves us a choice between dissecting aneurysm and coronary thrombosis. This is always a difficult differential diagnosis to make, for an aneurysm can dissect around the mouth of one of the coronary vessels and produce all of the typical changes of either a posterior or an anterior infarct. However, patients with a dissecting aneurysm usually have a history of hypertension, which this patient did not have, and they not infrequently have pain through to their back and pain in their abdomen caused by the occlusion of vessels to the abdominal viscera. No note is made in the record as to whether there was a difference in blood pressure in the two arms. Such a difference, if marked, would be very much in favor of a dissecting aneurysm. It must have been looked for, and the absence of any note on this point is in favor of a coronary thrombosis.

The whole picture fits very well with a massive infarct of the heart. The pain, the heart failure, the peripheral circulatory failure, the high white cell count, the pericardial friction rub which disappeared in a day or two, and the sudden death are all compatible with this diagnosis. While it is not commonly realized, pain on breathing is seen rather frequently with coronary thrombosis.

Three things could have been responsible for this patient's sudden death. Since I have been told that the patient was given no insulin on the day of death, I believe we can rule out insulin shock, which should certainly be considered. Rupture of the heart, with cardiac tamponade, is a real possibility.

However, while this is not an uncommon disorder in patients who are active following an attack of coronary thrombosis, it is rare in the individual who is lying in bed. Cardiac tamponade would not account for the irregularity of the patient's pulse. It would ordinarily cause death more quickly than it occurred in this patient following the onset of her collapse, and should have been associated with marked fullness of her veins. This sign was apparently not present.

It is my feeling that the patient probably developed ventricular tachycardia, which might well have persisted for half an hour and could have accounted for the irregular and weak pulse, the marked dyspnea, and the fact that her heart apparently stopped beating before respiration ceased.

My diagnoses are diabetes mellitus, coronary thrombosis, and death due to ventricular tachycardia and fibrillation.

Pathological Discussion

DR. W. C. THOMAS: The significant findings at postmortem examination, in addition to the marked obesity, were in the heart. The organ was increased in size as a result of left ventricular myocardial hypertrophy. The anterior descending branch of the left coronary artery was completely occluded by an organizing thrombus. The myocardium of the anterior portion of the left ventricle appeared discolored and softened. A deep-reddish, linear area, 1 by 5 mm., was noted midway between the apex and the base of the heart on the anterior surface of the left ventricle. On section, the discolored portion on the surface was found to be continuous with blood clot which apparently had dissected between the muscle fibers. Microscopic study showed an infarct which was at least a week old. The hemorrhagic dissection of the myocardium was obviously a terminal event, as was evidenced by the lack of tissue reaction.

This case is an excellent example of a seldom encountered complication of myocardial infarction—namely, myocardial dissection. If the process had continued, the heart would have ruptured and death would have resulted from cardiac tamponade[1]. I believe that myocardial dissection may be the mechanism of cardiac rupture[2].

Anatomical Diagnoses

Generalized arteriosclerosis.

Coronary artery atherosclerosis and thrombosis, organizing, of the anterior descending branch of the left coronary artery.

Myocardial infarction, massive, of the anterior portion of the left ventricle.

Myocardial dissection, incomplete.

CASE REPORTS FROM THE TUMOR CLINIC

NORTH CAROLINA BAPTIST HOSPITAL

Case 8

Mrs. D., a 45 year old housewife, was first seen at this hospital in January, 1944. Her chief complaint was vaginal discharge of two years' duration. In May, 1942, the patient had undergone a subtotal hysterectomy for uterine fibroids and a unilateral salpingo-oophorectomy. The patient was a well developed, slender woman who appeared quite well. A diagnosis of vaginitis and menopausal syndrome was made. The vaginitis was treated conservatively and the menopausal symptoms were abated by estrogen therapy.

On May 13, 1944, Mrs. D. fell and fractured her right radius. This was easily aligned and healed uneventfully.

Mrs. D. was seen by an internist in August, 1944, because of a cardiac neurosis. She had no demonstrable organic heart disease. Her neurosis improved following reassurance.

On February 13, 1945, she reported that she was having a slight recurrence of the vaginal discharge. She had no other complaints. A physical examination, including vaginal and rectal examinations, showed her to be in excellent general condition. The vaginitis was again treated, and she was advised that removal of the cervical stump would probably give her permanent relief from leukorrhea. She was to make a decision regarding this operation, and return in one month.

She returned on April 24 with an entirely new complaint. Nineteen days prior to this visit, she had noted a rounded, firm mass in the left lower abdomen. At that time it was approximately the size of a baseball. In nineteen days the mass grew so rapidly that on

level of the umbilicus. The abdomen was quite distended. The mass was irregularly smooth, rounded, and semi-solid in consistency. It seemed to arise in the pelvis; it was only slightly movable, suggesting partial fixation to the pelvic viscera. The tumor was non-tender. Pelvic examination added little knowledge of the origin of the tumor, because the mass filled the entire pelvis. The patient's general condition was good. She had maintained her usual weight of 105 pounds; her red blood cell count was 4,200,000 and there were 13.5 Gm. of hemoglobin.

The impression was that the process was malignant and represented either an ovarian tumor or a retroperitoneal sarcoma.

A laparotomy performed on April 25, 1944, revealed a large, smooth mass containing necrotic and hemorrhagic areas. It completely filled the pelvis and extended a few centimeters above the level of the umbilicus. There were innumerable adhesions to the bowel and to the abdominal wall. The site of origin could not be definitely demonstrated, but the neoplasm had infiltrated extensively the posterior abdominal wall. Removal proved to be difficult because of the size and vascularity of the lesion and the many adhesions. Numerous cystic implants were found in the bowel and mesentery; no attempt was made to remove these. The patient withstood the operation, being supported by parenteral fluids and a transfusion.

Tumor Clinic Discussion

PATHOLOGIST: The specimen presented to the pathological laboratory consisted of 350 Gm. of tumor tissue which was lobulated and well circumscribed, and which showed an indefinite but distinguishable thin capsule. Numerous areas showed hemorrhage and cystic changes. The surface of this tumor on cut section was white-yellow to white in color and was opalescent and glistening. The vascularity of the tumor was very marked.

Sections of the tissue show numerous small, spindle-shaped cells, which are arranged heterogeneously in various bizarre patterns, scattered throughout the section. A moderate amount of interstitial fibrosis is present, and the interstitial tissue is separated away from the cells in some areas, leaving vacuolated spaces about the nuclei. There is no attempt at an orderly arrangement of the cells in any area. Pseudo-rosettes are seen in some areas, and palisade formation about the blood vessels is observed in others. Anaplasia, hyperchromatism, and a bizarre type of mitosis are noted. Pleomorphism is also seen. In other sections, the appearance of the tissue in cross section is very difficult to interpret, and there is a question as to whether it is smooth muscle or connective tissue. The arrangement suggests smooth muscle.

The microscopic diagnosis is spindle-cell sarcoma. This specimen is compatible with a malignant sarcoma arising in the smooth muscle of the retroperitoneal tissues or of the abdominal organs.

RADIOLOGIST: The ultimate prognosis in most patients who develop a retroperitoneal or abdominal spindle-cell sarcoma is almost invariably poor. All we can hope to accomplish with deep x-ray treatment is relief of some of the patient's symptoms.

GYNECOLOGIST: This patient had a huge, friable, vascular tumor which apparently arose in the retroperitoneal space near the promontory of the sacrum or in the hollow of the sacrum. Numerous coils of small bowel were adherent to the tumor and were involved in it. Approximately four-fifths of the tumor tissue could be removed. The remaining tumor could not be removed, because of the marked vascularity, the infiltration of the posterior wall of the pelvis, and the fact that there was no definite cleavage plane which could be used for dissection.

The most remarkable feature of this patient's illness is the rapidity of the tumor's growth. The patient first noticed an abdominal mass which she described to be the size of a baseball approximately six weeks after a careful examination had revealed no pathology in her abdomen or pelvis. In an additional period of less than three weeks, the tumor grew so rapidly that she was unable to fasten her clothes over it; it attained a size described on her record as being larger than a six months' pregnancy.

It is this type of malignant tumor which discourages all of us about the management of malignant disease in general. The patient was most cooperative, and reported at the first sign of anything wrong. Her brief delay in getting medical advice after the tumor appeared was occasioned by illness in her family and was unavoidable. I do not think that the three weeks' delay between the appearance of the tumor and her operation affected the ultimate prognosis. I would like

to ask if the very rapid course suggests that the tumor will be unusually radio-sensitive?

RADIOLOGIST: We are never able to correlate definitely the radio-sensitivity of a tumor with its microscopic appearance or its clinical course. We know that certain tumors in general respond well, and that others respond poorly. There are numerous exceptions, and a definite prediction of the effect of irradiation upon a given tumor is impossible.

Tumor Clinic Opinion

Recommendation: Deep x-ray therapy, the amount to be determined by the patient's subsequent course.

Prognosis: Hopeless

Blame: None

Credit: None

The prognosis is considered inevitable by the Tumor Clinic group, because of the type of tumor and its rapid course.

Follow-Up Note

Mrs. D.'s postoperative course was very stormy, being complicated by paralytic ileus and a urinary tract infection, but she was discharged in good condition about twenty days postoperatively. During her hospital stay, she received fourteen x-ray treatments of 228 r each. On discharge from the hospital, she weighed 95 pounds; her hemoglobin was 13.5 Gm. and there were 4,200,000 red blood cells.

She was seen on July 11, 1945, approximately six weeks after her operation, and a mass measuring 8 by 8 cm. was found in the right upper quadrant. It was hard, irregular, and somewhat movable. Between July 12 and July 20, she received further x-ray therapy daily. It did not seem to affect the mass.

About the middle of July she began to be quite uncomfortable. Her symptoms were weakness, malaise, a feeling of epigastric fullness, aching pain in the left lower quadrant, and a gradual decrease in the frequency and caliber of her stools. For four days before her last admission to the hospital on August 21 she had passed neither flatus or feces, and enemas were ineffective. On this admission she was pale, cachectic, and looked quite ill. She had developed a cough productive of thick white sputum. Her heart seemed to be normal; the pulse rate was increased to 120 per minute. The chest was clear to percussion, but auscultation revealed fine, moist rales over the lower two-thirds of the right chest posteriorly and the lower one-third of the left chest posteriorly. She had no lymphadenopathy. Her abdomen was enormously enlarged and rounded. It was tympanitic anteriorly with dullness in the flanks. The entire abdomen and pelvis were filled irregularly with hard tissue masses.

A diagnosis of partial intestinal obstruction was made, but colostomy was not considered feasible. The patient pursued a rapid downhill course and expired on August 31, 1945, just five months after the mass was discovered.

MEDICOLEGAL ABSTRACT

J. F. OWEN, M.D., LL.B.
RALEIGH

BREACH OF WARRANTY: *A druggist impliedly warrants that the prescription contains the drugs which were ordered by the physician.*

A physician ordered by prescription a 1 per cent gentian violet solution, with written directions that the drug be used as a mouthwash. The physician directed the patient orally to use the solution also as an eyewash, and gave specific rules for its use. The druggist who filled the prescription made a 3 per cent solution instead of the 1 per cent solution ordered. The patient, in accordance with the oral directions of the doctor, used the drug in his eyes, and as a result thereof lost the sight of both eyes. A suit against the druggist was instituted by the patient for the purpose of recovering damages. In Superior Court the defendant entered a demurrer which in effect admitted that the prescription was improperly compounded but denied that his act in this regard was the proximate cause of the injury. The demurrer further stated that the act of the physician in giving directions which were inconsistent with the safe use of a 3 per cent solution of gentian violet was the direct cause of the injury. When this demurrer was upheld by the court, the plaintiff appealed to the Supreme Court.

When the case came up for consideration by the higher court, this body ruled that the demurrer should not have been been allowed

and that the facts should have gone to the jury for decision. The court stated that it is a settled principle of law that a druggist impliedly warrants that the article he sells is the article called for, and is liable for breach of warranty for injury resulting from his giving the purchaser the wrong drug. The court further stated that because of the peculiar and dangerous nature of the drug business and profession a high degree of care and caution is mandatory.

Although this particular suit was not brought against the physician, it should be mentioned in this connection that, when damage results to a patient from the negligent action of a physician in writing an order for drugs, the fact that the pharmacist is also negligent does not lessen the responsibility of the doctor.

The judgment of the Superior Court in this instance was reversed and the case was returned to the lower court for a new trial. (P. 171, v. 830, S. E. Reporter. Court of Appeal, Georgia, November, 1933)

TUBERCULOSIS ABSTRACTS

A Review for Physicians

ISSUED MONTHLY BY THE NATIONAL TUBERCULOSIS ASSOCIATION

VOL. XVIII OCTOBER, 1945 NO. 10

THE tuberculin test, on which much of the early work in tuberculosis was based, came into serious question when significant numbers of tuberculin negative reactors were found to have pulmonary calcification suggestive of tuberculous infection.

The evidence now accumulating indicates that calcification is a non-specific response of lung tissue to invasion, and may be called forth not only by the tubercle bacillus but by *Histoplasma capsulatum, Coccidioides immitis,* and perhaps other organisms. Tuberculin testing, therefore, takes again its rightful place as a biological test for the presence of the tubercle bacillus, while chest X-rays complement but do not supplant it as a diagnostic procedure.

NONTUBERCULOUS PULMONARY CALCIFICATION AND SENSITIVITY TO HISTOPLASMIN

In different parts of the country, there are marked variations in the frequency of pulmonary calcification observed in roentgenograms of the chest. Recent studies have shown that the prevalence of calcified lesions varies from six per cent in Oregon to 28 per cent in Kentucky. An area of high prevalence occurs in the East Central States, with a frequency generally lower in surrounding regions. Roentgenographic findings have been the basis for rejecting appreciable numbers of persons from the armed services.

Although pulmonary calcification is usually considered evidence of healed tuberculosis, there are strong indications that this disease is not the only important cause of such lesions. The correlation between the prevalence of tuberculosis and the frequency of calcification is not close, and a number of reports have shown that in the area of high rates of calcification, a large proportion of the persons with such lesions have negative tuberculin reactions. It has been shown repeatedly that reversion from tuberculin positive to negative takes place very slowly, and that calcifications exist in tuberculin negative children. These facts have led to a search for nontuberculous origins of the lesions, especially among the fungi. Ascariasis, as a cause of pulmonary calcification in man, has not been proved of significance. In the Southwest, coccidioidomycosis accounts for some calcification. Because the endemic area of clinical histoplasmosis corresponds with the area of high prevalence of pulmonary calcification in tuberculin negative reactors, a possible association has been sought.

The question of tuberculin negative pulmonary calcification has been studied recently in an extensive investigation on tuberculosis in student nurses, which is being conducted cooperatively by the National Tuberculosis Association, the U. S. Public Health Service, and a large number of specialists throughout the country. About

10,000 student nurses are under close observation, and are given tuberculin tests and 14″ x 17″ chest X-rays at six-month intervals. The schools are sixty-five in number, and are located in nine widely distributed metropolitan centers. Results from the study bring out clearly the regional differences in the frequency of pulmonary calcification, as well as the fact that especially in the East Central part of the country, the majority of nurses with calcification have negative tuberculin reactions.

In order to investigate the possibility that infection with *Histoplasma capsulatum* may be a cause of pulmonary calcification, a large number of nurses were given intradermal histoplasmin tests. Preliminary data are based on records of these tests, roentgenograms, and tuberculin tests of 3,105 student nurses in four centers. Results of this work indicate that (a) infection with histoplasma, or an immunologically related organism, is common in widespread localities, and that (b) it is probably the principal nontuberculous cause of pulmonary calcification. These conclusions are based on the assumption that skin sensitivity to the histoplasmin used in this study is indicative of infection with *Histoplasma.*

All skin tests were performed and read by one person, and all films were interpreted by one experienced roentgenologist. Film findings are limited to a report as to the presence or absence of shadows characteristic of calcification in the lung parenchyma or lymph nodes. The interpretation was recorded without knowledge of the tuberculin reaction and prior to the testing with histoplasmin.

Most of the nurses tested were given tuberculin and histoplasmin at the same time, and measurements of both erythema and induration were recorded at 48 hours. The reactions to the two tests were similar and could not be distinguished by their appearance.

Of the 3,105 nurses studied, 711 (22.9 per cent) showed a positive reaction and 61 (2.0 per cent) a doubtful reaction to histoplasmin. Great differences were found in the percentage of nurses reacting to histoplasmin in the various cities. In Minneapolis and St. Paul, the percentage of definite or doubtful reactions was 6.3; in Philadelphia, 12.6; in Detroit, 14.4; in Kansas City, Kansas, 54.0; and in Kansas City, Missouri, 65.8.

The most striking findings in the investigation are derived from the study of the relation, in individual nurses, between pulmonary calcification and reaction to histoplasmin and tuberculin tests.

About one-fifth (21.4 per cent) of the total group of 294 nurses with calcification had a positive tuberculin. Of the remaining four-fifths (231), who had a negative tuberculin, 206 had a positive or doubtful histoplasmin reaction. Only 25 nurses (8.5 per cent of the 294 with calcification) had a negative reaction to both tests. From these findings it may be seen that a high proportion of the group having pulmonary calcification react to histoplasmin, tuberculin, or both (91.5 per cent), and that many more react to histoplasmin than tuberculin.

Of the nurses who react only to the latter, 10.4 per cent show pulmonary calcification, while of those reacting only to histoplasmin, 31.1 per cent show calcification. A very low rate of pulmonary calcification (1.2 per cent) is found among the large group of 2,141 nurses who are negative to both tests.

Perhaps it is premature at the present time to discuss the significance of the general findings presented in this paper. If the histoplasmin test is correctly interpreted, however, a number of implications become apparent. Histoplasmosis, in a mild, perhaps subclinical form, may be a common infection in the East Central States, and the number of persons attacked may total several million. The epidemiological evidence indicates that a high proportion of the pulmonary calcification observed in individuals living in these States may be due to infection with *Histoplasma* or a related organism, and not to tuberculosis.

Nontuberculous Pulmonary Calcification and Sensitivity to Histoplasmin, Carroll E. Palmer, M.D., Public Health Reports, Vol. 60, p. 513, May 11, 1945.

Hospitals must recognize that a significant number of tuberculosis cases are admitted among their patients, first, because frequently the diagnosis is made only after a stay in the hospital, and more often because tuberculosis is not recognized and remains undiagnosed among their patients, unless special measures are instituted for its discovery. Reliable studies have shown as much as 2 per cent of admissions to general hospitals may have unrecognized tuberculosis. Hence hospitals should insist at least that every patient with respiratory infection be considered potentially tuberculous until proven otherwise and the use of the proper contagion technic should be insisted upon in their nursing care. —M. Pollak, M.D., The Am. Jour. of Nursing, December, 1944.

CORRESPONDENCE

21 August, 1945

To the Secretary of the Medical Society
of the State of North Carolina:

As a former active member, secretary-treasurer, and president of the —— County Medical Society and secretary and treasurer of the —— District Medical Society, I am speaking for myself and am taking the liberty of speaking for many other physicians who are now serving as reserves in the armed forces.

Firstly, we all thank our God, regardless of creed, that this war is terminated. We feel that we have done our duty to the best of our ability wherever we have served. At the same time we realize that our absence has put an additional strain on those physicians left at home. To those we can only say, "Thank you for attending our patients so faithfully while we were away."

Secondly, we have experienced socialized medicine (call it by any name you wish) in its ultimate in the Navy and Army. And the majority of us are disgusted with the entire set-up. It is a top-heavy organization, with the regulars in both services getting most of the breaks. A medical officer must follow either the rules and traditions or his conscience, and the two are not the same. I have learned that the easiest way to get along in the Navy is to "apple polish" every medical officer who holds more rank than I. It's surprising how they love even the most obvious boot-licking! We don't like this type of medicine, regardless of what the chiefs of the Army and Navy Medical Departments would have you believe. Prior to now we did not dare contradict them openly, for it would have meant abominable duty on some god-forsaken station. A few months ago Vice Admiral McIntyre made a statement which was quoted by *Medical Economics*. It was to the effect that USNR medical officers thought the Navy Medical Corps (and socialized medicine) was better than our former type of practice and would like to continue thus. He went on to say that we thought that there was more incentive to do good work and we liked the security offered by the Navy. I can assure you that of the 19 medical officers on one station only one agreed with that statement and he was a USN (or regular). Quotations for publication opinions of those of us who had our practice before the war.

Thirdly, is the Medical Society of the State of North Carolina doing anything to rush our return to civilian practice? You see we feel that we are needed more there than here and think that now is the time for us to leave and let the USN's and those whom the Government put through medical school take over. This is their chosen profession and they can have it with our blessings.

In case you decide to publish this in the JOURNAL (in order to see if others feel the same way) please omit my name for obvious reasons.

Best wishes to you and the members of the State Society.

Very truly yours,
Lieut. (MC) USNR

BULLETIN BOARD

NEWS NOTES FROM THE STATE BOARD OF HEALTH

In North Carolina, the intensive warfare that public health is making on syphilis and gonorrhea is being carried on with phenomenal success at the Rapid Treatment Centers in Charlotte and Durham. More than 10,000 patients have been treated at these centers. Syphilis is being cured in nine days, gonorrhea in a matter of hours.

These Rapid Treatment Centers are staffed by specialists from the United States Health Service and receive patients from local health departments throughout the state, regardless of race or economic standing. Many patients also are referred by practicing physicians.

All patients taking intensive treatment are subject to educational as well as medical procedure. Lectures on how to avoid re-infection once a cure is effected are illustrated with lantern slides and motion pictures. Since the inauguration of this practice, the number of patients requiring re-treatment has very sharply declined.

Only patients referred by health officers or qualified medical physicians can be admitted—that is, cases that have been completely diagnosed, supported by laboratory findings. Furthermore, each discharged patient must present himself to a doctor or approved clinic capable of making examinations at regular intervals, to make sure a cure has been effected. This feature is deemed highly important as a safeguard against relapse or reinfection.

* * * *

The general death rate among the civilian population in North Carolina for 1917 and 1918 respectively—the years of our participation in World War I—was 14.1 and 17.6 per thousand inhabitants. Compare these figures with the years of our participation in World War II. North Carolina's general death rate for 1942 was only 8.2 per thousand; for 1943, it was 8.1 per thousand, and for 1944, it was 7.9 per thousand, the last figure having been the lowest in our history. The 17.6 death rate in 1918 was due, in large measure, to the influenza epidemic. We had no influenza epidemic during World War II.

If the record made in North Carolina during the first six months of 1945 is maintained throughout the year, the general death rate will be lower than it was last year, when a new low of 7.9 was established. There were in this state 14,641 deaths through June, this year, as compared with 15,387 for the first half of 1944—a numerical decrease of 746.

* * * *

DDT is now commercially available for general use. The State Board of Health has received quotations from several producers of DDT, and has ascertained the price the United States Public Health Service pays for xylene and triton, used to make up a spray. The basic costs of the ingredients used in one gallon of a 5 per cent solution is approximately **thirty-five cents.** Reports have been received of purchases being made in the state at prices as high as $4.50 per gallon. The price of the ingredients used in one gallon of a 35 per cent concentrate is approximately $1.90. Several health officers have received quotations running as high at $10 per gallon. Such prices are considered exorbitant, and beyond all reasonable profit margins.

Any DDT spray designed for domestic use should be 5 per cent strong, and the percentage should be given on the label of the container. There is no point in mixing it with any other spray. When properly applied to the ceilings, walls, and screens of homes DDT has been known to kill flies and mosquitoes for as long as seven months. It can be relied upon to remain entirely effective for at least three months. DDT is not a substitute for screens, but is a very effective aid in controlling undesirable insects. If the interior of a well-screened house is sprayed correctly, all flies and mosquitoes that enter it will be down in three hours or less, and dead after ten or fifteen hours.

There has recently appeared in the newspapers the following item sent out of Washington by the United Press:

"The government is prepared to crack down on manufacturers who are cashing in on the magic name of DDT, with so-called 'DDT insecticides' that are really of little or no value as bug-killers." The United States Department of Agriculture, the article went on to say, will soon open a nationwide drive by issuing complaints against firms and individuals suspected of violating the insecticide act of 1910. This is a federal, not a state law. Convictions under the act carry a fine of $100 for the first offense. Subsequent offenses are subject to a penalty of $200 and one year's imprisonment.

"Government scientists," the article concludes, "emphasized that DDT is actually as potent as its reputation indicates. But the trouble with many DDT products now on the market, they said, is that they have as little as 1/100th of one per cent of DDT. Most effective solutions, the Agriculture Department said, contain at least five per cent."

The October number of **The Health Bulletin,** the State Board of Health's monthly publication, will be devoted exclusively to information concerning this product, including formulas and methods of use. Those who desire a copy of this publication may obtain it by addressing Dr. John H. Hamilton, the editor, care State Board of Health, Raleigh.

In the meantime, here are some pertinent facts about DDT and its domestic uses. DDT readily dissolves in kerosene oil. In spraying for flies, mosquitoes and other insects, the Army uses a 5 per cent solution of DDT in kerosene. This is easily obtained by dissolving two pounds of powdered DDT in five gallons of kerosene. When larger or smaller quantities are desired, the same ratio is maintained. The mixing should continue until the liquid becomes clear and contains no small particles in suspension. The kerosene spray is as effective as any devised for applying DDT, yet it has the objectionable quality of being a fire hazard for a longer period than that mixed with xylene. Kerosene sometimes leaves a greasy residue. And its odor, which soon disappears, is objectionable to some people.

Xylene is the solvent most commonly used by the U. S. Public Service and the State Board of Health and it will absorb a much greater amount of DDT than would be used in a spray. This makes it possible to prepare concentrated solutions that can be stored in smaller containers and transported more easily.

To spray for mosquitoes, a good application of either the DDT emulsion or the 5 per cent kerosene solution should be applied to the walls and ceilings of each room in the house, as well as the porches. The screens also should be sprayed or painted with one of these mixtures. The spray does not harm wall paper nor painted surfaces, but will show slightly on dark or varnished surfaces after it dries. This can be removed with ordinary furniture polish. Walls, curtains, wall paper or furniture are not injured. Screen doors should be given heavy applications, as large numbers of mosquitoes rest on the outside, awaiting the opening of the door to enter the house.

In addition to killing mosquitoes, DDT on walls and ceilings also will cut down the fly population, especially if the kitchen and pantry are carefully sprayed. Before using DDT in the kitchen or pantry remove all food and cover all eating utensils. Spray the window and door screens, and the sides of the house around the front and back entrances, especially the back porch and the kitchen entrance. Spray around garbage cans, and in privies, if any exist. Spraying barns and stables reduces the fly population tremendously.

Since cockroaches are most active at night and hide during the daylight hours in sheltered darkened places, DDT must be applied and forced into the cracks and crevices where these insects are usually found and from which they emerge. Treating the walls, ceilings and floors of kitchens and pantries will help, but concentrate the spray in cracks around cupboard, plumbing, sinks, etc. Spray the legs and undersides of the tables and chairs and other places where food is handled and stored, or where food particles may accumulate. Again— **Do not spray food or dishes.**

Bedbugs hide in cracks and crevices during the day and come out at night to suck blood. Hence, DDT spray must be directed toward their daytime hiding places. Apply the DDT to the bedsteads, paying particular attention to cracks in the wood and joints, and if the bed has slats, remove the slats and spray the niches into which they fit—then spray the slats thoroughly. Also spray the springs and mattresses. Strip the mattress and spray all the sides and edges, especially any crevices in which bedbugs might hide, and behind any loose paper where they might congregate.

For flea control, spray floors and rugs in all rooms of the house, especially the basement, and give special attention to possible breeding places. Do not spray animals themselves, since the DDT in oil solution may be absorbed by the animals and kill them. There is a DDT in powdered form which may be applied to animals without harm. But do treat kennels, sleeping baskets, mats, or wherever the pets usually lie down.

DDT does not repel insects. It kills them after they have come into contact with it.

The question arises: How should DDT spray be applied? A paint brush is an excellent applicator, and a hand spray may be used by those who are unable to provide themselves with more elaborate or

more expensive pumps made for the purpose, but do not breathe the spray. **It may be harmful.** Undoubtedly, the hand spray will be developed so that it can be used more effectively in applying DDT.

DDT solution is now sold by numerous feed and seed stores, by some hardware dealers, and by some drugstores. The supply is still small, but this will increase now that DDT has been made available for general use.

It is suggested that no DDT solution be purchased that does not show the percentage of DDT on the container. Look before you buy DDT; make sure you are getting the genuine product, and that you are not being charged an exorbitant price. The State Board of Health does not have DDT for general distribution.

State Board of Medical Examiners

In an effort to relieve the heavy burden carried by the physicians on the home front, as well as to increase the availability of physicians to the public, and to expedite the entrance of qualified medical veterans into practice, the North Carolina State Board of Medical Examiners has decided to call its members together every three months during the next year for licensure by endorsement of credentials. The next meeting will be at the Sir Walter Hotel, Raleigh, N. C., Wednesday, November 7, the board to convene at 10:30 A.M.

News Notes from the North Carolina Tuberculosis Association

The Executive Committee of the North Carolina Tuberculosis Association met in Durham on September 7, 1945, and discussed many matters pertinent to the Association at this time. Dr. S. B. McPheeters, Wayne County Health Officer, appeared before the group and explained the five-year plan to control tuberculosis in Wayne County. Dr. McPheeters solicited the interest and cooperation of the NCTA in making this project a success.

Mr. Hunter Bell, Treasurer of the Association, has resigned because of illness, and Mr. T. W. Steed of Raleigh was appointed to succeed him.

The following committees were appointed by the President: Rehabilitation Advisory Committee: Frank W. Webster, Chairman, Dr. P. P. McCain, Colonel Charles H. Warren, Mrs. C. O. DeLaney, Dr. Derwin Cooper, Miss Ruth Harris, Mrs. Eleanor H. Smith; Negro Advisory Committee: Dr. N. C. Newbold, Chairman, Dr. James E. Shepherd, Dr. Harold L. Trigg, Dr. P. P. McCain, Mr. J. A. Carter, Dr. M. B. Bethel, Dr. W. K. McDowell, Mrs. Anna F. Cheatham, Dr. J. Walter Hughes; Retirement Committee: Mr. T. W. Steed, Chairman, Mr. Baxter Durham, Dr. P. A. Yoder, Dr. H. F. Starr, Mr. Alvin T. Haley.

North Carolina Pathological Society

The North Carolina Pathological Society met in Winston-Salem at the Bowman Gray School of Medicine on September 7. Dr. Frank W. Konzelmann, of Atlantic City, president of the American Society of Clinical Pathologists, was guest speaker at the dinner meeting. Speakers at the afternoon session included Col. Alfred Blumberg, Station Hospital, Fort Bragg; Dr. Valy Menkin, Dr. B. B. Black-Schaffer, Dr. Lalla Iverson, and Dr. Hugh Dortch of Duke Hospital; and Dr. Paul Kimmelstiel of the Charlotte Memorial Hospital.

Officers elected were: Dr. H. C. Lennon of Greensboro, president; Dr. Paul Kimmelstiel of Charlotte, vice president; and Dr. W. C. Thomas of Winston-Salem, secretary-treasurer.

Ninth District Medical Society

The annual meeting of the Ninth District Medical Society was held in Salisbury on September 27. Speakers included Dr. T. V. Goode and Dr. J. W. Davis of Statesville, Dr. C. W. Woodson and Dr. Frank B. Marsh, of Salisbury, Lt. Col. L. A. M. Kraus, Chief of Medical Service at Camp Butner and formerly Clinical Professor of Medicine at the University of Maryland, Dr. Oren Moore, president of the State Medical Society, and Dr. Roscoe D. McMillan, secretary-treasurer. Dr. I. A. Bigger, Professor of Surgery at the Medical College of Virginia, was guest speaker at the dinner meeting, and Dr. T. W. Seay of Spencer acted as toastmaster. Dr. I. E. Shafer is District Councilor.

Edgecombe-Nash Counties Society

Dr. H. H. Schoenfeld, Assistant Professor of Surgery, George Washington University School of Medicine, Washington, D. C., spoke at the September meeting of the Edgecombe-Nash Counties Medical Society, held in Rocky Mount on September 12.

Forsyth County Medical Society

The Forsyth County Medical Society met in Winston-Salem on September 11. Drs. John Avera and Ellard Yow, of the Bowman Gray School of Medicine, discussed "The Control of Penicillin Therapy by Simple In Vitro Studies."

Charlotte Mental Hygiene Society

Dr. David Young, newly elected director of the North Carolina state hospitals for mental disease, was guest speaker at the quarterly meeting of the Charlotte Mental Hygiene Society on October 3. His subject was "Psychiatric Problems Confronting Us in North Carolina."

Surgeon General Announces New Officer Release Policy

A revised point system program which will return 13,000 physicians, 25,000 nurses, 3,500 dentists and an undetermined number of other Medical Department officers to civilian life by January, 1946 was announced 14 September 1945 by Major General Norman T. Kirk, The Surgeon General.

Under the plan those Medical and Dental Corps officers who have 80 points, are 48 years of age or have been in the Army since before Pearl Harbor will be released as surplus officers unless they are specialists in eye, ear, nose and throat work, plastic surgery, orthopedic surgery, neuropsychiatry or are laboratory technicians. These specialists will be released if they were called to active duty prior to 1 January 1941.

This is a drastic lowering of points below the previous plan which was based on an adjusted service score of 100 for non-scarce Medical Corps officers and 120 for those in scarce categories.

Only Army doctors who have not yet been overseas will be given assignments in foreign theaters under the Medical Department policy, Major General Norman T. Kirk, Surgeon General of the Army has announced. The same plan will be followed with reference to dentists, nurses, and other officers of the Medical Department, General Kirk said.

Any doctor who is sent abroad for duty in the Medical Department must be under 40 and must have a point score below 45.

(BULLETIN BOARD CONTINUED ON PAGE 467)

AUXILIARY

AUXILIARY PROGRAM SUGGESTIONS 1945-46

Mrs. William J. Butler, Program Chairman of the Auxiliary to the American Medical Association, again stresses juvenile delinquency and medical legislation as subjects for programs.

There are many sources of information regarding these subjects, among them the *Bulletin*, the *Journal of the American Medical Association*, the NORTH CAROLINA MEDICAL JOURNAL, and *Hygeia*.

Juvenile Delinquency

One of the greatest problems today is that of juvenile delinquency. A program with suggestions as to what to do about this problem has been prepared by the national Program and Public Relations Committees. Copies are to be sent to the Chairmen of Public Relations of every State Auxiliary. Write Mrs. John P. Kennedy, 416 Queens Road, Charlotte 4, concerning this.

To understand the problems of juvenile delinquency the following outline of procedure is suggested:

I Fact-finding survey. See Juvenile Court judge or other community leaders.

II Causes. Secure information from social welfare workers.

III Remedies:

A. Education of parents — study groups or parent guidance clinics.

B. Education of children

1. Child guidance clinics — diagnostic and preventive.
2. Juvenile health examination.
3. Establishment of teen-age clubs, stressing use of books, music, and recreation facilities.

C. Cooperation of community agencies, realizing that physical, mental, and moral health are all factors contributing to child welfare.

1. Talks by clergymen, superintendents or principals of schools, and other representative lay men and women of the community.
2. Talks by local doctors on the prevention of venereal diseases.
4. Procurement of a police force sympathetic to and cooperative with the problem.
   (1) Enforcement of curfew.
   (2) Eradication of places conducive to delinquent behavior.

Medical Legislation

Pending legislations of continued interest:

I National*

A. Burton-Hill Hospital Bill S191.

B. The Ellender Bill S637, concerning the release of persons from active military service in order to aid in making possible the education and training of physicians and dentists to meet essential needs.

C. The new Wagner-Murray-Dingell Bill, S 1050. See June issue of the NORTH CAROLINA MEDICAL JOURNAL.

D. All legislative measures relating to the World War Veterans.

II State

Dr. Hubert Haywood, Legislative Chairman of the Medical Society, asks our study and support of:

A. Expanded program for medical care of mental patients in North Carolina. Dr. David Young, Revenue Building, Raleigh, is Chairman of Mental Health.

B. Hospital and medical care program. Dr. Paul Whitaker, Kinston, is chairman of this committee.

C. Blue Cross Plan. Mr. E. B. Crawford, Chapel Hill, is Executive Secretary. See July issue of the NORTH CAROLINA MEDICAL JOURNAL, page 334, for his report.

D. Cancer program. Dr. Ivan Procter, Raleigh, is chairman of this committee.

E. State Board of Health Program—compulsory vaccination for all infectious and communicable diseases; venereal disease clinics; crippled children's, nutritional, and maternity and infancy clinics. This is an interesting and varied program.

F. Work of the State Commission for the Blind. This work is urgent and

General Suggestions

Mrs. David W. Thomas, National President, asks that the speech of Dr. Herman L. Kretschmer, President of the American Medical Association, appearing in the August issue of the *Bulletin*, be read at auxiliary meetings. This article, dealing with animal experimentation, black market in babies, eating habits, and prevention of accidents, might well be used as program material.

Additional material may be obtained by writing to Dr. W. W. Bauer, Director of the Bureau of Health Education of the American Medical Association, 535 N. Dearborn Street, Chicago 10, Illinois.

MRS. M. D. HILL, *Program Chairman*
Raleigh

* * *

POST WAR PLANNING

The war in Europe and in the Pacific has ended, and we are indeed grateful for the victory that is ours. By no means, however, must we give up our war activities and now be content to settle down to a normal life. Post war planning requires even greater efforts on our part than winning the war; so, as we face these challenging problems in an ever-changing world, may we be alert and try to serve the interests of our husbands' profession — medicine — by keeping abreast of the times. We must keep ever before us our slogan, "Let us not be weary in well doing."

In post war medical planning we must attempt to put into operation studies and plans previously formulated, keeping accurate account of hours given to all phases of activities.

We must promote sales of bonds and stamps. The Victory Loan Drive opens October 29. All leading state-wide organizations have been requested by Mrs. Karl Bishopric, State Chairman of the Women's Division of the War Finance Commission, to join in this drive. A letter concerning this is being mailed to each auxiliary chairman, stressing the great need and importance of buying bonds.

The question arises in our war service programs by Mrs. Rollo K. Packard, Chairman of the War Service Committee, "What can an auxiliary do in post war planning for returning doctors?" These plans are so well formulated that there is little we can do, except to have knowledge of such plans and to cooperate in any way the American Medical Association or the State Medical Society requests.

Post war medical planning has another phase in which returning doctors are interested, perhaps more now than before they entered the service. This phase is the future of American medicine. The Wagner-Murray-Dingell Bill has been introduced in the Senate. It is a bill that, if enacted, even with many changes, means the socialization of medicine.

Perhaps the Auxiliary can best serve the returning doctors and the American people by an aggressive educational program carried on through a coordinated program of the Public Relations and the Legislative Committees. Study groups should be formed so that women can keep intelligently alert concerning legislation affecting the practice of medicine. It is generally accepted that the American people are satisfied with the quality of medical care they now have, but they are not satisfied with the present methods of payment and distribution. Plans are being formulated by many state and county medical societies for pre-payment plans for medical care, which, in conjunction with the Blue Cross hospital plans, offer the people a health insurance plan under the control of medicine, hospitals, and interested laymen. The public must be informed of these plans if we hope to defeat legislation tending to the socialization of medicine. Returning soldiers know what proper medical aid means, and they will demand the highest quality in service and treatment; so, as an Auxiliary, we heartily endorse "free enterprise" and not standardization through socialized medicine.

The Red Cross is asking for more nurse's aides. Unless more volunteers register for aid work, countless patients will continue to do without service, Red Cross officials report.

I hope to write each chairman later, informing her of her duties. War service programs and questionnaires will be mailed to county auxiliary chairmen at a later date in order that they may make an accurate annual report. I sincerely trust that we doctors' wives may have a great share in winning eternal peace. I believe this will be accomplished if we put forth our sincere efforts to this end.

MRS. D. H. BRIDGER, *Chairman*
Post War Service Committee
Bladenboro

BOOK REVIEWS

The Specificity of Serological Reactions. By Karl Landsteiner, M.D., late Member Emeritus of the Rockefeller Institute for Medical Research. Revised Edition. 310 pages. Price, $5.00. Cambridge: Harvard University Press, 1945.

In this volume the author has admirably presented fundamental principles underlying the phenomenon of immunological specificity. Serological reactions based on and determined by immunochemistry and occurring both **in vitro** and **in vivo** are exceedingly important to the immunologist or serologist. Immunochemical structure also affects or determines virulence of many organisms, as well as the completeness or incompleteness of antibody formation in active immunization.

Most of the content of the book is based on experimental data accumulated in the author's research laboratory; however, much of the literature is reviewed. The contributions of the author in this field are immeasurable and add greatly to our knowledge of immunological reactions. The bibliography is extensive, but as presented is unnecessarily cumbersome.

The author begins the book with a discussion of the serologic specificity of natural and chemically modified proteins. This is followed by chapters on cell antigens; the nature and specificity of antibodies; artificial conjugated antigens and serological reactions with simple chemical compounds; chemical investigations on specific non-protein cell substances; and antigen-antibody reactions. Next follows the chapter on molecular structure and intermolecular forces contributed by Dr. Linus Pauling, which, with the chapter on antigen-antibody reactions, is entirely new.

Workers in the field of bacteriology and immunology will find this a most interesting and highly valuable book.

Microbial Antagonisms and Antibiotic Substances. By Selman A. Waksman, Professor of Microbiology, Rutgers University. 350 pages. Price, $3.75. New York: The Commonwealth Fund, 1945.

The greatest advance in bacteriology in recent years, measured in terms of lives saved, has been the discovery and production of the antibiotics. Great interest in these substances has been aroused in all practitioners of medicine and workers in related fields. This book presents information on the antibiotics in an authoritative and scholarly fashion.

The author begins the book with a discussion of soils and water basins as habitats of the various organisms capable of producing antibiotic substances. The close inter-relationship of these organisms, as well as methods for isolating and cultivating them, is emphasized. The many large groups of bacteria, fungi and other microbes, including animal forms, are thoroughly discussed. The subjects of the chemical nature of antibiotic substances, the nature of their action, their utilization in disease control, and their classification are presented in the usual clear and authoritative style of the author. A chapter dealing with "The Outlook for the Future" presents many interesting thoughts for future channels of investigation. A very extensive bibliography (1016 references) is included, as well as an index and glossary.

This book is strongly recommended to any one interested in microbial antagonisms and facts relating to their antibiotic substances.

Cancer of the Colon and Rectum. By Fred W. Rankin, M.D., and A. Stephens Graham, M.D. 346 pages, with 133 illustrations. Price, $5.50. Springfield, Illinois: Charles C. Thomas, 1945.

This monograph represents a summary of the broad experience of the authors in dealing with malignant neoplasms of the colon and rectum. The aid of Dr. Fred M. Hodges in the chapter on radiotherapy, of Dr. A. C. Broders in the matter of photomicrographs, and of Mr. W. B. Gabriel of London for materials from his volume on the same subject is acknowledged.

The book is divided into three parts. The first part concerns itself with some general considerations. These include the anatomy and physiology of the colon and rectum; the incidence, occurrence, etiology, and pathology of cancer of the colon and rectum; and the symptoms and diagnosis of the malignancies. The chapter on the differential diagnoses is particularly well presented. The illustrations are excellent. This reviewer disagrees with some of the broad generalities presented in connection with the discussion of pathology. This criticism is only a minor one, however.

The second part of the book deals with treatment. Prognosis, operability, choice of operation, operative mortality, end results, preoperative and postoperative therapy, and radiotherapy are discussed in detail. Various operative procedures are covered in the third part of the book. These are illustrated well by the use of excellent ink line drawings.

This volume is recommended for those who wish a concise summary of information on cancer of the colon and rectum.

Manometric Techniques and Related Methods for the Study of Tissue Metabolism. By W. W. Umbreit, R. H. Burris, and J. F. Stauffer, all associated with the University of Wisconsin. 198 pages. Price, $3.50. Minneapolis: Burgess Publishing Co., 1945.

The literature concerned with tissue metabolism has increased at an extremely rapid rate in the last decade. Throughout this literature are scattered the various techniques for experimental investigation and their modifications, and the "tricks of the trade," which are usually obscured by the theoretical aspects of the problem. This fact has made it very difficult for one with limited time to familiarize himself with these techniques, which are being applied to every branch of experimental medicine.

With the publication of this monograph many of these difficulties are overcome. An adequate discussion of the theory and use of the manometric apparatus is given, including a discussion of the differential manometer. Methods for preparing animal, plant, and microbial tissues are described. Particular attention is given to the homogenate technique. Among other subjects discussed are the Thunberg technique for estimating dehydrogenase activity, electrometric techniques, the manometric estimation of metabolites and enzyme systems, and the preparation of physiologically important intermediates and metabolites.

This monograph is more than a catalog of methods. It is a critical evaluation, for the authors have included only those methods which have been used satisfactorily by themselves. They also have included only those methods which require a minimum of equipment, of the type usually found in laboratories equipped for biological work.

The subjects discussed will interest those engaged in experimental work particularly. However, they also will increase the understanding of those who are not laboratory workers and make more critical their evaluation of medical literature.

Mental Disorders in Later Life. Edited by Oscar J. Kaplan, Ph.D., Associate Professor of Psychology, University of Idaho, Southern Branch, Pocatello, Idaho. 436 pages. Price, $5.00. Stanford University, California: Stanford University Press, 1945.

This book represents a concise summary of the psychiatric, physiological, sociological, psychological and medical aspects of old age. Each chapter is written by a worker in that particular field, and the book is well organized. The language is generally clear and understandable.

The reader who has some medical or psychiatric acquaintance with the problems of old age will find little that is new or contributes to further knowledge. The reader who has never given these problems much thought may find a good bit of interesting material.

In view of the fact that the problems of old age are constantly mounting because of the extended life span which medicine has made possible to human beings, a book of this kind will be found useful and stimulating by those whose work lies in the medical, psychiatric, sociological or nursing field.

A Textbook of Ophthalmology. By Sanford R. Gifford, M.A., M.D., F.A.C.S., Formerly Professor of Ophthalmology, Northwestern University Medical School, Chicago; Formerly Attending Ophthalmologist, Passavant Memorial and Cook County Hospitals. Third Edition, revised. 457 pages with 215 illustrations and 13 color plates. Price, $4.00. Philadelphia and London: W. B. Saunders Company, 1945.

This book is primarily intended for the use of medical students and general practitioners. It has been clearly and concisely written. It is well indexed and generously illustrated with photographs, drawings, and diagrams. It is highly recommended by the reviewer as a textbook of ophthalmology.

A Manual of Surgical Anatomy. Prepared under the Auspices of the Committee on Surgery of the Division of Medical Sciences of the National Research Council, by Tom Jones and W. C. Shepard. 195 pages with 267 illustrations on 138 figures, 153 in colors. Price, $5.00. Philadelphia and London: W. B. Saunders Company, 1945.

The purpose for which this concise manual of applied surgical anatomy was produced has been adequately met through the excellent anatomical artistry of Mr. Jones and Mr. Shepard. The deletion of word descriptions is in great part compensated for by the excellent line drawings of unsurpassed clarity.

This manual should be of great help to those needing a quick review of the topographical anatomy and the usual approaches for surgery of the different areas of the body. It will serve particularly well those doing traumatic surgery and needing to re-acquaint themselves with the important structures in injured areas.

All medical students and house officers would profit by referring to this manual while studying the techniques of operations at which they are planning to assist.

Your Eyes. By Sidney A. Fox, Sc.M. (Ophth.), M.D., Instructor in Ophthalmology, New York University College of Medicine. 191 pages. Price, $2.75. New York: Alfred A. Knopf, Inc., 1944.

This book is an excellent exposition of ophthalmology as it relates to the layman. It endeavors to answer many questions which are commonly asked of the ophthalmologist by the patient, and in entertaining style explains many fundamental concepts in the science.

The book should be read by anyone interested in ophthalmology, and is recommended as particularly useful for interested laymen.

BULLETIN BOARD

(CONTINUED FROM PAGE 463)

Regional Meeting of the American Cancer Society

The American Cancer Society will hold its Southeastern Regional Meeting in Durham and Chapel Hill on October 22, 23 and 24. The Southeastern Region consists of thirteen states reaching from Virginia to Texas. Dr. Alton Ochsner of Tulane University, Regional Director, will conduct the medical side of the program. All physicians in this region who are interested in cancer control are invited to attend the meeting.

Medical College of the State of South Carolina Refresher Course

The Alumni Association of the Medical College of the State of South Carolina will hold its fourth annual refresher course in Charleston on October 31, November 1 and 2. Among the speakers will be Dr. Walter C. Alvarez, Dr. John S. Lockwood, Dr. Jefferson Browder, Dr. Richard Kovacs, Dr. Thaddeus Montgomery, Dr. Jean Verbrugge, Dr. Hal Davidson, and Dr. Robert McIver. Dr. Horace Smithy of Charleston is in charge of reservations.

Tenth Annual Convention of the International College of Surgeons

The International College of Surgeons will hold its Tenth Annual Convention and Convocation on December 7 and 8, 1945, at the Mayflower Hotel, Washington, D. C. At this time approximately 200 men will receive their fellowship. A scientific program is planned for both days. Convocation exercises will be held Friday evening, December 7, in the Mayflower Auditorium.

Postgraduate Course in Allergy

The American College of Allergists offers an intensive, practical course in allergy for 5½ days, November 5 to 10, inclusive, at Thorne Hall, Northwestern University, Superior and Lakeshore Drive, Chicago, Illinois. Men in the service will be admitted free of charge, and for others the registration fee is $100.

Inquiries should be addressed to the Secretary of the American College of Allergists, 401 La Salle Medical Building, Minneapolis 2, Minnesota.

Lee County Hospital

The board of county commissioners of Lee County has recently authorized the issuance of $125,000 in bonds for the enlargement and improvement of Lee County Hospital.

Fiftieth Anniversary of the Discovery of X-Ray

The fiftieth anniversary of the discovery of x-ray will be celebrated on a national basis during the week of November 5 to 10 under the sponsorship of the American College of Radiology. The anniversary celebration will mark the development of x-ray as a medical instrument and call public attention to the uses of radiology in the diagnosis and treatment of disease. It will also seek to educate the public to the services of the radiologist, a physician, who specializes in the medical applications of the x-ray, devoting his skill to the interpretation of x-ray film for diagnosis and the application of x-rays in the treatment of many maladies.

News Notes

Dr. David Young, Assistant Professor of Psychiatry and Neurology at the University of Utah School of Medicine, has returned to North Carolina to begin his duties as General Superintendent of Mental Health for the four state hospitals. Dr. Young is a graduate of the University of North Carolina and Harvard Medical School, and has practiced in the Massachusetts General Hospital, Bellevue Hospital, Worcester State Hospital, Duke Hospital, McLean Hospital, and in Salt Lake City, Utah.

* * * *

Dr. Julian Ruffin of Duke University School of Medicine, Civilian Consultant to The Surgeon General, has returned from Europe, where he acted as clinician on Nutrition Survey Team No. 1, conducting nutritional surveys in many German cities.

* * * *

Major E. Charles Powell, Jr., of Rocky Mount, has been awarded the Bronze Star and the Meritorious Service Unit Plaque. The citation accompanying the Bronze Star read:

"For Meritorious Service in connection with military operations against the enemy in Belgium and Germany, November 18, 1944 to March 5, 1945. As regimental surgeon during this period, Major Powell. by his display of outstanding administrative ability, technical knowledge and loyalty, supervised the treatment and evacuation of wounded and sick personnel of his regiment under the difficulties of combat conditions and adverse weather in a manner which has insured prompt and efficient medical care. The preventive measures instituted by him during the months of winter warfare were largely responsible for the reduction of frostbite casualties within his unit. The skill, exemplary action and commendable conduct exhibited by Major Powell reflect high credit on himself and the military service."

* * * *

Captain R. L. Wall, Jr., M.C., of Winston-Salem, has been awarded the Bronze Star Medal for outstanding achievement. His citation reads in part as follows: "Capt. Wall, as surgeon of Headquarters Squadron, Ninth Air Defense Command, rendered invaluable service to the personnel of the headquarters. He worked tirelessly day and night, to provide medical attention for the squadron, cheerfully accepting any additional burdens which arose. At the same time, when his staff was depleted by transfers, he trained new personnel and reorganized the section. The professional knowledge, initiative and devotion to duty displayed by Capt. Wall reflects the highest credit upon himself and the armed forces of the United States."

* * * *

Dr. Wesley Monroe Stone of Dobson, aged 73, died suddenly at his home on September 27.

The following physicians successfully passed the written examination for Fellowship in the American College of Chest Physicians held in June 1945, and will be awarded their Fellowship Certificates at the next Convocation of the College:

Norman L. Anderson, M.D., Black Mountain
Claude G. Milham, M.D., Hamlet

The Convocations are held in conjunction with the annual meeting of the College, which will again be resumed in 1946.

* * * *

Drs. T. G. Fowler of Glenville, J. F. Marshall of Winston-Salem and N. W. Thiessen of Southern Pines have recently been promoted from the rank of major to that of lieutenant colonel.

* * * *

Captain John F. Weeks of Elizabeth City recently completed the Aviation Medical Examiners' course at the Army Air Forces School of Aviation Medicine, Randolph Field, Texas.

* * * *

Dr. T. D. Tyson of High Point has recently been discharged from the armed forces and has reopened his office at the Burrus Clinic. Dr. Tyson was in the army three years and overseas thirty-three months.

* * * *

Dr. George T. Wood has recently been discharged from the army and has returned to High Point for the practice of surgery.

* * * *

Dr. A. McR. Crouch of Wilmington was recently appointed by the governor to the Fort Fisher National Park Commission, to fill the unexpired term of Fred D. Poisson.

* * * *

Dr. J. F. Foster of Sanford is recovering from a recent operation at Duke Hospital.

Neuropsychiatric Discharges in Army Now Total 315,000

The nation's total of soldiers who have been discharged from the Army for neuropsychiatric reasons has now reached 315,000, Brigadier General William C. Menninger, Director of the Neuropsychiatry Consultants Division of the Army Medical Department, said in a recent (October 8) talk before the New York Academy of Medicine.

New Sulfa Weapon

A new group of sulfonamides, never before tested for antibacterial properties, has shown itself to be almost as effective against a sulfonamide-resistant strain of gonococcus as against other strains, report G. R. Goetchius and C. A. Lawrence of Winthrop Chemical Co., Inc., in a paper appearing in the current issue of the Journal of Bacteriology.

Another important property of this group, according to the paper, is its complete indifference to para-aminobenzoic acid. The acid, present in the gastrointestinal tract and in pus, inhibits the action of many of the sulfa compounds, seriously reducing their effectiveness.

FOR SALE—

Super-Diatherm Physiotherapy Apparatus. Made by Aloe Co. Serial 836. A.C. Complete with many attachments. Original cost $750.00. First check for $150.00 gets it, as I do not need it.

JOHN W. MacCONNELL, M.D.
Davidson, N. C.

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MEDICINE AND PUBLIC HEALTH IN A POST-WAR WORLD

THOMAS PARRAN, M.D.
Surgeon General, U.S. Public Health Service
WASHINGTON, D. C.

It is a special pleasure to be present at these graduation exercises of the Schools of Medicine and Nursing of Duke University. This institution has been founded within the lifetime of the members of this graduating class. Yet, within its short life, Duke has become a bright example of the medical center of the future—a great national center for the teaching and practice of modern medicine, as well as for research.

Before the advent of the Duke Medical School, talented young men and women of North Carolina had to go outside of their home state to complete their professional training in medicine. Too often they went to stay. Since the establishment of this school, an increasing volume of North Carolina's native medical talent has remained at home, to serve the people from which it sprang.

More significantly, the people of this state now turn to their own health and medical resources, and do not go far from home to seek complete care. Not so long ago the physicians of this state and their patients had to rely on distant centers for the diagnostic facilities and specialist services needed in difficult cases. Nowadays the common practice is to send such patients to Duke.

The development here represents a trend of the future, which will profit not only young physicians but the people, whose service is the only reason for progress in medical science. In the next few years, the best medical practice will no longer be concentrated in the large metropolitan areas, but increasingly will function wherever people need the services of modern medicine —and it will function in close cooperation with just such centers as Duke, serving whole states and regions.

I am aware that most of you are destined to devote the first years of your professional life to the armed forces. This service is at once your duty and your privilege. Oliver Wendell Holmes expressed the philosophy of your generation better than any man I know. Like you, he had his professional career disrupted by years of military service to his country. "Life is action and passion," he said. "I think it is required of a man that he should *share the action and passion of his time at peril of being judged not to have lived.*" You go from these halls of learning to share the action and passion of your time. And it is an age of great movements, of great men—a time to share not only the sacrifices of war but the noblest actions and loftiest passions in the history of free men.

When you have honorably discharged your duties, you will find that your home land and, indeed, the world need you more than they have ever before needed men and women with your training and skills. Forever with us is the scarcity of young minds, tempered in the discipline of academic study. When the war is over, a multitude of complicated problems will face our nation. To you—and the oncoming generation—will fall a large share of the responsibility of solving these problems.

That, in itself, is one of the reasons I welcome this opportunity of talking with you today about what the future holds in the fields of medicine and public health.

Address to the Graduating Class, Duke University Schools of Medicine and Nursing, June 23, 1945.

The victory in Europe has brought us over the first hump in this most destructive of wars. Even now the full force of Allied power is being turned against the Japanese. Our nation, with the other peace-loving peoples of the world, is striving at the same time toward international security—toward a peaceful world.

Already the society in which you live has undergone changes so rapid and so extensive that only the concurrent increases in the speed and range of air transport serve as analogy. You have lived your lives in a world of turmoil. But you have seen your nation and your people come through the darkest hours with strength and hope. Because of this, you are prepared to meet the challenge of a dynamic world, unafraid.

In the discipline of your professional training and in your acceptance of change, you are fortunate. The one certainty ahead for the public health and medical professions is the certainty of change, both in science and in practice.

Scientific medicine is in the midst of breath-taking changes, comparable with those of the nineteenth century. During the war, medical knowledge has been increased enormously in a score of important fields—to mention only a few, the production and successful use of penicillin, blood substitutes, and new insecticides; prevention of shock and wound infection; plastic surgery; and psychotherapy. There are other important contributions which must remain secret until after the war. Many incidental discoveries have been contributed as by-products of the war-time search for new medical knowledge.

The task before the young physicians of today and tomorrow is to see to it that this great scientific armament is put to use for all of the people. The practice of medicine can no longer be limited by the maldistribution and unequal opportunities that we witnessed before the war.

North Carolina's Contribution

A fundamental objective of the post-war world should be to create healthful citizens. Throughout our nation, this objective is gaining acceptance as a major post-war aim. The North Carolina program introduced in 1944 by Governor Broughton is a typical expression of the concept that, in a democracy, government has a responsibility to ensure to every person the maximum opportunity of securing or regaining health.

A significant proposal in that program is the creation of a four-year school of medicine in the University of North Carolina. I hope that the authorities of Duke University look with favor on this proposal, not only because the presence of another first-class medical school offers new opportunities for cooperation and wholesome neighborly competition, but because the nation's capacity for training medical and health personnel has never been equal to the needs.

Moreover, it is fitting that the nation's first state university should round out its service by offering complete medical education. Your revolutionary forefathers were not content to win freedom of thought on the battlefield; at Chapel Hill they created an institution "to advance knowledge and leaven the thought" of the state's oncoming generations. Today their faith in education is proved here at Duke and at many other institutions in the state, as well as at Chapel Hill under the leadership of Frank Porter Graham, who played a signal part in the creation of the nation's social security program.

Through another great North Carolinian, new public health services have reached out to affect the life of every man, woman, and child in this country.

Back in 1937, the Honorable Alfred Bulwinkle of Gastonia introduced into Congress the bill which became the National Venereal Disease Control Act of 1938. In 1944, he introduced legislation to create a national program for the conquest of tuberculosis. And he is the author of the Public Health Service Act of 1944, one of the most statesmanlike pieces of health legislation ever enacted by the United States Congress. We of the Public Health Service and the whole nation owe a debt of thanks to Mr. Bulwinkle and to the state which he represents. I want to take this occasion to express our appreciation for the many outstanding services rendered by this able and progressive lawmaker.

Distribution of Medical Care

It appears that the post-war demand for health and medical service is likely to exceed any that we have had in the past. Millions of veterans of this war will have received the benefits of complete medical and hospital care. By complete care, I mean the superior type of service that is given in the medical centers of the army and navy, here

at Duke, and in many other university hospitals—namely, practice by groups of physicians working together, sharing knowledge and skills and the best available facilities, to accomplish their task. That task is to prevent illness, and to restore the sick and injured to health as rapidly as science and biologic capacity permit. For a large proportion of the veterans, the care they received in the armed forces will have been their first experience with scientific medicine, dentistry, and nursing as well. No educational force is so powerful as personal experience and it is unlikely that the veterans will willingly give up these benefits, or that they will expect health care for themselves and their families as charity. It is necessary that we plan now to meet these demands with service—efficiently rendered and economical of money, men, and skills.

The ancient ethics of our professions teaches us that the opportunities for service are greatest where needs are greatest. Unfortunately, the industrial society in which we live, coupled with the development of medical science, has invalidated this lofty concept. The increased scope of scientific medicine, and the necessity for specialization and for costly facilities for diagnosis and treatment have conspired to draw physicians, nurses, and hospitals into centers of wealth and population. The areas of greatest need thus have been left unserved, or poorly served. This is true with respect to both preventive and curative services. About 40 per cent of the counties in the United States lack organized public health services, and approximately the same percentage have no registered hospitals. In still other counties, many isolated communities have no facilities of their own, nor do they have effective access to hospitals in other communities. These same counties and towns also have too few doctors, or none at all.

The medical exodus from rural areas began long before the war. It is increasing. In many parts of the country the depletion of personnel has reached the danger point. Your own Dean Davison told me not long ago the story of one of his graduates which illustrates the trend. This young physician had set up practice in a country town without a hospital. When the people of this town began to join the hospital insurance plan, they turned to a larger community with a hospital for their medical care. Now the country doctor will have to migrate to the hospital service center in order to make a living.

A first objective in the post-war period should be to reverse the present critical drift, and to make opportunities for practicing scientific work great where needs are great. Many states and communities already are planning the construction of modern hospitals and health centers. The people in the medically poor areas are becoming alert to the fact that lack of hospitals and other clinical facilities is a crucial factor in the shortage of physicians.

Integration of Hospitals and Health Services

I do not doubt that state and community plans for the construction of health facilities will be translated into real hospitals and health centers. This is the first step which must be taken to equalize the opportunities for health and for service. But it is only a beginning. To provide complete health services will require the adoption of new methods. Specifically, I visualize the marriage of the hospitals with the health service as a solution of the problem, especially in rural areas.

An agricultural state like North Carolina understands the needs. The future strength of America lies in prosperous agriculture. Factors vital to the prosperity of the farm family are good medical and health services, decent homes, modern sanitation, and other essentials of healthful living. We have made some progress in conserving the soil and other material resources. As a nation, we must make comparable progress in conserving human resources.

The integration of hospitals and health services would not only make the provision of complete service feasible; it would also offer the modern physician a wider field of practice than is to be found solely in his private office. The center for preventive and curative services provided by a small rural hospital housed under the same roof with the local health department could be in turn functionally related with a larger hospital system—serving widening areas and offering more complex services.

The relationship of these local units with the base hospital or medical center would be primarily for: (1) professional training, (2) diagnosis, and (3) research. The training of physicians and nurses in the future

may well include periods of required internship or field experience in such hospital-health centers. Mexico has already established six months of rural practice as a requirement for the medical degree. Field experience in public health nursing and home nursing will be required if we are to build up the needed staff of nurses in the health services of the future. A coordinated system of training and service for prevention and cure offers an opportunity for enriching the service in rural areas, as well as the experience of the students.

Proper integration of the several elements in a hospital system—medical center, district hospital, rural hospital-health service—would also provide for the continuous education of physicians.

I visualize a type of rural health organization which may offer rich opportunities for medicine and public health. It should be understood that such an organization would build upon existing resources, supplementing personnel and facilities to meet standards of adequate service. A group of sparsely populated counties should pool resources to support a well-developed hospital and the essential public health service. Together they might set up a joint hospital-health authority, or health district. Legislation would be needed to permit this authority to issue bonds and levy taxes for the construction and maintenance of a hospital and the required number of health centers. and to maintain public health services. All of the facilities could well be under the management of a board of trustees or board of health, the membership of which would represent the several counties. The health centers would be, in effect, outpatient clinics of the central hospital as well as headquarters of the public health activities in each county. Private physicians would serve in the health centers and would also be on the staff of the central hospital and subject to the staff regulations of that hospital. Under such an arrangement, modern medical practice would function in its most effective and satisfying form—that is, as a group function, and therefore cooperative rather than isolationist. Such a plan may be one of the ways to overcome, in future years, the difficulties of operating the small autonomous hospital and of practicing medicine in isolation from essential facilities and professional contacts. Of course, some such integration of hospital and health services could function in single counties large enough to support adequate hospital facilities.

Expansion of Public Health Services

In the past, public health services were confined to the maintenance of environmental sanitation and the control of epidemics. More recently, personal services have been added—that is to say, health supervision of mothers and infants, inoculations for the prevention of communicable diseases, and diagnosis and treatment of such mass diseases as tuberculosis, syphilis, and gonorrhea.

The specialty of public health administration is relatively young in medicine. The field, however, is expanding rapidly. We have done only a half-way job in providing the traditional services in this country. In 1935, only 528 of the 3,000 rural counties had full-time health departments, and only one in five local health departments had the personnel and facilities to perform competently the traditional tasks. By 1944, 1,800 counties reported full-time organizations. The war has seriously depleted the staffs of state and local health agencies, so that many departments now are operating with skeleton staffs, and serving much larger populations.

The Public Health Service Committee on Training of Personnel has estimated a need for 30,000 trained workers—exclusive of nurses—in official health agencies for the first post-war year. Of these, 5,500 would be physicians who would act as health officers and administrators of special activities. These men and women would be needed to render the services which were provided in comprehensive health programs as operated before the war. An expansion of services in nutrition, child care, tuberculosis control, mental hygiene, cancer control, and other community health programs is anticipated.

Even without further expansion of services, public health offers rich opportunities for well-trained men and women. Yet results of a survey conducted by the American Medical Association among military medical officers show a surprising unawareness of the needs and opportunities in public health as a specialty.

True, educational facilities for postgraduate training in public health have not developed rapidly enough to meet the needs.

One of the first objectives to be obtained after the war is the competent training of a well qualified army of health personnel, as well as training in other specialties and medical science generally. The task is too great for any one source of funds and facilities to accomplish alone. Private foundations, state universities and health agencies, and the federal government all will be needed for the recruitment and training of physicians, dentists, nurses, and all the other essential workers for national health. Emphasis in the future will be on prevention rather than cure.

Medical Education

In the past, the costs of medical education have been prohibitive for the average family. Our medical schools should be able to seek more widely in the population for the best young minds. Scholarships and the use of tax funds would widen the choice. Moreover, the costs of medical education should be lowered for the student. This does not mean that medical education should be handed to everyone on a silver platter. But, with proper safeguards, it should be possible to ensure medical training for every young man and woman whose personal qualifications meet the highest standards of the profession.

Reforms in nursing education, also, are long overdue. In general, schools of nursing in the United States are too largely financed by the students' contribution in service to the teaching hospital. Moreover, the average training of nurses is not good enough to produce leaders and teachers; on the other hand, it is too comprehensive for many of the tasks which graduate nurses still perform. Probably in the future we should develop at least three types of training: (1) for the professional-degree nurse, in collegiate schools of nursing; (2) for the registered nurse, in hospital schools; and (3) for the vocational nurse—the modern, vocationally-trained version of the practical nurse.

Research

Now, as in the past, the future of medicine depends upon progress in research. During the war, the federal government has appropriated some $17,000,000 for medical research through the Office of Scientific Research and Development.

Continued and augmented research with federal support is needed, if we are to add to our knowledge of the human organism in sickness and health. Failure to plan for new research, or curtailment of existing investigations would seriously handicap us in future plans for national health. We would not only lose our investment, but we would be cutting off our chances of finding and utilizing the best young research minds in the country. For some years to come the search for talent and its development will be the first demand.

The U. S. Public Health Service now has basic legal authority to finance medical research in the universities and other institutions. Public Law 410 (sec. 301) instructs the Surgeon General "to conduct in the Service and to encourage, cooperate with, and render assistance to other appropriate public authorities, scientific institutions, and scientists, in the conduct of research, and to promote the coordination of research . . . relating to the causes, diagnosis, treatment, control, and prevention of physical and mental diseases and impairments of mankind."

The Service thus has the authority to make grants-in-aid for research projects recommended by our National Advisory Health Council, just as we make grants-in-aid for cancer research on recommendation of the National Advisory Cancer Council. It is also possible for us to establish research fellowships for the most brilliant and promising young scientists from this country and abroad.

Compulsory Health Insurance

How shall these augmented sciences and skills reach the people? You are, no doubt, well aware of the movement toward the provision of medical care on a group prepayment basis. This trend has been developing rapidly over the past twenty-five years.

The medical profession in general is on record as favoring prepayment plans. In fact, a number of state and county medical societies have organized insurance schemes. The rapidly growing Blue Cross Plan has had the blessing of the profession for nearly a decade.

The issue, then, has narrowed. The question now is: shall insurance for medical service be voluntary or compulsory?

There are other unsolved problems, of course. I believe the time is right to seek the answers. Assuming a compulsory insur-

ance plan, shall it be administered directly by the federal government? Or shall a combined fund out of general taxes and insurance payments be allotted to the states through grants-in-aids, for state administration of medical care programs?

The United States for ten years has employed both patterns in the several sections of the Social Security Law. Some phases, such as old age insurance, have been administered by the federal government; public health programs, public assistance, and other sections, through grants-in-aid.

I believe, however, that the greatest obstacle to the development of medical services on a prepayment basis is the lack of an organized arrangement for giving the service. It is here that the professions must take leadership. Group practice is an inevitable and desirable trend; for with well-organized group services, it is possible to visualize the practical means of serving the millions who would be covered under a national medical care program.

In your training here at Duke, you have experienced the professional benefits of group practice; so also have the sick who have found health here. It is my sincere hope that this university will exercise its leadership and be the guiding spirit for similar developments in other parts of the state. Integration of the services of a great center like Duke with those of other institutions is a logical outgrowth.

Summary

As I see it, there are six major objectives toward which we should strive for national health. They are:

1. Construction of hospitals and health centers and their integration in state-wide systems of preventive and curative medicine, education, and research.
2. Creation of a sanitary environment in all parts of the country.
3. Expansion of public health services throughout the nation.
4. Training of health and medical personnel in adequate numbers.
5. Augmented public support for medical research.
6. Institution of a national medical care program.

If you think of each of these objectives and the developments in medicine, public health, and our national life during your time, you will see that there is nothing new proposed. It is simply a question of doing more of what we have been doing, and doing it better—so that all the people of our mighty nation shall have equal opportunity for health. When the war is over, some fifteen million men and women will be returning as veterans. Never before has such a large proportion of the total population served their country in war. Every community in the land will welcome home its own veterans. That is all the more reason that we should plan now for the best in health and medical services for them and their families. The best thinking is that many of the health services for veterans should be integrated with services for the rest of the population, and not set up separate and apart.

The specific objectives which I have mentioned are based upon principles for which our democracy stands. Full employment, with a continuing high level of national income, is a basis of progress in public health. All citizens should have an equal opportunity to regain and maintain health. We can reach our specific objectives for national health only through combined public and private action, using all resources in the democratic way.

As I say, "Godspeed," to each of you, I want to quote a message written by the greatest American in all our history, whose faith in our future is a challenge to you and your young colleagues in this country and throughout the world:

> "New frontiers of the mind are before us, and if they are pioneered with the same vision, boldness and drive with which we have waged this war, we can create a fuller and more beautiful employment and a fuller and more fruitful life."

These are the words of Franklin Delano Roosevelt.

From the medicine man of old to the modern clinic is a long way. Again and again mystery after mystery has been probed; again and again the utterly impossible has won acceptance against ancient truth; again and again the reach of medicine has been enlarged. The doctor's craft, with triumph after triumph to its credit, is still on its way. Yet it is set within a larger problem of human well-being which up to now has hardly been explored. It will not be solved until we learn to make culture in all its color and drama an instrument of health.—Wendell Berge, Ass't. Att'y. Gen'l. of the U. S., Pub. Health Rep., Jan., 1945.

DOCTORS, TAKE WARNING!

G. W. MURPHY, M.D.

ASHEVILLE

Like every other normal citizen of the United States, the average physician is inspired and sustained by his desire for success in his chosen field and the prospects of attaining it. For him success is measured partly by dollars earned, but more especially by the respect of his fellows and most particularly by the confidence of his patients. His patients choose him, and pay him; and only by curing, relieving, or comforting them to the utmost of his capacity may he achieve success. The factor of direct responsibility to the patient has made our present system of medical practice, with all of its imperfections, the best in all the world.

During the recent war the Army of the United States has had excellent medical care provided by medical officers who were inspired by the immediate emergency and who had brought into the army their habits of thought and procedure and the consciousness of individual responsibility acquired in civilian practice. One of the first things said to the new medical officer is: "The Medical Department assumes that you are professionally competent, and you will now be trained to become a soldier." From that time on he hears much of military matters, but little of medicine. During a recent three-year tour of active duty with the Medical Corps of the Army of the United States, I found that the interest shown in my professional proficiency was negligible, but that my ability to make a good impression in activities other than the care of patients was of the greatest concern.

The medical officer shares with the civilian doctor the desire to succeed, but he soon learns that success comes through the operation of an entirely different group of factors. He becomes conscious of the fact that his responsibility is no longer to his patients, but to his superior officers. He becomes aware that his immediate superiors also desire to succeed and that they in turn must please their superiors. In a short time, observation shows him only too well that a handsome figure, a pleasing personality, the faculty of saying "Yes," a knowledge of army regulations, and some executive ability may bring success in the form of rapid promotion, but that the confidence he inspires in his patients is of very little moment. The inevitable result is that his interest in the art of medicine diminishes and his best efforts are directed along those other paths which he believes are more likely to lead to success.

During my three years in the army, I came into contact with many physicians, and I feel that, with a very few exceptions, all of us suffered a gradual professional deterioration. We are coming back into civilian life much poorer doctors than when we were commissioned medical officers.

This is no unreasonable indictment of the Army Medical Corps, for it has been well organized and excellently administered, and the evils mentioned would have been unavoidable in any regimented system.

If the medical officer, inspired by a great national emergency, and responsible to superiors who were also medical officers to the highest levels, was embittered and disgusted by the lack of appreciation and utilization of his professional skill, you are asked to consider the inevitable effect of any system of governmental control of medicine in which military discipline would be lacking and in which *control would be exercised by non-medical directors and politicians.* In such a system the desire to succeed would again be the motivating force, but success which resulted from pleasing a group of governmental officials would produce a vastly different type of medical service from that which comes from pleasing the individual patient.

Abstract of a talk made before the North Carolina Radiological Society, Durham, October 5, 1945.

The Psychosomatic Concept of Disease. Medicine of the nineteenth century applied in practice the Cartesian theory of separation of mind and body. Alexander quoted a lay writer, Zweig, who, interpreting this change from Hippocratic tradition, wrote: "Disease meant now no longer what happens to the whole man, but what happens to his organs . . . the natural and original mission of the physician, the approach to disease as a whole, changed into the smaller task of localizing the ailment and identifying it and ascribing it to an already specified group of diseases . . ." This type of medical thinking influences most present-day teachers and practitioners of medicine. It underlies much of the uncritical reverence still given any quantitative biologic measurements; it impels the physician to examine and treat urine, not the diabetic, and blood pressure, not the hypertensive. But the reacknowledgment of the unity of man and of the change in the whole man implicit in any concept of disease is already astir.—Irvine H. Page and Arthur C. Corcoran: Arterial Hypertension, Chicago, The Year Book Publishers, Inc., 1945, p. 64.

PAINFUL OVULATION—NOT A SURGICAL CONDITON

PAUL MCBEE, M.D.

MARION

The purpose of this paper is to discuss a problem in surgical diagnosis which has received scant attention in the literature pertaining to abdominal and pelvic surgery.

A good many years ago, when I was desperately sick with dysentery, I got out of bed in the middle of the night, leaned against the side of an operating table, and removed an innocent appendix which two of my older and far more experienced doctor friends had decided would certainly rupture if left until morning. The patient was a very nervous 17 year old girl with an anxious family, and it was the fifteenth day of her menstrual cycle.

Painful ovulation probably accounts for the removal of more innocent appendices than does any other condition occurring in young women, and particularly in teen-aged girls. The problem is complicated by the fact that young women and teen-aged girls often do develop acute appendicitis, because they belong to the age group which is particularly susceptible to this disease. A few patients will have acute appendicitis and painful ovulation at the same time. A limited number of honest mistakes in diagnosis are unavoidable, but many needless operations can be prevented if the possibility of painful ovulation is always given due consideration. I am certain that a great many physicians do not clearly understand this condition.

Ovulation may occur at any time during the menstrual cycle. Among women who menstruate regularly every twenty-eight days it usually occurs between the fourteenth and the seventeenth days of the cycle. The exact time is not dependable in any case, however. Ovulation is normally not painful—in fact, most women have no accurate idea as to the time that ovulation occurs. When it is painful it comes within the scope of this paper.

Any foreign material which escapes into the peritoneal cavity in quantity will nearly always produce pain, and generally soreness. Blood in the peritoneal cavity does not produce anywhere near the amount of disturbance that gastric contents excite, but it is generally accompanied by some discomfort. Lay people are inclined to attribute every pain in the right side to appendicitis, and a highly nervous young woman is apt to exaggerate greatly the pain of ovulation. If she has some encouragement from an oversolicitous family or a too-sympathetic doctor, the pain becomes unendurable. If a doctor in whom the patient has confidence has ever made the mistake of calling one of these attacks appendicitis, every episode becomes more unbearable and the patient usually winds up with an operation for "acute appendicitis." In such cases the pathologic report is apt to read, "Appendix received, no lesion found."

Patients with painful ovulation generally give a history of repeated attacks. The pain of ovulation nearly always starts with pain in the side. If there is any generalized abdominal pain it usually follows the pain in the side. The temperature rarely goes above 99 F. and the white blood cell count almost never exceeds 12,000 to 13,000, although I have seen a few cases with blood counts of 14,000. There is usually soreness confined to a general locality, but not a circumscribed tenderness. True rigidity is never present. Nervous women will often "put on" a sort of false rigidity. In married women the offending ovary can usually be caught between the two hands on bimanual examination and the diagnosis confirmed beyond reasonable doubt. Rectal examination is almost as accurate in unmarried women. A vaginal or rectal examination should be made on every female patient complaining of severe abdominal pain.

Acute appendicitis always comes on with a generalized, ill-defined abdominal pain of greater or less severity, which may or may not be followed by nausea and vomiting. As a rule, the generalized cramping pain is followed in a few hours by localized soreness in some part of the abdomen. If the attack continues long enough there is nearly always a true rigidity which even the calmest patient cannot relax. The patient usually walks with a guarded step, and in severe cases drags the right leg. An inflamed pelvic appendix gives the same train of symptoms, except that the location of the tenderness is different. It can nearly always be elicited on rectal or vaginal examination. The patient with acute appendicitis is in most cases

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plainly sick. The temperature varies from subnormal to 101 F. The white blood cell count is apt to be 14,000 or above. I have seen cases of violent appendicitis with subnormal blood counts, but these patients usually present other symptoms which mark them as being evidently sick.

A word might be in order regarding appendix incisions in cases where painful ovulation is a possibility. Since ovulation is not a surgical condition, there is nothing that should be done about it after the abdomen is opened. Therefore the surgeon who makes the mistake of operating in one of these cases may as well use a McBurney incision to remove the appendix, and do the patient as little harm as possible.

In summary, painful ovulation is not a disease or a surgical condition, and it is usually not difficult to diagnose. Its recognition is a moral responsibility.

THE MANAGEMENT OF HYPERTENSION

VERNE S. CAVINESS, M.D., F.A.C.P.

RALEIGH

Hypertension is directly or indirectly responsible for more than 40 per cent of all the deaths in North Carolina; the national average approximates this very closely. The three main causes of death in hypertensive patients, listed according to the age of occurrence, are renal, cardiac, and vascular. A recent special study made by Dr. R. T. Stimpson, Director of the Bureau of Vital Statistics of the State Board of Health, showed that in North Carolina during one year there were 659 deaths from uremia, occurring at an average age of 47 years; 5,447 cardiac deaths, at the average age of 62 years; and 3,158 deaths from apoplexy, at the average age of 64 years. There were also 3,057 deaths from chronic nephritis, not classified, but doubtless largely uremic, which occurred usually in younger people. This means that out of a total of 31,364 deaths in the state for one year, 12,321 deaths were almost entirely attributable to hypertension. We have no record of the number of deaths from accidents, pneumonia, and other causes in which hypertension was a contributory factor.

Hypertension develops rather insidiously, and may become far advanced before it is discovered. It is more easily controlled in the early stages than later in its course. Unless treatment is begun early, before the pressure rises much above 130-140 systolic, 90 diastolic, the arterioles and capillaries may be damaged and later treatment will be less effective. A sclerotic arteriole cannot dilate and depressor substances have little or no effect on such vessels. After the sclerotic process in the arterioles has become too far advanced, the blood pressure can be lowered only by depressing the heart action or reducing the blood volume. Both measures are dangerous and rarely desirable.

Etiology of Hypertension

Blood pressure control appears to be dependent upon a balance between a pressor substance, adrenalin, and a depressor substance, probably sulfocyanate[1]. Adrenalin, manufactured in the adrenal gland, maintains tone in the arteriolar musculature. Sulfocyanates, natural end products of protein metabolism, are formed in the liver and flow into the duodenum in bile. The potassium salt appears to be the predominant form. They prevent, in health, too great a constriction of arterioles and capillaries. We have found that sulfocyanates are naturally present in the blood stream in an inverse ratio to the blood pressure. This finding has been substantiated by other observers. No person with a natural blood sulfocyanate concentration of about 1.50 mg. or above has been found with a systolic pressure above 150 or a diastolic pressure above 90[1]. Since there is no practical, accurate method for the quantitative determination of adrenalin in the blood, our work has been unfortunately limited in this direction.

Hypertension is caused by conditions which increase the output of adrenalin, inhibit the production of sulfocyanate, or combine these effects. In persons with normal cardiac output and normal blood volume and viscosity, blood pressure levels are controlled by the musculature of the arterioles and capillaries, which is in turn controlled by adrenalin and the sulfocyanates. In cases of long standing hypertension, a continual spasm of the musculature in the vessel walls results in muscle fatigue and arteriosclerosis, even up to the calcified pipe-stem arteries. Such

Read before the Sixth District Medical Society, Chapel Hill, November 4, 1944.

1. Caviness, V. S., Bell, T. A., and Satterfield, G. H.: The Correlation Between Blood Pressure and the Concentration of Sulfocyanates in the Blood, North Carolina M. J. 2:585-592 (Nov.) 1941.

vessels are not elastic and can neither contract nor relax. As the intima of such vessels thickens and constricts the lumen, more resistance is offered to the flow of blood and the blood pressure rises further[2].

Treatment

General measures

Hypertension is most often seen in emotional, high-strung individuals. Psychotherapy plays an important part in the management of hypertension, not only because of its positive therapeutic value—which is admittedly limited and temporary—but also because of the danger of raising blood pressure by adverse psychological suggestion. Often the physician's approach to the patient makes a wide difference in the effect of treatment.

Each patient with hypertension requires careful individual study before treatment is begun. While the factor directly responsible for hypertension is an imbalance between pressor and depressor substances, there are many possible causes for this imbalance, some of which can be eradicated. Among these are digestive disturbances (sometimes caused by achlorhydria), allergies, sources of continued pain or irritation, hyperthyroidism, and occasionally various renal disorders. Whenever possible, these causative or contributory factors should be eliminated[3]. Should the patient show considerable renal damage, it would be unwise to attempt very rapid reduction of blood pressure because of the danger of producing uremia as a result of impaired renal circulation. Hypertension affects, sooner or later, practically all systems of the body, and care must be exercised in blood pressure reduction. Reduction may be imperative at times, but it should never be too rapid.

Diet plays a part in the treatment of hypertension. It is our practice to limit the amount of food to a minimum daily requirement. We also restrict condiments in an effort to protect the kidneys. The amount of food, however, appears to be far more important than the selection.

Bed rest lowers the blood pressure in almost all cases, and the pressure tends to remain somewhat lower as long as the individual stays in bed. For emergencies, bed rest is essential in treatment, but very few patients are willing to remain in bed permanently to control hypertension. Any satisfactory treatment for hypertension must permit the individual to be reasonably active and to engage in a remunerative occupation. Otherwise, the patient will become so perturbed over his inactivity and inability to earn a livelihood that the beneficial effects of rest will be offset by worry.

Sedatives

Sedatives are very useful in the management of hypertension. In almost every case the pressure can be reduced to some extent by the use of small doses of a mild sedative. This reduction is temporary in many cases, but it shows that the pressure can be reduced and it helps to relieve the danger of apoplexy in extreme cases. In many patients sedation is also a valuable adjunct to sulfocyanates or other vasodilators. One half grain of phenobarbital given on rising and at noon takes the edge off frayed nerves and enables most patients to sleep soundly at night. A sedative given at bedtime is usually less effective and leaves the patient with a hang-over the next morning. Sometimes the sedative should be continued over a long period of time, the dose being varied according to the temperament of the patient and the condition of the blood pressure.

We have tried virtually all the various proprietary remedies exploited for hypertension, and have found none as effective as phenobarbital, except the sulfocyanates[4].

Nitrites and nitrates

Nitrites and nitrates, natural constituents of the blood stream in minute amounts, lower the systolic pressure temporarily, but exert very little effect on diastolic pressure. In emergencies, when the patient is threatened with apoplexy, nitrites are the drugs of choice for a very quick effect. Since they do not lower the diastolic pressure, they give no protection against renal damage and uremia and only a questionable protection against coronary artery damage.

Tissue extracts

Tissue extracts, especially renal and liver extracts, have been used with claims of success. The results reported for these extracts have been very similar to the results ob-

2. Caviness, V. S.: Arterial Hypertension, Tr. M. Soc. State of North Carolina, 1926, p. 271.
3. Caviness, V. S., Umphlet, T. L., and Royster, C. L.: Blood Pressure and Sulfocyanates (Thiocyanate), Am. J. M. Sc. 204:688-697 (Nov.) 1942.
4. Caviness, V. S., Umphlet, T. L., Peasley, E. D., Bell, T. A. and Satterfield, G. H.: Potassium Sulfocyanate in the Treatment of Hypertension, North Carolina M. J. 2:283-288 (June) 1941.

tained with sulfocyanates. In 1941 we prepared renal extracts according to all the published methods we could find[5]. Extracts that were dialyzed a long period of time contained only very small amounts of sulfocyanates, while extracts prepared by short dialysis or no dialysis contained large amounts of sulfocyanates. Some workers used extracts which contained as much as 75 grains of sulfocyanate in each day's dose. One group reported quite variable results from different batches of renal extracts prepared by different methods. While we could not secure samples from these investigators or get information as to the length of dialysis of the different batches, we concluded that their failures were probably with batches that had been dialyzed long enough to remove the sulfocyanates. In 1942 Schales, Stead, and Warren[6] reported a series of experiments with renal extracts which were dialyzed for a period of five days. Their extracts had no specific depressor effect; prolonged dialysis had removed all the sulfocyanates from the renal tissue. So far as we know, tissue extracts produce no effects on blood pressure other than a non-specific foreign protein effect or a sulfocyanate action.

Sulfocyanates

Sulfocyanates, which are more effective than nitrites grain for grain, are present in the blood stream naturally in a concentration about 50,000 times than of nitrites. This fact suggests a strong rationale for the use of sulfocyanates as depressor substances—a view which is further supported by the inverse ratio between natural blood sulfocyanate concentrations and blood pressure levels.

Sulfocyanates are proving highly satisfactory in the hands of many experienced users. Their use is very simple and easy, provided care is exercised to keep the blood concentration within safe levels. Otherwise, there is a decided danger. Several reports of deaths from sulfocyanates have been published[7], some of which are insufficiently substantiated. When the dangers of any therapeutic measure for hypertension are considered, the danger from the disease itself and its very high death rate must not be overlooked. As long as the sulfocyanate level is kept below 20 mg. per 100 cc. of blood, there is no more than a negligible danger of sulfocyanate poisoning. Cumulative effects are often seen, however, and are prevented only by careful management of each case, with frequent determinations of the blood sulfocyanate level.

The dose of sulfocyanate should be small. We start with about 3 to 5 grains of potassium sulfocyanate daily, usually given in a single dose. The patient should be seen at weekly intervals, or more often if necessary, and quantitative determinations of the blood concentration of sulfocyanates should be made weekly until the level has become stabilized. Later they should be made at monthly intervals. The dose should be regulated to give the smallest possible concentration in the blood that will effect the desired reduction in pressure. A concentration of 2 or 3 mg. is desirable and is effective in the cases with a sulfocyanate deficiency. Patients in whom there is an excess of adrenlin require higher concentrations of sulfocyanates in the blood in order to restore the balance between pressor and depressor substances.

Gradual reduction of diastolic and systolic pressure by sulfocyanate in patients who have not developed too much arteriolar sclerosis lessens the danger of such complications of hypertension as coronary occlusion, anginal attacks, or apoplexy. In patients who have already had such complications, sulfocyanates are useful in keeping the pressure low enough to prevent a recurrence of the attacks.

Old patients require more care and closer observation than do younger patients. Occasionally older persons with severe arteriolar sclerosis may have feelings of discomfort, uneasiness, and perhaps some generalized aches, if the pressure is reduced too rapidly. In such cases, the sulfocyanate may be discontinued until the symptoms clear up; then the drug may be given again, perhaps in a smaller dose. If too large a dose is used and the blood level of sulfocyanates rises too high, there may be some emotional upset. Skin rashes occasionally occur. Complications are quite rare and harmless, however, if due care is exercised in the use of sulfocyanates. Nitrites are very apt to produce headaches, but sulfocyanates only rarely do so if the pressure is reduced gradually. There is no tendency to acquire

5. Caviness, V. S. and Hoffman: Unpublished data.
6. Schales, O., Stead, E. A., Jr., and Warren, J. V.: Non-Specific Effect of Certain Kidney Extracts in Lowering Blood Pressure, Am. J. M. Sc. 204:797-809 (Dec.) 1942.
7. Weeks, K. D.: Fatal Poisoning with Thiocyanate in the Treatment of Hypertension, North Carolina M. J. 5:234-238 (June) 1944.

a tolerance to sulfocyanates, and apparently no contraindications to their use.

We have found the use of sulfocyanates satisfactory in about 80 per cent of our private patients and in about 68 per cent of all cases in which we have used it[3]. Results in clinic patients cannot be expected to be as good as those in private patients, for two reasons: (1) They are not so cooperative, partly because of mental limitations and partly because of a lack of interest in something that they get for nothing; (2) clinic patients usually present a later stage of hypertension, with more arteriolar sclerosis.

Conclusion

Hypertension is directly or indirectly responsible for more than 40 per cent of all deaths. Patients with hypertension should be treated early before arteriolar changes reach an irreversible stage. Each case requires individual study, care and treatment. The proper general measures, aided by sulfocyanates, give excellent results in patients with early hypertension; results in more advanced cases may be less satisfactory.

Grateful acknowledgment is made to Miss Gertrude M. Cox, Head of the Department of Experimental Statistics, North Carolina State College, for the analysis and correlation of the statistical parts of our work, and to Dr. R. T. Stimpson for preparing the statistics regarding the deaths from hypertension in North Carolina.

Emotions and Hypertension. That emotional stress may worsen the status of an established hypertension and that release from strain may improve the patient's condition are well known. The critical physician recognizes the decrease in blood pressure which occurs during the patient's first visits or when he meticulously assumes a touted regime, even one as unimpressive as a ritual of the pink pill. He is also familiar with the rise of pressure associated with personal, sexual, domestic or social tension . . . Physicians who do not recognize this relation unconsciously encourage their patients to drift away into the care of colleagues and quacks whose powerful asset is only the confidence they create and their intuitive knowledge of human nature. Such observations, however thoroughly documented, merely establish mental disturbance as coordinate cause; they do not suggest that it can be a primary cause of the whole disease.—Irvine H. Page and Arthur C. Corcoran: Arterial Hypertension, Chicago, The Year Book Publishers, Inc., 1945, p. 67.

To what ever school of social philosophy one belongs, the fact remains that it is the private physician who sees the largest number of persons in need of medical counsel. The physician knows by training and experience that the early manifestations of pulmonary tuberculosis are protean. A good percentage of his patients have one or more of these

THE PATHOGENESIS OF PEPTIC ULCER

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The various etiologic factors in peptic ulcer have been critically examined many times in the literature. As a usual thing such articles are based on the assumption that there is a type of individual who is predisposed to ulcer—"the ulcer-susceptible patient," "the peptic ulcer type," the patient with "the ulcer constitution" or "the peptic ulcer diathesis." Only recently has there been any attempt to explain the peptic ulcer diathesis. The purpose of this paper is to discuss this factor in its relation to the other pathogenic agents, and to present a common denominator for many of the factors which have been shown experimentally and clinically to influence the development of peptic ulcer.

The Peptic Ulcer Diathesis

Recently several authors have attempted to answer the question, "What is the peptic ulcer diathesis?" and have discussed certain types of individuals who appear clinically to be more susceptible to peptic ulcer than are other individuals. They place much emphasis on the relationship between the various subsequently listed pathogenic factors and the so-called peptic ulcer diathesis.

The activity of the abdominal viscera is controlled by the autonomic nervous system. This system is made up of sympathetic and parasympathetic divisions. These, being more or less antagonistic in their action, exert a stabilizing effect on each other which tends to coordinate the secretion, motility, blood flow, and other activities of the abdominal viscera. The action of the autonomic nervous system is influenced by numerous intrinsic and extrinsic factors. Stimulation of the system above a certain level—which varies for each individual and which may be called the threshold of endurance—results in a disruption of the balance between its two components. In some individuals this disturbed balance manifests itself as a parasympathetic overflow — or, we might say, a diminution in sympathetic reactivity.

The upper abdominal viscera get their

the vagus. The vagus is closely connected with the higher centers, vegetative and cortical, as has been shown by Cushing[1]: "Certain experimental observations . . . strongly suggest the presence in the diencephalon of a parasympathetic center. From this center, apparently tuberal in situation, fiber tracts pass backward to relay with the cranial-autonomic stations of midbrain and medulla of which the vagal nucleus is by far the most important because of its influences upon the activity of the lungs, heart, and upper alimentary canal." The lower abdominal viscus which concerns us is the distal colon, and it derives its parasympathetic innervation from the sacral outflow.

Parasympathetic overflow produces, directly, hypertonicity or spasm of the pyloric sphincter, hypermotility of the gastro-intestinal tract in general, and increased and prolonged secretion of hyperacid gastric juices. Secretion of the protective mucus is first stimulated and then inhibited. The stomach varies between a state of atony with retention and one of hypermotility with rapid emptying, depending upon the state of the pyloric sphincter when gastric stimulation is initiated. The intake of food stimulates gastric secretion and motility; in the presence of pylorospasm, however, gastric motility ceases and the food is retained in an atonic stomach. The normal rest period of the stomach is thus abolished, and since the pancreatic, duodenal, and biliary juices are not regurgitated into the stomach, their neutralizing effects are absent. The disturbed muscular action, with intermittent spasm, interferes with the normal blood supply to the tissues, lowering their resistance to the action of strong acid.

This condition produced by parasympathetic overflow is, undoubtedly, the factor which precedes and causes the formation of peptic ulcer. The peptic ulcer type of individual is one who, because of a low autonomic endurance threshold, is subject to the above discussed pathologic physiology. One or more, sometimes all, of these abnormal functions exist in such individuals, either intermittently or persistently, for varying lengths of time. Their severity and the results of their presence differ in various individuals only in degree. In some people this pathologic physiology is present to a degree which results in ulcer formation at the most susceptible point in the mucous membrane of the stomach or duodenum. These people do not have a disease of the nervous system, but merely a lowered capacity for endurance.

1. Cushing, H.: Peptic Ulcers and the Interbrain, Surg., Gynec. & Obst. 55:1-33 (July) 1932.

The Development of Ulcer

It is generally believed that the action of the acid and pepsin of the gastric juice on the mucosa of the stomach and duodenum is the direct and immediate cause of ulcer formation. The resistance of the mucosa is lowered by the effects of disturbed physiology and diminished blood supply. Those areas of mucosa which are most continuously bathed in the acid chyme are the usual ulcer sites. In the duodenum the first portion, just outside the sphincter, is such an area. In the stomach the prepyloric region is a common site for ulcer formation. Those ulcers which occur on the greater or lesser curvature of the stomach result, in the motile stomach, from acid action which is influenced by the speed and strength of the peristaltic waves; in the atonic stomach they result from the chyme level. The tendency to chronicity and recurrence is due to the fact that the underlying pathologic physiology persists to a greater or lesser degree over varying intervals of time.

Factors Conditioning the Endurance Threshold of the Autonomic Nervous System

The hereditary factor in peptic ulcer formation is demonstrated by the frequent occurrence of peptic ulcers or allied gastrointestinal disturbances in several members of one family. The other factor, which I believe to be far more important, is the influence of environment in conditioning the nervous constitution of the individual. Psychologic impressions occurring throughout life result in conflicts of the conscious and subconscious mind which predispose the individual to abnormal psychic responses. Such conflicts will be shown later to be a very important trigger mechanism in disturbing the autonomic nervous system.

Secondary or Trigger Factors

Innumerable secondary factors influencing the etiology of peptic ulcer in the patient with a peptic ulcer constitution have been reported. In the individual with a low threshold of endurance of the autonomic

nervous system, these factors act as trigger mechanisms to overthrow the balance of the sympathetic and parasympathetic systems, thus producing the pathologic physiology which leads to the formation of ulcer. These factors are listed below in order of importance and frequency:

A. Intrinsic
   1. Neurogenic
      a. Worry—psychobiologic conflicts in the conscious and subconscious mind
      b. Mental stress and strain
      c. Psychic trauma
         (1) Love affairs—marriage
         (2) Business reversals
         (3) Attitude and feelings with respect to self, family, friends, occupation and life
         (4) Guilt
         (5) The bizarre conflicts which relate to the instinct of self-preservation
      d. Habits—eating, sleeping, recreation, and so forth
   2. Disturbed mineral balance
   3. Hypoglycemia
   4. Presence of other diseases, with complications of toxic and psychic influences
   5. Avitaminosis and lowering of general resistance
   6. Fatigue—from overwork, over-indulgence in sexual activities, and combinations of other factors
   7. Allergy
   8. Infections
B. Extrinsic
   1. Alcohol
   2. Tobacco
   3. Caffeine

It is generally believed that not one, but a combination of the above factors are usually present in any given individual and have a cumulative influence.

Conclusion

The primary factor in the production of chronic peptic ulcer is a parasympathetic overflow resulting from stimulation of the autonomic nervous system beyond its capacity for normal function. An individual whose autonomic nervous system has a low threshold of endurance is said to have the peptic ulcer diathesis. Parasympathetic overflow results in hypermotility, hypersecretion, and hyperacidity of the upper gastro-intestinal tract— the factors directly responsible for ulcer formation. The numerous pathogenic agents listed in the literature are to a large degree secondary or trigger factors which stimulate the autonomic nervous system beyond its threshold of endurance. These trigger factors are usually multiple and have a cumulative effect. Because the presence of these factors is so variable, each individual with peptic ulcer diathesis is constantly having remissions and recurrences of symptoms.

The human body is not an organism that is static and immutable, but a highly complex and integrated mechanism which must adjust itself continuously to the forces of its environment, both external and internal. It is my opinion that the peptic ulcer syndrome is one of those widespread human afflictions which, like cancer and tuberculosis, can be controlled to a large degree by education directed toward prevention through understanding.

THE PREVENTION OF ECLAMPSIA

ALBERT F. LEE, M.D.

SEATTLE, WASHINGTON

More can be accomplished by the prevention of eclampsia and pre-eclampsia than by the treatment of these elusive disorders, the cause of which is still unknown. The only etiological factor found consistently in patients with these conditions is pregnancy, and every pregnant woman can become a candidate for one of the varied forms of toxemia.

"Prevenception"

The first step in preventing toxemia of pregnancy is to prevent pregnancy in women who are "poor risks." Included in this group are those with essential hypertension, those with cardiac disease, the obese, the diabetics, and the large group of nephritic patients who are relatively symptom-free in the non-pregnant state but who cannot go through a pregnancy without functional embarrassment, leading all too frequently to death. Elderly candidates for pregnancy should be studied carefully, and conception should not be allowed if there is sufficient organic or functional weakness to make the added load of pregnancy dangerous. In this group of "poor risk" patients the incidence of toxemia and other obstetrical complications is much greater than in normal women. We should carefully weigh our findings in each individual case, preventing pregnancy whenever possible in those whose lives might be endangered by it. The desire for motherhood is a strong force in many of these women, and it seems to be strengthened by the phy-

Read before the Spring Meeting of the Washington State Obstetrical Association, March 25, 1944.

sical handicap. The physician should state the true risks to his patient and her family, and if the desire for pregnancy wins, he should do his best to see her through.

Prenatal Care

The most important factor in the prevention of toxemia and eclampsia is adequate prenatal care. A complete history, physical examination, and laboratory study should be done early in the pregnancy. DeLee[1] has suggested the removal of foci of infection such as the appendix, the gallbladder, the tonsils, and abscessed teeth. If any such corrective measures are indicated, they should be carried out early in the prenatal program.

The prenatal visits should be regular. A suggested schedule is one visit a month for the first six months, two visits a month for the next two months, and visits once a week or oftener in the last month. At each visit the blood pressure and weight should be recorded, the urine examined for albumin, and any edema of the extremities or face noted. The patient should be questioned concerning symptoms such as nervousness, scotomata, headache, pain in the epigastrium, nausea, and vomiting. If the systolic blood pressure is 140 or above, the diastolic pressure 90 or above, or if there is any abrupt rise in pressure; if the weight gain is more than 2 pounds a week; if there is albumin in the urine, peripheral edema, headache, or a sudden onset of nausea and vomiting late in the pregnancy, we have presumptive evidence of pre-eclamptic toxemia.

Treatment of Pre-Eclampsia

There has been relatively little change in the treatment of pre-eclampsia in the past few years, except in regard to the amount of protein allowed the patient. The protein intake of these toxemic patients is no longer restricted, but rather increased. The suggested regimen for patients with pre-eclampsia includes: (1) a salt-free diet rich in protein; (2) frequent periods of partial or complete bed-rest, depending upon the severity of the case; (3) a saline cathartic by mouth, usually one teaspoonful of epsom salts each morning (this dose may be more agreeable taken in gelatin capsules); (4) restriction of fluids to one quart daily, or to the amount of the previous day's urinary excretion, whichever is larger; (5) sedation. Paraldehyde, orally or by rectum, has recently become popular for the last-named purpose. Douglass and Linn[2] report improved maternal and fetal mortality figures in patients with eclampsia who were given paraldehyde by rectum. Sodium amytal and sodium pentobarbital remain as old favorites.

Patients with mild pre-eclampsia can follow the above regimen in the home, but patients with more severe toxemia should be in the hospital under closer supervision.

Except in patients with frank deficiencies, results with the oral and parenteral use of fractions of the vitamin B complex and other vitamins have not been very encouraging, nor has the use of the naturally occurring and synthetic hormones proved beneficial. Veratrum viride seems to be a powerful cardiac depressant, causing a great drop in blood pressure and slowing of the pulse. Williams[3] found that patients receiving Veratrum viride did neither better nor worse than those who did not receive it. We should remain open to conviction until the results of further experimental studies are shown.

Delivery of the Toxemic Patient

If conservative remedies are unsuccessful in preventing the mild condition from becoming severe, or in improving the severe condition, the proper treatment is delivery of the fetus. The method of delivery depends upon the indications in the individual case. Williams, at the Johns Hopkins Hospital, found the maternal mortality among toxemic patients delivered by cesarean section to be nearly twice that among such patients delivered by the vaginal route[4]. Cesarean section should be reserved for the rare severely toxic primipara with a long-closed cervix and a non-irritable uterus, and for patients with demonstrable cephalo-pelvic disproportion. The performance of a cesarean section on a toxemic patient with sterilization as the prime motive is highly questionable. The risks of cesarean section are increased in toxemic patients, whose resistance to infection is notably poor and whose healing powers are diminished. In my own experience I have seen two postoperative eviscerations following sections done on patients with tox-

1. DeLee, Joseph B.: Principles and Practice of Obstetrics, ed. 7, Philadelphia, W. B. Saunders Company, 1938, p. 384.
2. Douglass, L. H. and Linn, R. F.: Paraldehyde in Obstetrics, with Particular Reference to Its Use in Eclampsia, Am. J. Obst. & Gynec. 43:844-848 (May) 1942.
3. Stander, H. J.: Williams Obstetrics, ed. 7, New York, D. Appleton-Century Company, 1936, p. 777.
4. Stander, H. J. (3), p. 774.

emia. Certainly delivery from below is the procedure of choice in most cases. Fortunately, medical induction of labor is successful in more than a usual number of cases because the toxemic uterus seems to be more irritable than a normal pregnant uterus. Pitocin, because it lacks the vasopressor factor of pituitrin, is preferred for this purpose. If the medical induction of labor fails, then rupture of the membranes plus other surgical means of inducing labor is in order.

Our success in preventing eclampsia by delivery of the fetus depends upon the degree to which we can lower the blood pressure, increase the urinary excretion, and reduce edema. Complete bed rest, isolation, the intravenous use of hypertonic glucose and magnesium sulfate, and adequate sedation will help to accomplish these aims.

The choice of the sedative to be used during labor is important. Among the drugs recommended for this purpose are paraldehyde, sodium amytal, sodium pentobarbital, scopolamine, and morphine—separately or in varied combinations. Attaining the proper degree of obstetrical analgesia plus the added sedation necessary to prevent convulsions is a real problem in the care of these patients. Too light sedation means apprehension and the risk of convulsions, and too deep sedation may cause pulmonary edema and circulatory collapse.

The types of anesthesia suitable for labor or cesarean section are, in order of preference, local anesthesia, caudal anesthesia, and ether anesthesia.

Conclusion

The five major rules for prevention of eclampsia are as follows:

1. Discourage pregnancy in "poor risk" women.
2. Give adequate prenatal care.
3. Render early and adequate treatment to patients with pre-eclampsia.
4. In the unimproved cases of toxemia of pregnancy deliver the fetus by the vaginal route or, if necessary, by a cesarean section.
5. Choose wisely the sedative and anesthetic to be used for the delivery.

BILATERAL CRYPTOPHTHALMUS AND SYNDACTYLISM

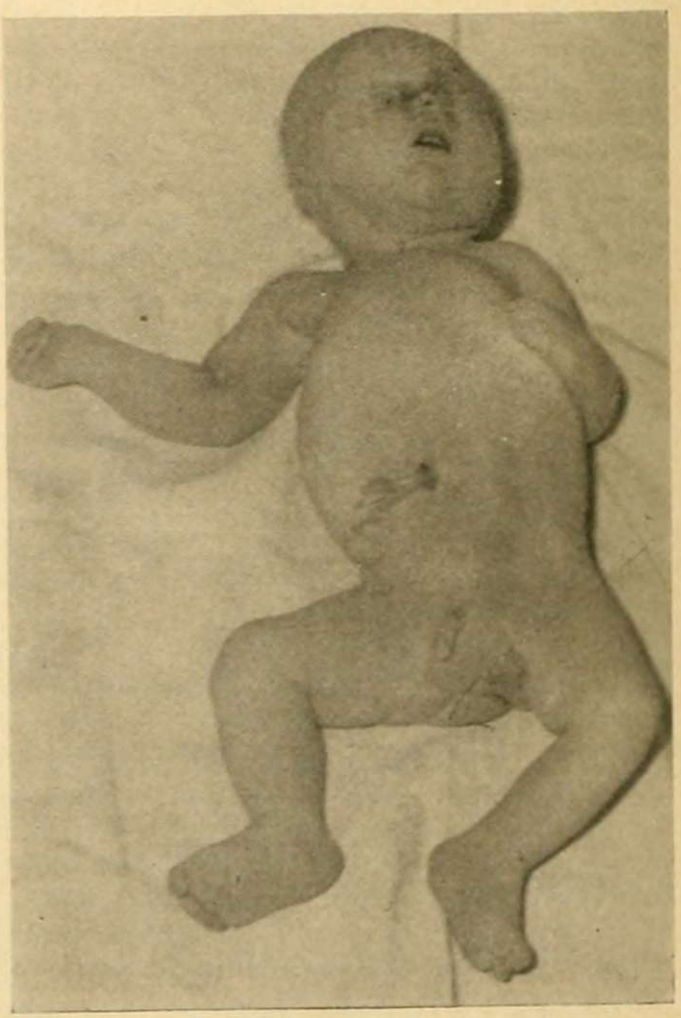
Case Report

Adam T. Thorp, M.D.

Rocky Mount

The accompanying picture looks very much like that of a normal dead newborn baby. The unusual feature, which does not show up very well in the picture, is that there is no suggestion of apertures for the eyes, but merely a continuation of skin from the brow downward. The eyes could be palpated beneath the places where the lids should have been, but the skin was absolutely smooth. There was also complete syndactylism of both hands and feet.

This was the mother's fifth pregnancy. She had previously had four miscarriages (at two to six months). The attending physician stated that no abnormality was ever noted in any of these fetuses. There was no history of syphilis, and at least two Wassermann tests were negative. This fifth pregnancy was perfectly normal, as was the delivery. Although there was no evidence of birth injury, the baby never breathed well, and died a few hours after birth. The cause of death was probably atelectasis.



THUMBNAIL SKETCHES OF EMINENT PHYSICIANS

JOSIAH C. TRENT, M.D., *Editor*

ANN ARBOR, MICHIGAN

THE EVOLUTION OF THE ASEPTIC PRINCIPLE IN SURGERY

XI

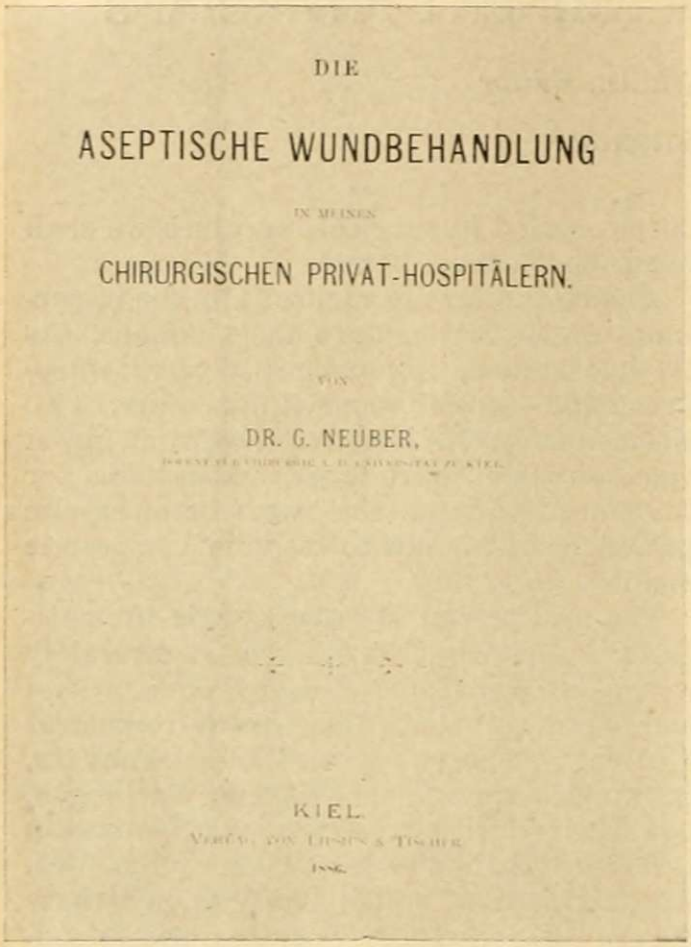
GUSTAV NEUBER and ERNST VON BERGMANN

Lucas-Championniere's statement that there are only two periods in the history of surgery—that before and that after Lister—implies antecedents and followers of this great man. By standing on the shoulders of his predecessors Lister was able to solve the century-old riddle of wound suppuration[1]. After careful deliberation and experiment he set down the factors necessary for *per primum* healing of "clean" wounds—namely: (1) The germs must be destroyed on the patient's skin, on the surgeon's hands, on the instruments used, and on everything surrounding the area of operation. (2) Germs must be prevented from entering the wound during the operation. (3) Germs must be prevented from spreading into the wound after operation. To accomplish these ends Lister relied upon chemicals, chiefly carbolic acid, and thereby established the system referred to as "the antiseptic method." Although his principles of wound treatment have remained unchanged through the years, newer methods of sterilization, changes in hospital architecture, and improved surgical technique have outmoded antisepsis and have resulted in our present-day system of "aseptic" surgery. As the aseptic treatment gained favor, there was a tendency to discredit antisepsis. Lister's disciples were quick to rush to its support, saying that both methods, strictly speaking, were "aseptic," differing only in the details of application, and that the use of the two names was confusing. For obvious reasons, however, it is convenient and practical to refer to the two methods as aseptic and antiseptic, and since the terms have become deeply rooted in surgical literature we shall not abandon them here.

Among the first to realize fully the importance of antisepsis were the Germans. As its use spread, improvements were introduced and asepsis became an actuality. Two German surgeons, Gustav Neuber and Ernst von Bergmann, were largely responsible for the transition from the "wet" or antiseptic treatment of wounds to the "dry" or aseptic method.

The first person to grasp clearly the antiseptic principle and to set about deliberately to achieve the same ends by simpler and more effective means was Gustav Neuber of Kiel. He was born July 24, 1850, at Tondern, Schleswig. He studied at Halle, Tuebingen, and Kiel under von Bruns, von Volkmann and Esmarch, and took his doctorate in 1875. He participated in the campaign in France during 1870 and 1871, and in the Russo-Turkish war in 1876. From 1884 until his death in 1932 he conducted a private surgical clinic in Kiel. From 1876 until 1884 Neuber was assistant to Esmarch, and it was during this time that he carried on painstaking experiments with antiseptic pressure dressings, new methods of drainage, and other variations in technique, in an attempt to improve the antiseptic treatment of wounds. After extensive researches in this direction he realized that no further progress could be made until the use of caustic antiseptics, with the resulting irritation of the tissues, could be dispensed with. He therefore directed his efforts toward abolishing the need for antiseptics and wound drainage. In 1884, after a break with Esmarch, he built in Kiel a large private hospital planned especially for the purpose of carrying out the methods of asepsis which he had devised. The hospital was put in operation in 1885, and a year later, under the title *Die aseptische Wundbehandlung in meinen chirurgischen Privat-Hospitaelern* (fig. 1), Neuber published the details of his technique. The hospital had five operating rooms instead of the usual one, so that the "clean" and "dirty" cases could be complete-

1. It was not uncommon before antisepsis for patients with minor wounds to require two and a half to three months' hospitalization because of infection. Breast amputations took from three to six months to heal, and major limb amputations took equally as long.


DIE

ASEPTISCHE WUNDBEHANDLUNG

IN MEINEN

CHIRURGISCHEN PRIVAT-HOSPITÄLERN.

VON

DR. G. NEUBER,

KIEL.

Fig. 1. The title-page of Gustav Neuber's account of the aseptic method employed in his private hospital. (Reproduced through the courtesy of the Army Medical Library)

ly separated. The air which circulated in the operating rooms was sterilized by heat and by passage through a cotton filter. The dust in the rooms was reduced by wetting the walls and floors. The following aseptic regimen was rigidly observed:

(1) *Disinfection of the patient.* The patient was bathed and the entire body washed with a solution of mercuric bichloride. The patient was then clothed in a clean gown and brought into the operating room. During the induction of anesthesia (chloroform) the area to be incised was again cleansed with a bichloride solution and the entire body except for the operative site was covered with a rubber sheet and drapes sterilized by boiling. (2) *Disinfection of the professional personnel.* All members of the operating team were required to bathe and change their underclothes frequently. Immediately before operations they washed themselves with soap and water and sprayed the skin with a solution of mercuric bichloride. They then put on caps and gowns, again washed their hands, forearms, and faces, and put on rubber overshoes and aprons sterilized by boiling. (3) *Sterilization of instruments and accessories.* All water was boiled for one hour. The instruments were washed with soap and water after every operation, and immediately before every operation were boiled in water for fifteen minutes and placed in a 1 per cent solution of carbolic acid. Sponges were sterilized by boiling and kept in a 5 per cent solution of carbolic acid. (4) *Care of wounds.* The wounds were irrigated with sterile salt solution or a weak solution of mercuric bichloride. After closure without drainage, a dry sterile dressing was applied. (5) *The handling of visitors.* The number of observers was kept at a minimum, and before entering the operating room they were required to undergo the same process of disinfection as the surgical team.

Under this system wounds healed more rapidly and infections were rare. The toxic effects of the more potent antiseptics were eliminated, and pain due to the frequent changes of dressings necessary under the old system was minimized. Obviously the method of sterilization (boiling) used by Neuber was superior to the more unreliable method of the application of strong antiseptics.

Asepsis was carried to its logical conclusion during the latter part of the eighties in the clinic of Ernst von Bergmann. Born in Riga, Russia, in 1836, von Bergmann was graduated at Dorpat in 1860 and was later made surgical assistant in the Dorpat clinic. He served in the Prussian army in 1866 and in 1870-1871, and with the Russian army of the Danube during 1877 and 1878. His reputation was greatly enhanced by his work in these wars, and in 1878 he was called to Wuerzburg as professor. In 1882 he succeeded von Langenbeck as Professor of Surgery in Berlin, where he remained until his death in 1907. Von Bergmann is often referred to as the father of modern German surgery, and to him should go the credit for establishing our present aseptic ritual. Although he did not publish the details of his technique himself, they were published by his assistant, Curt Schimmelbusch, in 1892 under the title, *Anleitung zur aseptischen Wundbehandlung*. The technique differed essentially from that developed by Neuber in that steam instead of boiling

was used for sterilization. Von Bergmann's routine consisted in cleansing the skin of the patient with soap and water and alcohol or ether, then shaving the operative area and washing it again with soap and water. The instruments were cleaned with soap and water and alcohol, and immediately before operation were boiled in water containing sodium bicarbonate. The dressings and drapes were placed in perforated metal drums and sterilized with nascent steam according to the method of Koch[2], or by steam under pressure. The surgeon's hands were disinfected by scrubbing with a sterile brush and soap, followed by washing in 80 per cent alcohol and in a 1:2000 solution of mercuric bichloride.

The universal adoption of the aseptic principle in surgery resulted from the elaboration and perfection of the details of the aspetic ritual devised by von Bergmann. The filling in of the complete picture of asepsis as it is practiced today came with the addition of rubber gloves, face masks, and sterilization of the air. These factors will be discussed in the concluding sketch of this series.

J. C. T.

2. See Sketch X.

Work of Medical Department in World War II

In his Biennial Report to The Secretary of War, General George C. Marshall, Chief of Staff of the United States Army, paid tribute to the Medical Department for its outstanding work in World War II, as follows:

"The remarkable reduction in the percentage of the deaths from battle wounds is one of the most direct and startling evidences of the great work of the Army medical service. In the last two years Army hospitals treated 9,000,000 patients; another 2,000,000 were treated in quarters and more than 80,000,000 cases passed through the dispensaries and received outpatient treatment. This tremendous task was accomplished by 45,000 Army doctors assisted by a like number of nurses and by more than one-half million enlisted men, including battalion-aid men, whose courage and devotion to duty under fire has been as great as that of the fighting men they assisted."

Army Medical Department Gets Six Per Cent of World War II Decorations

Of the 1,400,409 decorations given in World War II in recognition of meritorious service and gallantry, six per cent were received by Medical Department personnel, according to a biennial report by General George C. Marshall. These figures are exclusive of the Air Medal and the Purple Heart.

DDT Again

An interview with shy, young Dr. Paul Muller of the J. R. Geigy Company, Switzerland, to whom the world owes a debt for the discovery of the insecticidal properties of DDT, and tall, suave Dr. Paul Lauger, Director of Research there, brought forth some interesting information regarding DDT.

DDT, as everyone now knows, is a contact poison. What is not so well known is that the skin of insects contains a lipoid layer, (a protective coating acting in some ways, like a raincoat) and DDT goes into solution in this layer. From there it attacks the nervous system of the insect. The skin of warm-blooded animals is entirely different, and since it does not include this lipoid layer, DDT does not have the same or even a similar effect on man or other warm-blooded animals. True, a sufficient quantity of DDT swallowed or absorbed through the skin of a warm-blooded animal will cause trouble, but real danger is actually slight. Workers in plants where DDT powder is made are constantly sprinkled with the dust, with no untoward effects. When DDT is mixed with carriers that do not evaporate quickly, such as kerosene, and applied to the skin, contact is maintained for a long time and irritation may result. Birds can get enough DDT internally by eating poisoned insects to be harmed or even killed. Bees, being insects, are killed by contact with DDT.

The problem of the carrier is of primary importance. Molecules of DDT separated from each other have more chance to attack. The DDT molecule bristles with chlorine atoms, and these are the key to its action. The freer the chlorines are to reach the surface, the more efficiently they can work—effectiveness of DDT depends on its dispersal through a carrier. For this reason, a 5 per cent solution of DDT is much more effective than a 100 per cent powder. By careful choice of the type of carrier and regulation of the percentage of DDT, researchers hope eventually to be able to provide highly specific insecticides. It might then be possible to eliminate "bad" insects in a given area while leaving the useful ones undisturbed. Perhaps these modifications will make available products not in the least potentially dangerous to people, pets or livestock.

Use of DDT in louse control was well publicized during the incipient typhus epidemic in Naples right after our troops landed there in December, 1943. One of the results of this spectacular victory was that all cloth from which British army uniforms are cut is now first dipped in a DDT solution.

It would be a mistake to assume that DDT is the answer to every insect problem. There are, in fact, insects against which it is quite useless. White grubs, for instance, show no susceptibility to it, nor does the cotton boll weevil. Our familiar friends, the cockroaches, have demonstrated their power of survival over the centuries, and do not fall easy victims to DDT. As Dr. Lauger put it, "They are not easily to be killed, and that takes more time," but they do succumb. It will be interesting to learn whether or not the cockroach will be able to devise a defense against DDT, as it has developed defenses against every other agent threatening its continued existence. There is no evidence so far that a tolerance to DDT can result from exposure to it.

—Office of Pharmacal Information

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NOVEMBER, 1945

A LAYMAN LOOKS AT DOCTORS

The *New England Journal of Medicine* for October 11 gives first place to the George W. Gay Lecture on Medical Ethics, given to the students of Harvard Medical School by a professional writer, Mr. Ben Ames Williams. This article may be read with profit by any doctor, whether a recent graduate or a grizzled veteran. The title of Mr. Williams' lecture is "The Greeks Had a Word for It," and its theme is the fear which the doctor unconsciously inspires in his patients and their families, and the harm which may result therefrom. The word "panic" is derived from the Greek god Pan, who aroused fear in human beings when he appeared. The present-day prototype of this god, Mr. Williams says, "We call . . . 'Doctor,' and tremble at his name."

"The prospect of summoning a doctor," continues the writer, "frightens almost every layman . . . Doctors do not sufficiently realize the fact that their patients are frightened, and do not give enough attention to the particular branch of pathology that involves a study of the emotions."

Half jestingly and half seriously, Mr. Williams gives the Harvard students—and the entire medical profession—much good advice. Some of his epigrams are reminiscent of Osler at his best: "Your medical education is just beginning. If you are wise, you will accept the fact that it will never be complete . . . your first private patient will extend your education and—if your mental capacities endure that long — so will your last." "Every medical school should have a course of lectures given by patients!" "Any doctor, after having once been ill himself, is a better doctor afterward." "It may be quite as easy to make a well person sick as to make a sick person well."

Those who plan to become specialists are warned against narrowing their professional vision to the extent that they lose sight of the patient as a whole. As an example, Mr. Williams cites the case of a psychiatrist who showed his class a woman with a pronounced psychosis. Later the same patient was used by a dermatologist to demonstrate a skin lesion. Still later a gastro-enterologist had her stools studied to determine the cause of her diarrhea. Finally a rural general practitioner came in and immediately recognized that the patient had pellagra, with the triad of "D" symptoms—dementia, dermatitis, and diarrhea.

A very pertinent criticism is that doctors too frequently delay giving their patients the results of such studies as an x-ray examination or a biopsy on which may hinge the possibility of a malignant growth. Mr. Williams tell us that "Doctors seem to wish to be mysterious. They use long words for simple things . . . The human imagination is a powerful force, and it is easily stimulated into activity."

Many doctors, even if their crowded days make it hard to allow time for more than the barest greetings to their patients before becoming professional, will agree that frequently "the good that the doctor can do the patient is determined within a few minutes after their first meeting. If you are to free the patient of his fear of you, if you are to win his confidence and if you are to

enlist his co-operation, these first moments are vital . . . before a doctor can do his best he must sell himself to the patient."

Along with Mr. Williams' excellent address should be read the article by Auerback and Gliebe, in the *Journal of the American Medical Association* for September 29, entitled "Iatrogenic Heart Disease." The term "iatrogenic" is derived from two Greek words, which mean "produced by doctors." As may be inferred, this paper deals with the too-frequent cardiac neuroses which develop "following the careless or ill-considered remarks of doctors."

While Mr. Williams' address is not too complimentary of the medical profession, constructive criticism is worth far more than fulsome flattery. It is good for us all occasionally "to see oursels as others see us."

* * * *

DR. WILLIAM H. SMITH

Dr. William H. Smith—best known to his friends as "Buff"—died on September 28 at the age of 63. Dr. Smith was born in Goldsboro and received his medical education at the University of North Carolina and the University of Pennsylvania. Following an internship at the Philadelphia Polyclinic Hospital, he came back to his native city and practiced there for the rest of his life.

Dr. Smith was recognized as one of North Carolina's foremost internists, and was one of the most active and useful members of the State Medical Society. He had been president of the State Board of Medical Examiners, was for many years chairman of the Committee on Postgraduate Education, and at the time of his death was the first vice president of the Medical Society of the State of North Carolina. His usefulness was not confined to his chosen profession. For twenty-four years he served as an elder in the First Presbyterian Church of Goldsboro; he was one of the originators of the Boy Scout movement in Goldsboro, and was a past president of the Goldsboro Rotary Club.

Dr. Smith's many friends join in extending to his family their deepest sympathy. His genial presence will be sadly missed at the next meeting of our State Society, and he will long be remembered for his many accomplishments and for his lovable personality.

A CHALLENGE TO NORTH CAROLINA DOCTORS

On page 498 of this issue will be found a very important announcement by Dr. Arthur H. London, President of the North Carolina Pediatric Society. The announcement is self-explanatory. It is hoped that every member of the State Society will read it and will respond to the challenge and the opportunity that have come to North Carolina doctors. To have been selected as the pilot state of the nation is a great honor to North Carolina, but it is also a great responsibility.

As Dr. London says, "The success of the venture in this state depends entirely upon the cooperation of all North Carolina doctors." Let us all watch for the questionnaire, fill it out, and return it promptly. We must meet the challenge.

* * * *

GENERAL COBURN RETIRES

Brigadier General Henry C. Coburn, Jr., after thirty-seven years in the Medical Corps of the United States Army, has retired from service. The crowning achievement of his distinguished career, which spanned both World Wars, was the job he did as chief medical officer at Fort Bragg from April, 1939, until his retirement. When he came to Fort Bragg, it had one 83-bed hospital; now it has three hospitals, capable of caring for 6,000 men, forty-six dispensaries, and six dental clinics.

Mere figures, however, do not and can not tell of General Coburn's fine personal qualities—the warmth and cordiality of his nature and the sincerity of purpose that have endeared him to his associates and to the civilian doctors who knew him. North Carolina is proud to claim him as an adopted son.

As General Coburn goes with Mrs. Coburn to their home at Haddenfield, New Jersey, the best wishes of all North Carolina doctors go with him. It is hoped that he will return often to visit our state, for he will always be welcome. May he thoroughly enjoy the leisure he has so richly earned.

PARDONABLE DOUBT

According to the Associated Press a spokesman at Supreme Allied Headquarters in Tokyo, in commenting on a rumor that General MacArthur "might retire because of heart trouble," stated that the General is in "perfect physical condition" and has "never been more fit than at present in the entire four years' campaign."

The legion of General MacArthur's admirers sincerely hope that these reassuring words are true, and this JOURNAL knows of no reason to think otherwise. It is unfortunate, however, that this statement is so reminiscent of one made by the Surgeon General of the Navy about the health of President Roosevelt, just a few months before he died. It is probable that the contrast between General MacArthur's most recent pictures and those of the late president—which, even when most skilfully touched up, bore unmistakable evidence of the precarious hold he had on life—will afford the public more reassurance than any number of statements by government spokesmen.

The American people are by no means as gullible now as they were when our administration began its policy of telling them what it was deemed wise for them to know. They have learned that such "official statements" are open to pardonable doubt, and many who had never entertained the slightest question of MacArthur's physical fitness will now begin to wonder.

Those responsible for the assumption of this "Papa knows best" attitude should remember that there is a limit to human credulity. John Q. Citizen sooner or later is apt to adopt the philosophy of the Chinese proverb: "Fool me once, shame on you; fool me twice, shame on me."

* * * *

DR. HUGH CARTER HENRY

On Sunday, October 14, Dr. Hugh Carter Henry of Richmond, Virginia, died, as he would have wished, while at work. Dr. Henry was Virginia's first Commissioner of the State Department of Mental Hygiene and Hospitals. He was born October 31, 1875, and was graduated from the Medical College of Virginia in 1896. Most of his professional life was devoted to psychiatry, and he literally worked his way up from the ranks to the position of leadership in psychiatry in his native state. In 1911 he became an assistant physician at the Central State Hospital; in 1924 he was appointed its superintendent; and in 1938 he was made Commissioner of the State Department of Mental Hygiene and Hospitals.

A colleague who knew him well writes in a personal letter: "Dr. Henry was a splendid man, an excellent psychiatrist, and a highly efficient hospital administrator . . . He had given practically all of his professional life to the mentally sick, most of it to the Negroes in the Central State Hospital of Petersburg . . . He pitched his official life on a high plane and kept it there. He cannot be replaced."

The NORTH CAROLINA MEDICAL JOURNAL offers to our Virginia colleagues heartfelt sympathy in the passing of this great and good man.

* * * *

DON'T LET GEORGE DO IT

A famous psychologist was asked the question: Is it harder to get money from people for charity than to induce them to give time and effort?

His reply was: "It is far harder to induce people to give their time and effort to help the community than it is to induce them to give money . . . It is hard enough to get either, but when it comes to asking people to roll up their sleeves, attend meetings late at night, get out and actually work, instead of talk, the attitude of most people is: Here's $5. Let George do it."

Have you, as a citizen and Georgia physician, done anything to stop the enactment of legislation which may take from you and your patients that which you are accustomed to now? Have you studied the new Wagner-Murray bill, Senate Bill 1050? Have you been satisfied to let George do it? Are you aware of the fact that certain individuals and certain groups in this State are working almost constantly to facilitate the passage of this bill?

Busy as you are, please sit down now and write your Representative and Senators in the Congress of the United States for a copy of the bill, at the same time requesting each of them to withhold his support of the proposed measure. By all means, don't let George do it for you. Roll up your sleeves now and "take pen and paper in hand." Remember, it's Senate Bill 1050.—*Journal of the Medical Association of Georgia*, October, 1945, p. 204.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE HOSPITAL

Presentation of Case

A 36 year old white, single farmer was first seen in the Outpatient Clinic about one year prior to admission to the hospital. His complaints at that time were weakness of the arms, attacks of numbness in the left forearm followed by temporary amblyopia and amnesia, and dull aching in the lower abdomen. The symptoms had been present for about twelve months. Examination showed hyperreflexia and a positive plantar sign on the left, with hypesthesia and diminution of vibratory and position senses in the toes of both feet. There was no cardiac enlargement or any murmurs, and the electrocardiographic tracing was within normal limits. The patient was seen in the Neurology Clinic by Dr. Graves, and because there was a questionable history of lues, inadequately treated, a tentative diagnosis of amyotrophic lateral sclerosis, possibly on a luetic basis, was made.

His general health had been good in the past. He had had only the usual childhood diseases, which were uncomplicated, and there was no history of rheumatism or of joint pain at any time.

About four months prior to admission to the hospital he began to note progressive exertional dyspnea and orthopnea, and for two weeks prior to admission he was unable to sleep because of paroxysmal nocturnal dyspnea. This for a time was relieved by sedatives, but in the week prior to admission he was awakened by dyspnea almost every night, in spite of sedation. Four days before entry he noted progressive swelling of the ankles and hands, and also became aware of a dull aching pain in the abdomen and in the right upper quadrant.

Physical examination

The temperature was 37.5 C. (99.5 F.), pulse 110, respiration 20, blood pressure 132 systolic, 92 diastolic in both arms. The patient was rather orthopneic, mildly euphoric, and somewhat sluggish mentally, but he was in no acute distress and there was no cyanosis. The left pupil was larger than the right and both reacted sluggishly to light and accommodation. There was a questionable, unsustained rotary nystagmus. The optic fundi showed nothing remarkable except for some engorgement of the retinal veins. The mouth and the throat showed nothing remarkable. The neck presented no abnormalities, and there was no local or general glandular enlargement. The maximum cardiac impulse was in the fifth interspace in the anterior axillary line. The pulmonic second sound was considerably accentuated and the first sound at the apex was quite loud. There was a harsh systolic murmur transmitted to the axilla and to the subscapular space. No diastolic murmur was audible. The lungs were clear. There was some tenderness to palpation in the right upper quadrant of the abdomen, and the liver margin could be felt about 6 cm. below the costal border. Other organs were not palpable, and there was no evidence of any ascites.

On neurological examination a loss of vibratory sense over the legs and the knees was noted. The previously mentioned anisocoria and rotary nystagmus were confirmed. Motor examination showed left-sided weakness and some fibrillations in muscles of both lower extremities. The tendon reflexes were present on the right but seemed definitely more active on the left. The abdominal reflexes were absent on both sides. The plantar response was equivocal on the right and extensor on the left. The Hoffman reflex was positive bilaterally. There was moderate tremor with past-pointing on the left. The gait was slightly ataxic, with staggering to the left.

Laboratory findings

The hemoglobin was 11.2 Gm. or 72 per cent, the red cell count 3,980,000, and the white cell count 12,640, with a normal smear and differential count. The serologic tests for syphilis were all negative. The blood sedimentation rate was 25 mm. in an hour, corrected. The urine showed a trace of albumin, 2 to 3 white blood cells and an occasional red cell.

Fluoroscopy and a chest film showed marked increase in the hilar and linear markings, with a diffuse clouding at both bases. The heart was considerably enlarged in all diameters and the esophagus was deviated posteriorly and to the right because of an enlarged left auricle. This finding was

felt to indicate mitral stenosis and congestive failure. Plates of the skull were normal. A gallbladder series showed poor concentration of the dye but good contraction following the fatty meal. A barium enema was unsuccessful because very little barium could be passed beyond the region of the rectosigmoid; there appeared some narrowing in this region, but no definite lesion. A gastrointestinal series showed a questionable deformity in the duodenal bulb, possibly due to pressure from the gallbladder. An electrocardiographic tracing showed a right axis deviation, slurred QRS complexes, and low voltage.

The blood nonprotein nitrogen on admission was 60 mg. per 100 cc., but five days later it had fallen to 37. The plasma albumin was 2.6 and the globulin 4.2. Spinal puncture revealed clear fluid with an initial pressure of 270 mm. of saline, and a rise of pressure to 410 mm. on straining. Spinal fluid Wassermann and colloidal mastic tests were negative. The spinal fluid protein was 34 mg. per 100 cc. The stool was quite black and gave a 4 plus benzidine reaction; microscopic examination showed 5 to 10 red blood cells per high power field.

Blood cultures were made on three occasions and remained sterile. Proctoscopic and sigmoidoscopic examination by Dr. Ruffin showed only intermittent spasm in the rectosigmoid region, which would probably account for the findings on barium enema examination.

Course in the hospital

Since the patient had had no digitalis previously and was obviously in congestive failure, he was given a single dose of 1.2 mg. of digitoxin. The venous pressure on entry was 240 mm. of water and the decholin circulation time 33 seconds. There was no change in either of these tests in a period of twenty-four hours, but after two days the circulation time had fallen to 17 seconds and the venous pressure to 170 mm. of water. Dr. Orgain confirmed the physical findings.

Under treatment for cardiac failure, the patient seemed to improve somewhat. He was seen in consultation by Dr. Sergerson, who was unable to explain the unusual neurologic findings. About ten days prior to death the patient's left leg became swollen and pitting edema was present over the leg and foot, but there was no tenderness and Homan's sign was absent. He was seen by Dr. Wilson of the Department of Surgery, who did not think the patient had thrombophlebitis and advised conservative non-surgical therapy.

Two and a half weeks following admission the house officer was called because the patient's respirations had ceased. He was cyanotic, although his pulse was still present. After intravenous coramine and artificial respiration the breathing was resumed temporarily; it failed again, however, and he expired in spite of the administration of coramine and adrenalin. An electrocardiographic tracing taken a few moments before death showed auricular standstill with idioventricular rhythm and left bundle branch block. The ventricular rate was 35.

Discussion

DR. CHRISTOPHER JOHNSTON: If we were seeing this patient for the first time, the finding of a globular heart with accentuation of P_2, the history of dyspnea, and the presence of increased venous pressure, together with the x-ray report of enlargement of the left auricle, would, I think, force us to say that the patient's cardiac failure was on the basis of mitral stenosis. But even so, the presence of paroxysmal nocturnal dyspnea, which is almost entirely confined to patients with failure of the left ventricle, would be difficult to explain. It would also be difficult to explain the absence of a mitral diastolic murmur and the relatively sudden onset of cardiac failure. The fact is, however, that this patient was apparently examined thoroughly in our own Outpatient Clinic a year prior to his final admission, and no mention of any cardiac abnormality was made. It seems highly unlikely, therefore, that any significant degree of cardiac enlargement was present or that a murmur, harsh and transmitted to the axilla and the subscapular space, could have been missed.

So far as the original neurological condition is concerned, I shall not attempt to make a diagnosis which baffles the neurologists themselves. There does not seem to be any clear connection between the neurological and the cardiac conditions. It seems to me that we are faced with an almost equally hopeless task in attempting to make a diagnosis of the cardiac condition. One might think of a luetic aortitis with progressive narrowing of the coronary openings, and this might possibly fit in with the

rapidly progressive history, but hardly with the clinical findings. One might also think, in passing, of the possibility of a malignant growth involving the myocardium. Here again the findings are entirely too indefinite to consider this as more than a remote possibility. The only clinical diagnosis that seems at all likely to explain the history and the physical and accessory findings is that of a coronary occlusion with softening and rupture of the intraventricular septum. This would naturally throw a sudden extra burden upon the right ventricle and cause an increase in the blood pressure of the pulmonic circulation. It would also explain the dyspnea, the accentuated P_2, and also the right axis deviation and the clinical evidences of right-sided cardiac failure. I am not sure that it would explain enlargement of the left auricle.

Pathological Discussion

DR. WALTER G. GOBBEL: There are two groups of clinical findings in this case which, although apparently unrelated, can be explained by one disease process. First, there is the strange neurological picture which dates back more than a year prior to death; and secondly, there is the terminal cardiac failure. This case is one of a papillomatous myxoma of the left auricle, which is attached to the membrane that partially closes the foramen ovale. Extending through the foramen ovale there is a small tumor mass measuring 1 cm. in diameter which lies in the right auricle. The main tumor mass in the left auricle measures 7 cm. in its greatest diameter. There are also multiple old infarcts in the brain which are most prominent in the left occipital and right parieto-occipital areas. These infarcts of the brain, which are the result of tumor emboli from the myxoma in the left auricle, explain the neurological findings; for the breaking off of small portions of this friable papillomatous tumor occurred early in the disease process before the tumor became large enough to cause obstructive symptoms in the circulation and cardiac failure. Thus, the patient had early neurological symptoms without signs of cardiac failure. The gradually increasing size of the tumor mass accounts for the cardiac dilatation and hypertrophy, with chronic passive congestion of the lungs, liver, and spleen, hydrothorax, pericardial effusion, ascites, edema of the ankles, and terminal cardiac failure.

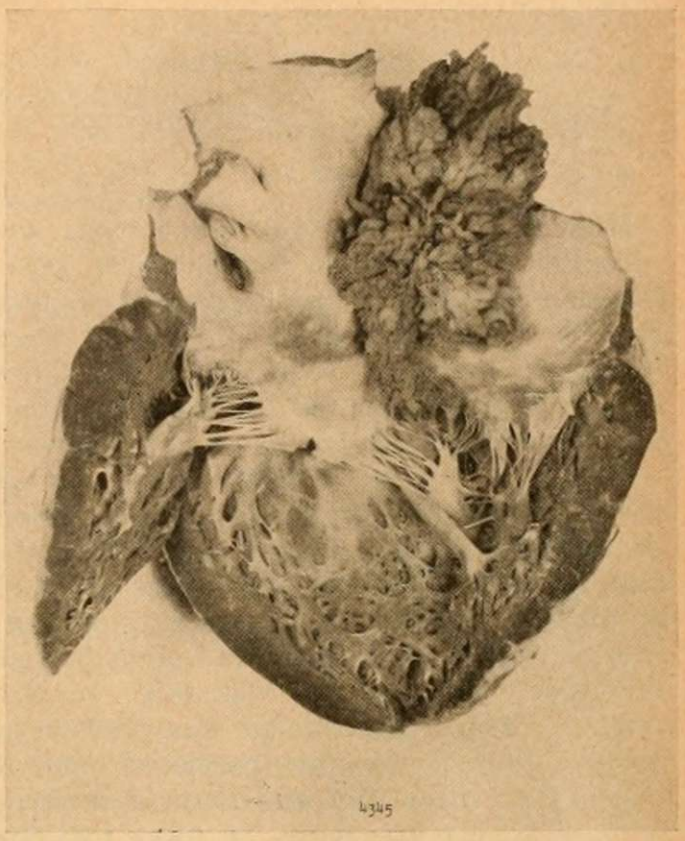

Fig. 1. Myxoma of the left auricle.

Brenner in 1907 collected 33 reports of cardiac myxomas, of which 20 were located in the left auricle, chiefly on the septum as in this case. The origin of these tumors is believed to be superfluous embryonal tissue in the region of the foramen ovale, where many of these tumors are attached. Curtis believed that the process was not a genuine neoplasm but was the result of a chronic inflammation of rheumatic nature producing nodular outgrowths of the endocardium which continue to grow because of mechanical influence to which they are exposed. In this case, however, there is no evidence of rheumatic heart disease, and this appears to be a definite neoplastic process. This is a rare tumor, only a small number having been reported in the literature. This is the first such case in over 4,300 autopsies at Duke Hospital.

Anatomical Diagnosis

Myxoma of the left auricle of the heart, producing cardiac hypertrophy and dilatation (cardiac failure).

Tumor emboli obstructing small cerebral arteries and producing infarcts of the brain.

Chronic passive congestion of the lungs, liver and spleen.

Hydrothorax, pericardial effusion, ascites and edema of the ankles.

CASE REPORTS FROM THE TUMOR CLINIC

North Carolina Baptist Hospital

Case 9

Mrs. R., a 49 year old widow, was admitted to the hospital on September 23, 1945. Her chief complaint was progressive dysphagia and regurgitation of undigested food during the preceding year. She had lost ten pounds of weight in the last three months. She was constipated, but had had no melena.

Mrs. R.'s present illness really started about two years before this admission, when she began having epigastric pain three to four hours after meals which was relieved by alkalis. She had no nausea or vomiting, and no melena or appreciable weight loss at this time. Her appetite was fair. In November, 1943, a laparotomy was performed because these complaints persisted after a trial on an ulcer diet and antacid medications. The surgeon found an ulcer measuring 2 by 2 cm. in the prepyloric area of the stomach. A biopsy specimen was obtained, but the lesion was not removed. Pathological study of the biopsy specimen revealed it to be benign. From that time until her admission to this hospital, the patient was treated conservatively.

No symptoms referable to other systems were elicited in the history.

Physical examination revealed a well developed, well nourished middle-aged woman in no acute distress. Her temperature was 98 F., pulse 86, respiration 18, blood pressure 100 systolic, 68 diastolic. Examination of the head, eyes, ears, nose, mouth, and throat was not remarkable. No lymphadenopathy was found. The chest, lungs, and heart were normal. The abdomen was rounded but not tense, and showed a healed right paramedian scar 15 to 20 cm. in length. There was no rigidity or muscle spasm. A hard nodular mass extended from the midepigastrium to about the left midclavicular line. The tumor was easily defined on its left border, but the edge was less definite in the midline. It was firmly fixed and nontender. Several examiners felt that this represented the fundus of the stomach. The liver, spleen and kidneys were not felt. Pelvic and rectal examinations revealed no ab-

4,600,000; hemoglobin, 13.2 Gm.; white blood cells, 7,600. The stool was positive for occult blood on one examination. The Kahn test was negative. The total serum proteins were 6.9 Gm. per 100 cc. The gastric analysis showed no free hydrochloric acid before or after histamine. There were 5 degrees of total acidity both before and after histamine. Following a barium enema the colon was reported normal. An x-ray film of the stomach and duodenum showed an organic lesion of the fundus of the stomach, probably tumor.

On October 1, 1945 a left transthoracic abdominal exploration was performed, and it was discovered that the esophageal wall was infiltrated by neoplasm for a distance of approximately 4 cm. above the diaphragm. The stomach was involved by a very large, hard, infiltrating tumor with the typical gross appearance of carcinoma. The mass measured 15 to 20 cm. in diameter. It had infiltrated along the lesser curvature almost to the pylorus. The stomach could not be mobilized, and a resection was impossible. Direct extension to the liver, spleen, and body and head of the pancreas had occurred. The omentum was studded with metastatic nodules. A specimen for biopsy was taken from one of these. It was impossible to deliver the jejunum or any portion of the small bowel for an anastomosis with the esophagus. The lesion was totally inoperable.

The patient tolerated the operation well.

Tumor Clinic Discussion

Pathologist: The specimen consisted of a piece of tissue 8 x 3 x 1 cm. in size, which appeared to be composed mainly of fatty tissue. In the end of this tissue was a very firm area which was almost of rock-like consistency. This area was cut in sections. The tissue had a glassy appearance, and there were numerous areas of yellowish discoloration.

Microscopically, the supporting tissue was seen to be composed of adult fat cells, but it had been almost entirely replaced in many areas by a dense sclerotic tissue having a very dense collagenous fibrous stroma, with active fibroblasts and infiltrating lymphocytes. There were also many scattered, dark-staining, irregularly shaped cells which

clumps. Many mitotic figures were present in these cells.

The pathological diagnosis was undifferentiated carcinoma of the gastrohepatic omentum, metastatic.

SURGEON: This unfortunate patient's story illustrates a problem we have faced on several occasions. While the value of biopsy of any questionable lesion is above dispute, biopsy examination can assist us only if the true character of the lesion is shown by the tissue obtained for pathological examination. There have been numerous instances in this hospital where repeated biopsies have had to be done before an accurate diagnosis was obtained.

The frequency with which carcinoma of the stomach is associated with ulcers located in the prepyloric region has led to a strong trend toward the use of gastric resection in the treatment of all patients who present such a lesion.

We do not know the specific reason why either gastric resection or excision of the entire lesion was not performed at the time of the patient's laparotomy in November, 1943, but we must presume that some problem related to anesthesia, equipment, or assistants at the operation led the surgeon to decide to perform only a biopsy of the lesion. There must have been little question in his mind but that no benefit other than diagnosis would result from the procedure.

Our policy in the management of patients with an ulcer of the prepyloric region of the stomach is to advise subtotal gastric resection for any patient with a lesion of appreciable size, or with one which does not entirely and promptly heal on an adequate conservative regimen. We feel that the only hope of improving the statistical rate of survival for patients with gastric carcinoma lies in this policy.

Tumor Clinic Opinion

Prognosis: Hopeless

Blame: 1. Mismanagement of case early in the course. 2. Type of lesion.

Follow-Up Note

On October 10, 1945 an esophagoscopy was performed, for dilatation of the esophagus. The mucosa of the esophagus was seen to be intact, but there was complete obstruction 4 cm. below the level of the phrenic pinchcock. Because of extrinsic pressure over the posterior and lateral surfaces of the esophagus, the opening was too small to pass a Levin tube into the stomach. The patient is now having to be maintained on parenteral fluids.

MEDICOLEGAL ABSTRACT

J. F. OWEN, M.D., LL.B.
RALEIGH

MORAL TURPITUDE: *When the revocation of a physician's license depends upon moral turpitude, his crime must be inherently immoral and not merely illegal.*

In order to bring the matter of moral turpitude to the attention of the profession, and to show its relationship to crime in which the question of the revocation of a physician's license is in issue, the following case was selected for review.

This is an account of a criminal proceeding in which a physician was arrested and charged with the illegal sale of intoxicating beverages. From the record we find that the doctor, while actively engaged in the general practice of medicine, also manufactured a remedy bearing his name which was recommended as a tonic. Because of the high alcoholic content of this "tonic," it was bought and used in certain instances solely as a beverage. The physician was arrested under the authority of a state law and charged with the illegal sale of intoxicating liquors. The trial was held before the mayor of the city where the crime was committed. It should perhaps be stated in this connection that mayors, while acting in a judicial capacity, have the powers usually conferred upon justices of the peace. The doctor was found guilty of the crime as charged and was assessed a fine of one hundred dollars and cost. As further punishment, his license to practice medicine was revoked.

The matter was then appealed by the defendant to the circuit court, where the judgment of the court below was upheld in its entirety. The defendant physician upon proper exceptions brought the case before the Supreme Court for final disposition. The Supreme Court began its deliberations of the question involved by citing the follow-

ing definition of moral turpitude as given by Black: "Moral turpitude is an act of baseness, vileness, or depravity in the private and social duties which a man owes to his fellowmen or to society in general." Continuing, the court stated that the act of selling intoxicating beverages was not inherently immoral, and that the illegality came about by the fact of its being prohibited. Moral turpitude, according to the court, implies something immoral in itself regardless of whether or not it is punishable by law. The court of original jurisdiction in this matter, having only the authority of a justice of the peace, could not order the revocation of a license unless the crime charged was one associated with moral turpitude; and as this was not found by the Appellate Court, the judgment as to the revocation was reversed and dismissed. (Supreme Court of Arkansas, fall term, 1908. V. 112 S.W., p. 1084.)

TUBERCULOSIS ABSTRACTS

A Review for Physicians

ISSUED MONTHLY BY THE NATIONAL TUBERCULOSIS ASSOCIATION

VOL. XVIII NOVEMBER, 1945 No. 11

THE chest X-ray, reinforced and supplemented by a wide and wise choice of other diagnostic aids, has brought us far along the road toward control of human tuberculosis. In this year of 1945 medicine pays its sincere respects to a half century of progress in the employment of an invaluable procedure. It is a happy circumstance that we celebrate at the same time the centennial of Wilhelm Conrad Roentgen's birth.

THE ROENTGEN RAY

X-RAY . . . new eyes for the physician . . . a new light to guide the hand of the surgeon . . . a light that can put on photographic film the record of damage done to a person's lungs by tuberculosis germs. These things we have in 1945. All because 50 years ago a scientist, at work in his laboratory, saw something he did not understand . . . but had sense enough to investigate . . .

The scientist was Wilhelm Conrad Roentgen, professor of physics at the University of Wurzburg. From his laboratory in 1895 came the announcement that he had discovered a new kind of light.

A New Kind of Ray

The professor was doing some experiments with cathode rays. His apparatus was a Crookes' tube, and an induction coil with a mercury interrupter—standard equipment for laboratories of the day. But, without knowing why, perhaps, Roentgen covered the tube with thick black paper so that no visible light could come through. He darkened the room completely. Then he applied current to the tube. To his amazement he saw a few brightly fluorescent crystals shining in the darkness on a table at some distance from the tube. How could this be?

He checked to see that there was no leak in the thick black paper. The fluorescence continued. He knew that the fluorescence was caused by some kind of light. But what kind? Invisible light?

What Roentgen saw had probably been seen by many before him. But he was the first to grasp its true significance, and he went to work at once to investigate and interpret his mysterious light. For days he ate and slept in his laboratory. He did not want to be interrupted in his work of putting his discovery through one test after another. Finally, after eight weeks of intense work, he released a statement "On a New Kind of Ray."

Because of the ray's unknown quality he called it X-ray. But there were many things about it that were known to him. His experiments had shown that the ray could pass through wood, paper, flesh and many other materials through which ordinary light cannot go. He noted that the ray could go through some objects more easily than through others. For example, when he held his hand between the tube and a fluorescent screen he could see the shadow of the bones

in outline. Substituting a photographic plate for the screen, he made a photograph of Mrs. Roentgen's hand. The result was the first X-ray picture—a photograph showing bones and a metal ring, but no flesh.

World Reaction

Public announcement of Roentgen's discovery brought instant attention. The world of science and medicine was quick to see the benefits that the new ray would bring to mankind. If Roentgen could use his "light that never was on land or sea" to make such a photograph of his wife's hand, why couldn't it be used to show broken and diseased bones, or even diseased organs of the body?

Magazines of the day carried articles that marvelled at, as well as made fun of, the discovery. News of Roentgen's rays rivalled the headlines of the Boer war in the daily papers. Who was this man whose name was suddenly known to everyone?

The Man

Wilhelm Conrad Roentgen was born in Lennep, Germany, on March 27, 1845. Home, however, was Apeldoorn, in Holland, where his merchant father moved the family when Wilhelm was three years old. His boyhood and early school days in Holland were like that of most boys. In fact, he was not considered a very good or serious student.

His first interest in science came at the Zurich Polytechnical School in Switzerland where he had the good fortune to study with August Kundt, an experimental physicist. Roentgen was preparing to be an engineer, but he spent much of his time in Kundt's laboratory. After he graduated in engineering, he took a degree of doctor of philosophy with a study on gases. As he put it, "I had two diplomas, one as an engineer and the other as a Ph.D. . . . however I could not bring myself to go into engineering . . . He (Kundt) told me to try physical science . . . In short, at the age of 24 years, and already practically engaged, I began to experiment and to study physics . . ."

He was "practically engaged" to Bertha Ludwig whom he married in 1872. The Roentgens then set out on a career which took them to universities in Wurzburg, Strassburg, Hohenheim, Giessen, and back to Wurzburg. At the University of Wurzburg he and Bertha spent their happiest years.

World Acclaim

The happy routine at Wurzburg was, of course, affected by the discovery of what his colleagues now called Roentgen rays. He lectured on his discovery before the Physical Medical Society in Wurzburg early in January 1896. He was asked to give a personal demonstration of the new rays before Kaiser Wilhelm II. Other invitations came for him to speak, but Roentgen made a policy of refusing. Universities began to bid for his services. Finally in 1900 he accepted the call to head the Physical Institute at the University of Munich. A year later he received the Nobel prize for physics—the first year of the award.

For some twenty years until his death in 1923, in Munich, Roentgen saw phenomenal development of his rays. Industry, agriculture, art and countless other fields besides medicine and science fitted it to their uses.

X-ray in Tuberculosis

Benefits of Roentgen's rays are striking in the fight against tuberculosis. Before X-ray the physician had to depend upon sound and touch to find tuberculosis. By the use of X-ray, however, tuberculosis can be discovered in its early stages; treatment can be begun when it will do the most good. Today new and improved X-ray equipment makes low-cost X-ray examination of the chest possible for everyone. Such mass X-raying of apparently healthy people gives new hope for the complete elimination of tuberculosis.

To the zeal and creative genius of a scientist will go much of the credit for this promised conquest of disease. For, although X-ray equipment has undergone notable development, the principle of the X-ray itself remains the same as when laid down by Wilhelm Conrad Roentgen in his laboratory on November 8, 1895.

(The contents of this issue of TUBERCULOSIS ABSTRACTS, adapted for lay distribution, are available in the form of an anniversary "Roentgen" leaflet. If you wish a supply for your patients, please apply to the tuberculosis association in your community.)

CORRESPONDENCE

THE INTRAVENOUS USE OF ALCOHOL IN STATUS ASTHMATICUS

October 10, 1945

To the Editor:

I note that a recent article in the NORTH CAROLINA MEDICAL JOURNAL on the "Treatment of Status Asthmaticus"[1] does not mention the use of alcohol. On looking in several standard textbooks of medicine and recent medical journals and finding that only the oral use of alcohol in this condition was mentioned, it occurred to me that my experience with intravenous alcohol in status asthmaticus might be of interest to others.

Some three years ago I had under my care one of the most severe cases of status asthmaticus it has ever been my misfortune to see. I had treated the patient at intervals for two years at her home and at my office, using the standard remedies — adrenalin, adrenalin in oil, ephedrine, and so forth— with good results. This attack, however, was so severe as to necessitate hospitalization. During the two days she had been in the hospital all the usual treatments had been tried, but with no success. Adrenalin no longer had any effect. Aminophyllin was tried, but without results. Nothing did any good. The patient had been unconscious for four hours when I left the hospital to go to lunch. A woman who stopped me to ask about the girl's condition remarked, "What a pity she has been unconscious so long, or you might get her to drink a little liquor like my grandmother used to take for her asthma."

This chance remark gave me an idea which slowly evolved itself. I went to my office and got 20 cc. of alcohol used for sterilizing needles and syringes and made of four parts of 195 proof alcohol to one part of tap water. Returning to the hospital, I slowly injected this amount into the patient intravenously (with trepidation, since her husband was sitting beside her and I could not foretell the results). Nothing could have been more spectacular. Within two minutes she was breathing better; within five minutes consciousness was returning; and in thirty minutes she was breathing with comparative ease.

I have used this same treatment on several cases of status asthmaticus since then, almost always with the same dramatic results. So far there have been no untoward effects, except that one patient became delightfully intoxicated after the dose was repeated at a close interval.

Intravenous alcohol in my hands has been a truly miraculous drug in severe status asthmaticus in "adrenalin-fast" patients. It has been more effective than has aminophyllin in the less severe cases. It must be given slowly to minimize the sclerosing effect on the walls of the vein.

JOHN P. U. MCLEOD, M.D.
Marshville

BULLETIN BOARD

AN IMPORTANT ANNOUNCEMENT

The American Academy of Pediatrics at its annual meeting in St. Louis in November, 1944, approved a plan of its "Committee on Child Health in the Post-War Period" to make a survey of the needs of the children of the United States and the facilities available to meet these needs. The organization work of this survey has now been completed and North Carolina has been selected as the pilot state for the survey. The success of the national study will in a great measure depend upon the results obtained in this state. The success of the venture in this state depends entirely upon the cooperation of all North Carolina physicians.

The importance of the survey cannot be overemphasized. It is the first attempt of an organized group of medical men to inquire into its own affairs. It is a fact-finding study undertaken by physicians to ascertain their strong and their weak points.

Many organizations outside the ranks of practicing physicians are quoting figures and making recommendations relative to the regulation of medical practice. This survey offers the practicing physician opportunity to determine the needs of his own state and to have facts to help him determine the best methods to meet these needs.

The Academy survey in North Carolina is sponsored by the North Carolina Pediatric

sent to every practicing physician in the state. It is of the utmost importance that this be filled out promptly and returned.

The opportunity is here — the time is short! Will the physicians of North Carolina demonstrate to the country as a whole that they are interested in the broader aspects of medical practice, or sit idly by and be regulated by outsiders?

ARTHUR H. LONDON, JR., M.D., *President*
North Carolina Pediatric Society

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Dr. Milton J. Rosenau, one of the world's greatest authorities on public health and preventive medicine, came to this state in 1936 as the first director of the North Carolina School of Public Health. Dr. Rosenau recently was the guest speaker at a session of the North Carolina Academy of Public Health, which is composed entirely of health personnel and was the first organization of its kind ever perfected in any state in the Union. There are, Dr. Rosenau said, four roads of public health: sanitation, hygiene, community health, and mental and moral health, all leading toward one common goal of perfect health. What public health wants to do is not simply to keep people from getting sick, but to improve the health level of all, because good health makes for the happiness of any community, any people. We spent around $300,000,000,000 to win World War II, the first major war on record during which bullets killed more people than disease. It is not unreasonable, therefore, that we ask for millions to promote public health—as against these billions that were spent for human slaughter.

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

Mr. Kemp D. Battle, prominent Rocky Mount attorney and trustee of the University of North Carolina, has been appointed chairman of the 1945 Christmas Seal Sale campaign by the executive committee of the NCTA. He succeeds Mrs. J. Henry Highsmith who served as State chairman last year.

The North Carolina Tuberculosis Association has tentatively set the 1945 Seal Sale goal at $285,000. This is approximately $13,000 more than the amount of the Sale last year.

* * * *

Winners in the 1945 Negro Essay Contest, sponsored and conducted by the National Tuberculosis Association, the North Carolina Tuberculosis Association, and their affiliates, are as follows:

State Winners

College: First, Miss Lillian V. Black, Shaw University; Second, Miss Mary E. Skinner, Elizabeth City State Teachers College; Third, Miss Evelyn Rush, North Carolina College for Negroes.

High School: (individual group) First, Miss Mary M. Crocker, Hillsboro Negro High School; Second, Miss Lillian Dunn, Orange County Training School; Third, Miss Janis A. Edwards, Lincoln Academy.

High School: (class group) First, Grade 8-1, Hillside High School, Durham; Second, Science Club, Washington High School, Raleigh; Third, 25 Students from the 9th, 10th, 11th, and 12th grades, Carver High School, Winston-Salem.

National Winners

College: Honorable Mention, Miss Mary E. Skinner, Elizabeth City State Teachers College, Elizabeth City, N. C.

High School: (individual group): Fourth, Miss Lillian Dunn, Orange County Training School, Chapel Hill, N. C.

High School (class group): Third, Science Club, Washington High School, Raleigh, N. C.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

An additional grant of $6,000.00 in support of the research conducted by Dr. William A. Wolff, Assistant Professor of Pathology, on tobacco, has been awarded by the Camel Cigarettes Medical Relations Division. This grant makes a total of $22,651.00 awarded for the support of this work.

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A grant of $2,500.00 has been received from the John and Mary R. Markle Foundation to aid the research conducted by Dr. David Cayer, Assistant Professor of Medicine, on the study of nutrition.

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The following papers were presented by members of the faculty at the Southern Medical Association Meeting in Cincinnati, November 12-16:

"The Effect of Anti-Reticular Cytotoxic Serum in the Therapy of Hodgkin's Disease," Joseph Abernethy, George T. Harrell, Jr., and Leslie M. Morris.

"Prediction and Requirements Necessary for Effective Penicillin Therapy: Comparison of In Vitro and In Vivo Response in Seventy-Five Cases of Acute and Chronic Infections of Varied Etiology" —Ellard M. Yow, John W. Avera, and George T. Harrell, Jr.

"The Prevention and Control of Disturbance of Proteins in Rocky Mountain Spotted Fever by Forced Feeding"—William L. Venning and George T. Harrell, Jr.

"Experiments in Medical Education and Medical Care in a New Medical School"—C. C. Carpenter.

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A grant has been received from the American Foundation for Tropical Medicine to aid in the publication of studies done by the Department of Medicine on lepromin skin reactions.

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The following paper was presented at the meeting of the American Society of Tropical Medicine in Cincinnati: "An Attempt by Feeding to Induce in Animals Reactivity to Trichinella Spiralis in the Absence of Infection"—John W. Avera, Ellard M. Yow, and George T. Harrell, Jr.

SEVENTH DISTRICT MEDICAL SOCIETY

On November 9 the Seventh District Medical Society held a scientific meeting at the American Legion Building in Shelby in the afternoon, and a banquet at the Hotel Charles in Charlotte that night. Speakers for the afternoon session were Dr. H. R. Sherrill of Shelby, Drs. R. T. Bellows, J. E. Hemphill, Monroe T. Gilmour and Paul Kimmelstiel of Charlotte, and Dr. Roscoe D. McMillan of Red Springs. Dr. Oren Moore of Charlotte, president of the State Medical Society, addressed the banquet meeting, and Dr. Robert L. Bennett of the Georgia Warm Springs Foundation gave the scientific address.

Officers of the Seventh District Medical Society are Dr. I. W. Hill of Albemarle, president; Dr. B. H. Kendall of Shelby, vice president; Dr. H. C. Thompson of Shelby, secretary; and Dr. J. A. Elliott of Charlotte, councilor.

Edgecombe-Nash Counties Medical Society

The October meeting of the Edgecombe-Nash Counties Society was held in Rocky Mount on October 10. Dr. C. T. Smith spoke on the subject, "Embolism and Thrombosis."

Forsyth County Medical Society

Dr. Julian M. Ruffin of Duke University, recently returned from Europe after assisting in a nutrition survey of the German people, was guest speaker at a meeting of the Forsyth County Medical Society on October 9. His subject was "Nutritional State of Civilian Population in Southern Germany."

News Notes

Dr. Stuart Irvin Draper of Raleigh has recently been promoted from the rank of lieutenant colonel to that of colonel.

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Dr. H. C. Whims, health officer of the Catawba-Lincoln counties health unit, resigned on October 31 to accept a position as health officer for Buncombe County. He succeeds Dr. Wilfred N. Sisk, who resigned several months ago.

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Dr. John W. Morris of North Wilkesboro, surgeon at Wilkes Hospital for seven years, has gone to Morehead City to serve as associate surgeon to Dr. B. F. Royal, chief of staff of the Morehead City General Hospital.

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Dr. P. W. Flagge has left High Point to go to Fairhope, Alabama.

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Dr. R. T. Stimpson, Director of the Bureau of Vital Statistics of the State Board of Health for fourteen years, resigned on October 1 to go into the general practice of medicine. He opened offices in the Nissen Building, Winston-Salem, on November 1.

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Dr. L. Nelson Bell, formerly of Swannanoa, has recently moved to Asheville.

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Dr. William C. Matthews, formerly of Davidson, has opened offices in Charlotte for the practice of internal medicine following his discharge from Charlotte's 38th Evacuation Unit.

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Dr. T. Preston White, who helped organize the 38th Evacuation Unit, was discharged from the army on November 2 and expects to resume the practice of medicine in Charlotte on December 1.

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The following doctors who have recently been discharged from the armed services are resuming civilian practice in North Carolina:

Dr. E. Bruce Brooks of Winston-Salem
Dr. Harry W. Goswick of Winston-Salem
Dr. W. D. James, Jr. of Hamlet
Dr. R. D. Kornegay of Rocky Mount
Dr. A. C. Norfleet of Tarboro
Dr. J. W. Straughan of Warsaw

* * * *

Dr. E. M. Hutchens of North Wilkesboro died at his home on October 31.

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Dr. Ballard Norwood of Oxford is recuperating from a recent appendectomy.

Sutton Mental Hospital

The state's new mental hospital at Camp Sutton was opened to receive patients on October 15. All patients admitted there will be transfers from the hospitals at Raleigh and Morganton. Approximately 500 patients will be treated there when the unit begins operating at capacity, by the first of next year.

Southern Chapter, American College of Chest Physicians

The Southern Chapter of the American College of Chest Physicians met conjointly with the Southern Medical Association in Cincinnati on November 11 and 12. Among those scheduled to discuss papers on the program were Dr. Karl Schaffle of Asheville and Dr. M. D. Bonner of Jamestown, North Carolina.

Twenty-Seven Hundred Doctors Released During September

During September and the first four days of October, the Army Medical Department has separated 2700 doctors from the service and by Christmas it is expected that 14,000 doctors will have been separated, Brig. General Raymond W. Bliss, Acting Surgeon General of the Army, stated recently before the House Military Affairs Committee. Through the months of July and August approximately 1300 doctors were released.

General Bliss pointed out that in proportion to the Army's 45,000 doctors on VE-Day, there are now 43,000 in service, 2000 of whom are recent graduates of medical schools. With the high hospital load in this country, a large number of doctors are needed to staff hospitals and separation centers, which are now at peak operation. These centers require a total of 2,000 doctors.

Stating the approximate total of patients still in Army hospitals to be 400,000, General Bliss concluded, "You cannot treat patients without doctors . . . According to the laws of Congress you cannot separate men without doctors . . . By Christmas we will have reduced the number of doctors by at least 14,000, which represents more than thirty per cent of the total corps. At the same time, we will continue to meet our first and foremost responsibility to give the American soldier the best medical care that any soldier in any Army has ever received."

Colonel Gardner Appointed Army Medical Library Director

Colonel Leon L. Gardner, formerly in charge of Public Relations and Military Intelligence, Office of The Surgeon General, has been appointed Director of the Army Medical Library, according to a recent announcement by Major General Norman T. Kirk, The Surgeon General. He succeeds Colonel Harold W. Jones, who will be retired from active duty in January.

Baruch Committee Appoints Physical Rehabilitation Consultant

Dr. Frank H. Krusen, Director of the Baruch Committee on Physical Medicine, has announced the appointment of Colonel Howard A. Rusk, Medical Corps, Army of the United States, as Consultant on Physical Rehabilitation for the Baruch Committee. Colonel Rusk, whose pioneering work as Chief of the Convalescent Division of the Air Surgeon has attracted national attention, will make his headquarters at the New York office of the Committee created a year ago by Bernard M. Baruch.

New Medical Journal

A new bi-monthly medical journal, **Geriatrics**, devoted to research and clinical reports on the processes and the diseases of the aged and aging, will appear in January, Modern Medicine Publications announces.

For some time the need for a journal of this type has been increasingly apparent. The market among patients of fifty and over is growing steadily. By 1975, it is estimated that 40 per cent of our population will be in that group. Whatever information serves to increase the life span of the individual, whether a matter of diagnosis and treatment, surgical intervention or proper nutrition is very much in accord with the thinking of the times. The editorial direction of **Geriatrics** will stress the investigations and advances made in the study of geriatrics and report on the clinical applications of new developments.

The editor is Dr. A. E. Hedback, who has been the editor of **Modern Medicine** since its inception. The editorial board serving with Dr. Hedback consists of a group of distinguished medical authors and editors, specialists in the field of geriatrics.

Other journals published by Modern Medicine Publications include **The Journal-Lancet** and **Modern Medicine**, the journal of diagnosis and treatment.

American Association on Mental Deficiency

The sixty-ninth annual meeting of the American Association on Mental Deficiency will be held at the Hotel Cleveland, Cleveland, Ohio, on November 28, 29, 30, and December 1, 1945. The program, as arranged, presents sections on institutional administration, research, psychiatry, and medicine in the field of mental defect.

The presidential address will be given by E. Arthur Whitney, M.D. of Elwyn, Pennsylvania, the evening of November 29.

Chicago Medical Society Annual Clinical Conference

The Chicago Medical Society will hold its ANNUAL CLINICAL CONFERENCE at the Palmer House, Chicago, Illinois, March 5, 6, 7, 8, 1946. All physicians are invited to attend this Conference and hear the outstanding specialists from all sections of the country discuss subjects of major interest.

United Nations Relief and Rehabilitation Administration

UNRRA heath officers have completed an expanded program of winter medical care for the remaining displaced persons in assembly centers in U. S. occupied Germany. Care will include full-scale hospital and dispensary services and an extensive schedule of preventive medicine based on standard public health procedures. The work will go forward under the supervision of the Public Health Branch of U. S. Military Government. Approximately 500,000 displaced persons are said to be in the U. S.-occupied zone at the present time.

Anticipating a severe winter with critical fuel shortages in Germany, UNRRA doctors are immunizing the displaced persons for typhus, diphtheria, typhoid, and smallpox. Supplies of the sulfa drugs are being stocked for pneumonia. The possibility of typhoid with the spring thaws is also being met now by sanitation measures to check the disease at its sources.

AUXILIARY

FALL BOARD MEETING

The annual fall meeting of the Board of Directors of the Auxiliary to the Medical Society of the State of North Carolina was held October 12 at Sanatorium, with the president, Mrs. Erick Bell, presiding. Forty-two members were present as the guests of Dr. and Mrs. P. P. McCain.

Regrets that they could not attend the meeting were read from Dr. Oren Moore, president, and Dr. Roscoe McMillan, secretary, of the State Medical Society.

Dr. Rachel Davis, of Kinston, Chairman of the Advisory Board, gave a short and informative talk on "Who Are Going to Be Our Future Doctors?"

Reports and plans of officers, committee chairmen, and councilors were discussed, with particular emphasis on medical legislation, post-war planning, juvenile delinquency, a physical fitness program, and the sponsoring of essays in the schools on pertinent health questions.

Mrs. D. M. Royal, Chairman for *Hygeia*, the only national publication devoted solely to problems of health, urged the sale of the magazine, stating that North Carolina was far from being "over the top."

The following nominating committee was elected to serve for the year 1945-46: Mrs. K. B. Pace, of Greenville, chairman; Mrs. A. C. Bulla, Raleigh; Mrs. Wingate Johnson, Winston-Salem; Mrs. George Mitchell, Wilson; and Mrs. John McLain, Dunn.

New by-laws, drawn by Mrs. J. B. Sidbury of Wilmington, were discussed and approved. These will be presented to the general assembly for adoption.

Prizes of $5.00 each were offered:

To the county first in paying all dues by Mrs. Erick Bell.

To the county making the largest gift to the McCain Bed at Sanatorium by Mrs. McCain.

To the county making the largest gift to the Stevens Bed at Black Mountain by Mrs. J. W. Vernon, of Morganton.

To the county making the largest gift to the Cooper Bed at the Eastern Carolina Sanatorium, in Wilson, by Mrs. K. B. Pace, of Greenville.

To the county making the largest gift to

the Student Loan Fund by Mrs. Frederick Taylor, of High Point.

Dr. Rachel Davis of Kinston offers $25.00 as an achievement prize to the district which shows greatest progress and achievement along all lines — organization, increased membership, donations to philanthropies, educational projects, subscriptions to *Hygeia* and the *Bulletin*, and so forth. The district winning the achievement prize will also win the Davis Cup. Should a district win this cup three years consecutively, it will become the property of that district.

Attractive yearbooks were presented to the members of the Board by Mrs. Bell.

This very successful meeting closed with a vote of appreciation to Dr. and Mrs. McCain for their splendid hospitality.

The Auxiliary will meet at the Carolina Hotel in Pinehurst May 1-2-3, 1946, in conjunction with the Medical Society.

BOOK REVIEWS

The New-Born Infant. A Manual of Obstetrical Pediatrics. By Emerson L. Stone, M.D., Associate Clinical Professor of Obstetrics and Gynecology, School of Medicine, Yale University. Ed. 3. 314 pages. Price, $3.25. Philadelphia: Lea & Febiger, 1945.

This well-written manual has two principal aims: "(1) To correlate and arrange in orderly fashion a mass of data that is otherwise scattered through a vast medical literature; (2) to emphasize at every possible opportunity the obstetrician's viewpoint and responsibility." The book has thirteen chapters, the first three covering the immediate care, the physiology and development, and the nursing care of the normal new-born infant. Three chapters on breast feeding, pathological aspects of lactation, and modified feeding are followed by a chapter on dietary disorders. The remaining chapters cover birth injuries, infections, disorders of special systems, and prematurity.

This book is written in an informal, easy-to-read style. It has many valuable references, which are placed at the bottom of the page rather than at the end of the chapter or book. There is also a useful index. The only typographical error found was on page 282, where the length of premature infants is recorded as 35 to 47 inches, rather than centimeters.

The book should be valuable to pediatricians, to obstetricians who do not have ready access to pediatric consultation, and particularly to general practitioners. The revision is up to date except for rare spots overlooked by the author: for example, although he gives a good brief discussion on the sulfonamides and mentions penicillin, yet in discussing meningitis under "convulsions" he states that the treatment is non-specific; in another part of the book, however, the therapy is adequately covered under "infections."

It is a surprise to find such a good pediatric book written by an obstetrician. Dr. Stone has apparently found it difficult to get pediatric consultation during the first six weeks of infant life.

Pulmonary Edema and Inflammation. By Cecil K. Drinker, M.D., D.Sc., Professor of Physiology, School of Public Health, Harvard University. 106 pages. Price, $2.50. Cambridge, Massachusetts: Harvard University Press, 1945.

This stimulating monograph contains four lectures—the Nathalie Gray Bernard lectures delivered in December, 1944, at the Bowman Gray School of Medicine of Wake Forest College—together with a fifth chapter on artificial respiration. This work brings together the laboratory findings and clinical experience of the last several years.

Throughout the first four chapters the importance of varying degrees of oxygen-want in the formation of pulmonary exudates and transudates is emphasized. Increased pulmonary pressure is always accompanied by some degree of oxygen-want, and increases fluid production or edema. The author states that the use of oxygen in medicine has failed because it is given inefficiently and is given too late. Oxygen masks are the best way to administer oxygen.

Dr. Drinker has repeatedly demonstrated in dogs that all the lymph from both lungs, except for a small area at the left apex, drains via the right lymphatic duct into the right subclavian vein; thus a true bottleneck is present in the pathway for removal of exudates and transudates from the lungs.

The minute anatomy of the lung is clearly discussed and beautifully illustrated from the author's own work and that of William Snow Miller. The functional aspect of the anatomical arrangement in both normal and abnormal states is especially emphasized. Dr. Drinker has shown by carefully conducted experiments that capillaries and arterioles damaged by burns may require one week for recovery.

In the last chapter artificial respiration is discussed, and many of the controversies regarding the best method to apply are mentioned. The author particularly warns against any method that uses the "pressure and suck" principle, and gives very excellent reasons for doing so.

A timely bit of advice for all undergraduate students, as well as for practitioners of medicine, is contained in his statement: "Since graduation (1913), insulin, liver extract, sulfa compounds, and penicillin have been discovered, what a group of constellations to light our hopes! But do not let these brilliancies cloud your perceptions of small, pressing, every-day matters."

This reviewer has never read a more stimulating and more practical monograph on any medical or related subject.

A Synopsis of Medicine. By Sir Henry Letheby Tidy, Extra Physician to H. M. the King, Consulting physician to St. Thomas's Hospital. Ed. 8. 1215 pages. Baltimore: The Williams and Wilkins Co., 1945.

This book is written in telegraphic outline style as a synopsis of medicine for review and brush-up. It is not a substitute for the larger textbooks of medicine. The section on typhoid fever seems much too long in relation to more common diseases. Arthritis is allotted only two pages, and the common cold is omitted. Treatment of the fungus diseases is totally inadequate. The author apologizes for omitting the advances in chemotherapy resulting from the discovery of penicillin. The interpretation of the role of alcohol in the production of cirrhosis is not that generally conceded in this country. There is confusion in the discussion of O antigen in typhus fever; a rise is suggested following T.A.B. (typhoid, paratyphoid) vaccine. The index is quite complete and adds to the usefulness of the book.

Clinical Biochemistry. By Abraham Cantarow, M.D., Professor of Physiological Chemistry, Jefferson Medical College; formerly Associate Professor of Medicine, Jefferson Medical College, and Assistant Physician, Jefferson Hospital; and Max Trumper, Ph. D., Lt. Commander, H(S), USNR, Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md.; formerly in charge of the Laboratories of Biochemistry of the Jefferson Medical College and Hospital. Third edition, revised. 647 pages with 29 illustrations. Price, $6.50. Philadelphia and London: W. B. Saunders Company, 1945.

This new edition of **Clinical Biochemistry** will be welcomed by those familiar with this popular book. It is not a laboratory manual; in fact, laboratory procedures are not described. Nor is it a systematic and logical presentation of fundamental knowledge; therefore it cannot substitute in undergraduate teaching or in the library of the physician for a textbook of biochemistry. As stated by the authors, the purpose of the book is to give to medical students in their clinical years and to progressive practitioners a clear understanding of the significance of chemical findings and laboratory tests in relation to clinical problems.

This third edition, issued five years after the second, incorporates most of the recent advances in both theoretical and practical knowledge. Many new topics have been added. Among them the chapter on "Hormone Assay and Endocrine Functions," prepared by Dr. A. C. Rakoff, is especially interesting and stimulating. It is a concise, clear, and really up-to-date presentation of the available information on this difficult topic. The extensive subject index and the bibliographic references at the end of each chapter have also been carefully revised and considerably enriched. The new material represents probably a 30 to 40 per cent increase in the text; yet, because of a change in type, the size of the book remains approximately the same.

The organization and distribution of the very large amount of information is also essentially the same as in the second edition. In this respect, however, the reviewer thinks that much superfluous repetition could have been avoided and a more compact and complete picture could have been obtained if the discussion of many subjects had not been distributed among various chapters. For example, separate sections on the galactose tolerance test are found under the headings of "normal alimentary reactions," "abnormal alimentary responses" and "hepatic functions"; the diabetic lipemia is discussed in the chapters on "Lipid Metabolism" and on "Diabetes." These and a few other deficiencies do not detract substantially from the value of the book which, because of the extensive information and its reliability, represents a useful contribution to the bridging of the gap between fundamental biochemistry and clinical medicine.

The Principal Nervous Pathways. By Andrew Theodore Rasmussen, Ph.D., Professor of Neurology, University of Minnesota Medical School, Minneapolis, Minn. Ed. 3. 73 pages. Price, $3.50. New York: The Macmillan Company, 1945.

This book presents in very usable form the functional paths through which nervous impulses travel. This presentation is accomplished by a series of diagrams and word schemata. The labeling of the charts is very extensive and adds to their usefulness. Diagramatic cross sections of different levels of the nervous system are cleverly drawn in, so that the book can be used in conjunction with anatomic atlases or other detailed works. If color could be used to trace the various systems without making the book unduly expensive, it would be unequalled in usefulness. The arrangement of material is essentially the same as in previous editions. Many refinements embodying the latest advances in knowledge have been made. This book is highly recommended for students and practitioners.

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1944. Cloth. Price, postpaid, $1.00. 238 pages. Chicago: American Medical Association, 1945.

The thirty-sixth edition of the Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association contains in compact form not only the reports of the Council which have been published in **The Journal** during the past year but also some additional reports which were not considered of sufficient importance to be published in **The Journal.**

The present volume is quite unusual in that it contains not one report concerning a product found unacceptable. However, there are five reports on the omission of products from **New and Nonofficial Remedies,** mainly for the reason that they have outlived their usefulness.

This volume is a veritable mine of information on subjects of general interest to the physician, pharmacist and the pharmaceutical manufacturer. The reports concern deliberations of the Council on general subjects ranging from the use of the electron microscope to the appraisal of new drugs. The report on pathogenic bacteria, rickettsias and viruses as shown by the electron microscope is noteworthy as being pioneer work in this field. The report on the "Current Status of Prophylaxis by Hemophilus Pertussis Vaccine" was prefatory to the acceptance by the Council of various brands of pertussis vaccines and pertussis vaccine combinations. The valuable and highly informative article on "Local Treatment of Thermal Cutaneous Burns" reports on the latest and best work in this field.

New and Nonofficial Remedies, 1945, containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on Jan. 1, 1945. Cloth. Price, postpaid, $1.50. 760 pages. Chicago: American Medical Association, 1945.

Each year a revised list of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association as of January first is published in book form under the title of **New and Nonofficial Remedies.** The book contains the descriptions of acceptable proprietary substances and their preparations, proprietary mixtures if they have originality or other important qualities, important nonproprietary nonofficial articles, simple pharmaceutical preparations, and other articles which require retention in the book.

Some fifteen or twenty newly accepted preparations appear in the 1945 volume. A large number of preparations have been omitted, mainly brands of official preparations. The general statement concerning these pharmacopeial preparations has been retained for the information of physicians.

As stated in the preface, the entire book has been scanned to bring it up to date with the latest medical knowledge. It is noted that the section "Articles and Brands Accepted by the Council but Not Described in N.N.R.," a vestigial remnant of which appeared in the 1944 volume, has now entirely disappeared. Many of the official preparations have been transferred to the body of the book and the others deleted.

One is struck by the large amount of medical information contained in this volume. Certainly no other compendium of comparable price contains so much.

Price of Drugs

Though the prices of other items involved in the cost of living have risen an average of 31 per cent, most essential drugs and medicine are selling at approximately the same levels as before the war, and in some cases have been drastically reduced in cost, Dr. E. L. Newcomb, of New York, executive vice president of the National Wholesale Druggists' Association, told New England drug wholesalers, meeting at the Parker House in Boston on October 10.

Light on Arsenic Poisoning

Some light on the way in which ascorbic acid in the blood stream reduces the effect of poisoning by trivalent arsenicals is thrown by Dr. E. W. McChesney of Winthrop Chemical Co., Inc. in an article appearing in the current issue of the Journal of Pharmacology and Experimental Therapeutics.

An excess of ascorbic acid (vitamin C) in the blood decreases the oxidation potential of the blood. The author concludes that retarded oxidation of the arsenical is the reason for the lessening of its poisoning effect. While it cannot be shown directly that oxidation of one of the groups in the arsenical increases toxicity, strong laboratory evidence in this direction is cited.

In Memoriam

DR. ROBERT ARNOLD SCHOONOVER

Dr. Robert Arnold Schoonover, who practiced among us for thirty-five years, passed away July 24, 1945, at the age of 65 years, and has been buried in this city.

There were few people in Greensboro who did not know him by reputation. There were hundreds who loved and esteemed him for what he was both as a man and as a physician. Anyone who came in sickness or trouble was sure of sympathetic understanding or material aid. Among his many lovable characteristics, none was more noticeable than his devotion to his profession. No sacrifice was too great for him when it was a question of his patient's welfare.

Dr. Schoonover was born in Bethlehem, Pennsylvania. He graduated in medicine from The University of Maryland and interned at the Sibley Memorial Hospital in Washington, D. C. He later became resident physician in this same hospital, filling the position with marked distinction. He came to Greensboro in 1912 and remained here until his death.

He was consulting physician to Greensboro College for twenty-one years; he took care of the surgical work for many of the manufacturing plants in this city. He was a member of every hospital staff in Greensboro and was a past president of the Guilford County Medical Society. He was an enthusiastic member of the Civitan Club and attended the West Market Street Methodist Church.

He is survived by his widow, Mrs. Kate Langston Schoonover, one daughter, Mrs. Herman H. High of New York City, and two granddaughters, Peggy and Susan.

On motion, duly seconded, it was

RESOLVED: That the foregoing resolution be spread upon the records of the Guilford County Medical Society, and copies thereof be sent to the family of the deceased and to the Secretary of the Medical Society of the State of North Carolina.

* * * *

At the regular monthly meeting of the Guilford County Medical Society held on September 6, 1945, the foregoing tribute of respect in memory of Dr. Robert Arnold Schoonover, offered by Dr. Wesley Taylor, was unanimously adopted.

Robert W. Matthews, M.D.
Secretary

Physician-Artists' Prize Contest

The American Physicians Art Association, with the cooperation of Mead Johnson & Company, is offering an important series of War (Savings) Bonds as prizes to physicians in the armed services and also physicians in civilian practice for their best artistic works depicting the medical profession's "skill and courage and devotion beyond the call of duty."

For full details, write to the Association's Secretary, Dr. F. H. Redewill, Flood Bldg., San Francisco, Cal., or Mead Johnson & Co., Evansville 21, Ind. Also pass this information on to your physician-artist friends, both civilian and military.

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PSYCHIATRY IN NORTH CAROLINA

DAVID A. YOUNG, M.D.

General Superintendent,
North Carolina State Hospitals

RALEIGH

The situation in North Carolina as regards psychiatric needs and existing facilities has been reviewed in the Thompson Report of 1936, and again by Dr. Maurice Greenhill this year[1]. In addition to these state-wide surveys, the report of the committee appointed by Governor Broughton to investigate the State Hospital at Morganton has been published. These different reports have agreed in this conclusion: That the psychiatric facilities within the state are inadequate, both for committed patients and outpatients, and alike for rich and poor. In normal times, the well-to-do have been able to obtain care in private hospitals, but these facilities are now overtaxed.

Perhaps one reason for the inadequate facilities for the care of mental patients is geographical: The state is large and long, and its population is widely disseminated and to a great extent rural and agricultural. The cities in North Carolina are smaller than those in Georgia or Virginia, and there are fewer large cities. This distribution of the population has not encouraged the private practice of psychiatry, and the few private sanitaria are of small capacity. Recently, however, the two four-year medical schools have been able to take the lead which should ordinarily have been taken by private practitioners of psychiatry. The state hospitals have not progressed as they should have, and the Thompson Report ranked them near the bottom of the list of states as to per capita cost and the ratio of physicians and other employees to patients. There may be other factors less easily discernible and less easily measured than geography and frugality. However, we know that in 1936 our state hospital system was far from the best, and there were few doctors trained in psychiatry practicing throughout the state.

Progress since 1936

In the following four years not a great deal was accomplished toward carrying out the recommendations of the Thompson Report regarding the state hospitals, except that through state and federal funds new buildings were erected at Goldsboro and the old buildings at Morganton were modernized and made fireproof. There were few changes in the workings of the staff, and almost no additional persons were employed in such fields as social work, occupational therapy, recreational therapy, and physiotherapy. A psychiatrist was obtained as Director of Mental Hygiene under the Department of Public Welfare, and he was active in setting up an educational program, in holding clinics, and in inspecting the private and state hospitals. The Rockefeller Foundation made possible the expansion of the Department of Neuropsychiatry at Duke to its present size.

After this period came the war, when no more buildings could be put up and when there were serious losses of personnel to the armed forces, to defense work, and to any other industry which paid high wages. Inasmuch as the total capacities of the hospitals had not been much increased, the present capacity was soon exceeded. All of the institutions are now overcrowded, and

Read before the Charlotte Mental Hygiene Society, October 3, and the North Carolina Neuropsychiatric Association, Durham, October 26, 1945.

1. Greenhill, Maurice H.: The Present Status of Mental Health in North Carolina, North Carolina M. J. 6:7-22 (Jan.) 1945.

most of them have waiting lists. As long as this unfortunate situation exists, many patients with better possibilities of recovery will be put off because the need for hospital care, or at least confinement, is more obviously urgent in the more advanced cases.

Facilities

In the short time that I have been connected with the state hospitals, I have been struck by the need for more space. The first Board of Control and the present one have, I believe, been similarly impressed. They have tried to meet the situation in slightly different ways, but with the same end in mind. The first board outlined a building program, but no new construction has been possible during the war and still may not be for some time. The present Board of Control has looked around to find any accommodations that could be used during this interim and has decided to develop the hospital at Camp Sutton for the care of older patients whose needs are simpler than those found in more acute, active psychiatric conditions. The lease of the Camp Sutton hospital and its use in this way seem feasible, and have received a good deal of approval in different parts of the state, together with some criticism. I hope that this criticism has come from persons less acquainted with the needs and with the possibilities for very good care at this unit.

Many of the doctors throughout the state may be acquainted with the Sutton facilities, but I would like to describe them briefly. The hospital is located on the edge of Monroe, near a main highway, and is well shaded by tall pine trees. It is of semi-permanent construction, fireproof, designed for 1,000 patients. Not all the wards will be put into use at once, and for the present the number of patients will be limited to 500. The buildings are so arranged that the patients can get out into the open when the weather permits, or can have space to sit inside in light, cheerful areas—sometimes in enclosed porches, though open porches are lacking. The operating rooms of the hospital will provide a good place for first aid and minor surgical cases. We have been fortunate so far in getting personnel to man the hospital, though the permanent full-time doctor in charge has not been selected. We hope to provide care here which will be equal to that in the other state hospitals, and in some ways will be better, since more space will be available in buildings of recent construction.

Personnel

The lack of sufficient personnel, especially trained personnel, has been serious during the war, but in some lines this situation is beginning to improve slowly. It has not been possible recently to get any new doctors, and there remains a need for all personnel, including doctors, nurses, and attendants. However, the staffs have been increased by the addition of trained and experienced social workers, occupational therapists, and dietitians. Plans extend beyond this to include dental hygienists, physiotherapists, and more graduate nurses. The services of workers in these different branches are generally considered standard equipment for a good state hospital. We hope to be able to get some doctors from the armed services as they are released. The war has focused attention on psychiatric problems and has given valuable psychiatric training to doctors in service. Probably many doctors who have become interested in this field for the first time while in service will want to continue in it after they are released.

The Contribution of Private Groups and Individuals

It is my hope that we shall be able to build up the quality of the state hospitals, and to make them the nucleus of the state's efforts in extramural psychiatry as well. The state's program should complement the work done by progressive communities and by private groups, and it should neither hamper these groups nor relieve them of their responsibilities. It may be that the communities and private groups will point the way to some new methods which the state can use, after they have been tried on a smaller scale.

It would appear that privately supported clinics and doctors in general practice, as well as psychiatrists, are already of considerable assistance to the state hospitals in helping patients to make some adjustment outside the hospital and in lessening the number for whom commitment is necessary. Both the clinics and doctors are in a position to acquaint patients with the functions of the psychiatric facilities and of psychiatrists. They are very often able to dispel prejudice and counteract some of the old wives' tales which usually discourage a patient seeking psychiatric help; they are also the ones to advise commitment when this is

necessary and to assist the family and patient, if possible, in accepting this as a necessary course. Even after the patient has been admitted to the hospital, the family will rely considerably on the clinic or the doctor for advice in various matters, but particularly concerning the length of time which the patient should spend in the hospital. Very often the function of the doctor or the clinic will be to encourage the patient to stay the necessary period of time in the hospital and to encourage the family to go through with their unpleasant duty of keeping the patient in the hospital when he is asking to leave prematurely. In some instances the family may come for advice as to the attitude which they should take towards the patient when he is released, and the way in which they may facilitate his re-adjustment.

It is natural that after the patient has been released from the hospital both he and the family should come to the clinic or doctor on whom he originally depended and that he should wish to re-establish the relationship which existed prior to his hospitalization. The formal supervision of patients released from the state hospitals is in the hands of the Department of Public Welfare, and this agency is of considerable help where no close relationship between a clinic or doctor and the patient has existed. Even where there has been some contact, the acceptance of the recently discharged patient by the family physician will probably be an important step in his re-adjustment. The patient is apt to worry a good deal about how the people in the community—and particularly his family physician, who knows so much about his illness and the reasons for it—are going to receive him.

The private agencies and practitioners are in a position to dispel some of the hopeless attitude which has existed in regard to mental illness. Many people have looked on it as being so disabling that the individual will never return to a useful or normal life. It is hoped that people will be made to realize that mental illness occurs with considerable frequency and that recovery is possible in many cases, as has been shown by the high incidence of neuropsychiatric disorders in the army and the relatively good recovery rate.

Private psychiatric clinics, psychiatrists, and general practitioners will serve the state and its psychiatric patients best through the examples they set by their interest in the field of psychiatry. Lay groups will be of great service in their support of these clinics and in their appreciation of the function of psychiatry in the community. All three groups together should be mutually stimulating and should affect the thought of the state. None of us should be satisfied until the care and treatment of psychiatric cases, both in and out of the hospital, is of the best and is consistent with the progressive attitude found in our state as a whole.

PARATHYROID ADENOMA: A CLINICAL AND BIOCHEMICAL DISCUSSION

Edited by FREDERIC M. HANES, M.D.
DURHAM

At a recent medical staff conference at Duke Hospital a case of parathyroid adenoma was shown and discussed by various members of the staff of the medical school.

Presentation of Case

DR. HENRY T. CLARK, JR.: The patient, E. T., B62492, was a 35 year old white married male who was first seen in the Orthopedic Outpatient Clinic on September 20, 1945, and was subsequently admitted to the medical service on September 26, 1945. He complained of weakness, vomiting, and pain in the knees and shoulders.

The patient enjoyed excellent general health and worked actively on construction jobs in several Southern states until the early fall of 1942. At that time, after a three-week period of weakness and of vomiting unassociated with abdominal pain, the patient was operated on in a small Florida hospital for "intestinal obstruction." Postoperatively the patient was told that his bowels had been "twisted." Weakness and occasional vomiting spells persisted, however, and it was three months before he was on his feet again.

The patient has never been in good condition since this episode. There have been periods during which he has felt fairly well and was able to do light work on odd jobs, but these have been interrupted by shorter periods when weakness and vomiting forced him to go to bed. In addition, he has had dull intermittent pain in his knees and ankles for almost three years, the pain being worse upon walking. In January, 1945, pain started in the patient's right shoulder and

From the Duke University School of Medicine, Durham, N. C.

has persisted until the present, limiting the activity of his right arm.

About eighteen months ago a firm, painless lump appeared in the patient's left tibia. It grew for a few weeks, then began to recede, and on admission had almost disappeared. Almost a year ago a similar though larger knot developed in the middle of the right clavicle and has persisted without regression.

In March, 1945, the patient took a job as timekeeper on a construction job and got along fairly well except for two brief periods when weakness kept him away from work. In mid-August, however, he was confined to bed by another spell of weakness, nausea and vomiting, and pain in his knees, ankles and both shoulders. There has been a gradual weight loss of 20 pounds.

Physical examination

The temperature was 37.5 C. (99.5 F.), the pulse 84, respiration 18, blood pressure 150 systolic, 88 diastolic. The patient was a fairly well developed, poorly nourished, young white man with a sallow complexion. He was lying quietly in bed, was alert and cooperative, and appeared chronically ill. He complained of pain in his knees and shoulders, and there was moderate limitation of motion of the right shoulder. The skin was dry and loose. No general glandular enlargement was noted. An irregular, bony hard, non-tender mass measuring 5 by 5 cm. bulged from the mid-portion of the right clavicle. A small slightly elevated area was also present in the upper third of the left tibia. The neck was slightly sore as a result of numerous recent attempts to feel a parathyroid tumor. Neither the thyroid nor a tumor mass was palpable. The lungs, heart and abdomen showed nothing remarkable.

Neurological examination revealed the sensorium to be clear. The musculature showed generalized flabbiness and hypotonicity. There were no sensory changes, and the reflexes were normal.

*Accessory clinical findings**

A lateral film of the thoracic spine showed osteoporosis and prominent striations, but no collapse of any of the vertebrae. A film of the abdomen showed fine stippling in both kidneys, apparently in the parenchyma, which probably represented calcium deposits due to hyperparathyroidism. There appeared to be a stone in the right kidney, possibly in the lower calyx. Films of the teeth showed a decrease in the density of the lamina propria of several of the teeth, and in others there appeared to be widening. This finding is also consistent with hyperparathyroidism.

The blood count showed 13 Gm. of hemoglobin, 4,100,000 red blood cells, and 9800 white blood cells, with 58 per cent segmented polymorphonuclears, 4 per cent nonsegmented, 8 per cent large lymphocytes, 24 per cent small lymphocytes, 4 per cent monocytes, and 2 per cent eosinophils.

An electrocardiogram taken on September 26, 1945, showed a heart rate of 78, with a PR interval of .18 sec.; the QRS interval was .04 sec.; there was a normal sinus rhythm with borderline left axis deviation; Q_1 was present, T_1 low upright, T_2 diphasic, T_3 inverted, and T_4 upright. The conclusion was that the low T_1 made the record abnormal.

The *clinical impression* was hyperparathyroidism.

Course in the hospital

On admission the patient was placed on a liquid diet. He vomited several times, and as a consequence received intravenous glucose in saline on three occasions. His joint pains were helped by codeine and aspirin. He complained of extreme weakness and was kept on strict bed rest.

Operation was performed on September 29, 1945, by Dr. G. B. Hodge, and a tumor about 2 cm. in diameter was found at the right lower pole of the thyroid. This proved to be a parathyroid adenoma. On the day following operation the serum calcium was 9.7 and the phosphorus 2.7 mg. per 100 cc. Recovery was uneventful. The patient was discharged on the fifteenth day after operation.

Medical Discussion

DR. FREDERIC M. HANES: When von Recklinghausen, in 1891, described the disease of bone which he called *osteitis fibrosa cystica*, the function of the parathyroid and thyroid glands was quite unknown. Following the removal of the thyroid by surgeons, for cosmetic reasons, some patients developed tetany. No sensible explanation of the phenomenon was forthcoming until MacCallum and Voegtlein, in 1908, demonstrated the relation of the parathyroid glands to cal-

* For blood chemistry see biochemical discussion by Dr. Taylor.

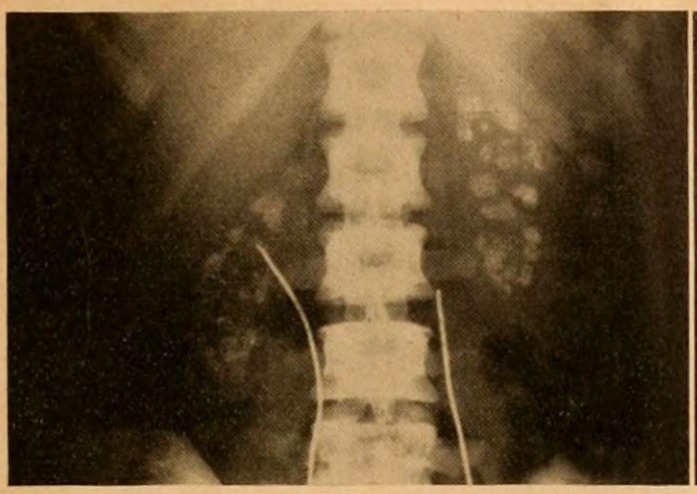


Fig. 1. Showing the characteristic delicate mottling due to calcification in the pyramids of the kidney (nephrocalcinosis).

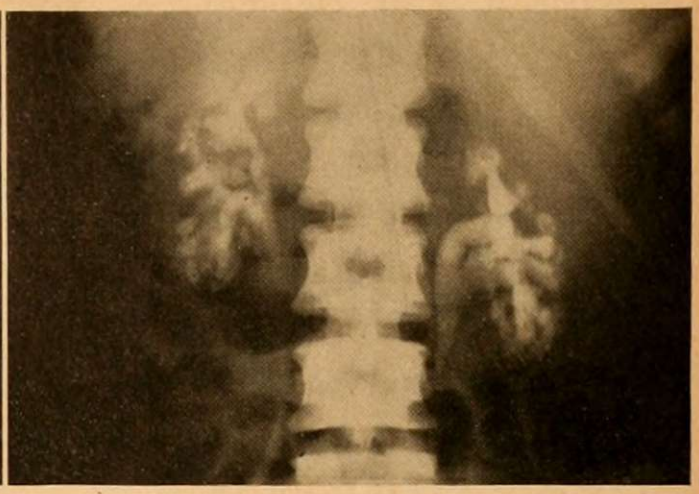


Fig. 2. Parenchymatous calcification of the kidney in parathyroid adenoma. The calices are seen to enclose the tips of the calcified pyramids.

cium and phosphorus metabolism. This discovery threw a new light upon the metabolic functions of the parathyroids, and in 1924 Collip and others prepared an extract of the internal secretion of the parathyroids, now called *parathormone.*

It was not until 1926 that the relation of fibrocystic osteitis, described by von Recklinghausen thirty-five years before, to parathyroid adenoma was demonstrated, although Askanazy, Erdheim and others had recognized for some years the association of adenomas of the parathyroid with the fibrocystic bone changes. Mandl, in 1926, removed a parathyroid adenoma from a patient suffering from *osteitis fibrosa cystica,* and observed regression in the bone changes and marked clinical improvement in the patient's general condition. Since that time our knowledge of the syndrome of parathyroid adenoma has been greatly enriched from many sources, especially through the work of Fuller Albright and his associates in Boston.

We were able in this clinic in 1939 to fill a gap in the natural history of the parathyroid adenoma by describing an instance of death from parathormone intoxication[1]. The patient, a woman of 49, came in complaining of tiredness and pain in the right chest. The correct diagnosis was not suspected until x-ray plates showed a stippling of calcium in the parenchyma of the kidneys (fig. 1 and 2) with generalized decalcification of the bones. The serum calcium ranged from 20 to 22 mg. per 100 cc., and the phosphorus on two determinations was 4.7 and 4.8 mg. per 100 cc. of serum. The temperature ranged from 38 C. (100.4 F.) to 38.5 C. (101.3 F.)—a fever now recognized as due to parathormone intoxication. The patient died suddenly, and postmortem examination revealed widespread necrosis and calcification of the kidneys, lungs and stomach, and especially of the arteries and muscle fibers of the heart. The clinical and pathological observations in this patient paralleled closely those reported in rats and dogs suffering from parathormone poisoning.

The clinical manifestations of parathyroid adenoma are seldom striking or dramatic and, unless the clinician is properly sensitized to the syndrome, an error in diagnosis is easily possible. When bone cysts and the characteristic parenchymatous calcification of the pyramids of the kidney are present, one naturally investigates the calcium and phosphorus content of the serum; but the usual complaints of tiredness and bone-pains, with or without polydipsia and polyuria, may not put the clinician sufficiently on his guard. As is so often the case, the correct diagnosis is the reward of suspicion; once the syndrome is suspected, diagnosis is, as a rule, not too difficult.

Adenomas of the parathyroid are rarely palpable, and the patient's symptoms may be increased by massaging more parathormone into the circulation, after the analogy of paroxysmal hypertension in chromaffin tumors of the adrenal.

The highly characteristic, though probably not pathognomonic, deposits of calcium in the pyramids of the kidney (fig. 1 and 2) are due to necrosis of tissue with subsequent calcification. They have a high diagnostic

1. Hanes, F. M.: Hyperparathyroidism Due to Parathyroid Adenoma, with Death from Parathormone Intoxication. Am. J. M. Sc. 197:85-90 (Jan.) 1939. (For full bibliography see Shelling, D. H.: The Parathyroids in Health and Disease, St. Louis, C. V. Mosby Co., 1935.)

value, and when hyperparathyroidism is suspected an x-ray plate of the kidneys should always be made.

The over-stimulation of osteoclasts by parathormone may lead to the development of bone tumors—osteoclastomas—, and unless their etiology is recognized a needless amputation may result. After removal of the parathyroid adenoma such tumors regress.

Biochemical Discussion

DR. HAYWOOD M. TAYLOR: When this patient was first seen in the Orthopedic Outpatient Clinic on September 20, 1945, the blood analysis showed:

Calcium	15.2 mg. per 100 cc.
Inorganic phosphorus	2.2 mg. per 100 cc.
Phosphatase (alkaline)	12.1 Bodansky units

A more complete chemical study made on September 27, after the patient was admitted to the medical service, yielded the following findings:

Serum	
Total calcium	17.7 mg. per 100 cc.
Ionized calcium	8.0 mg. per 100 cc.
Inorganic phosphorus	3.8 mg. per 100 cc.
Alkaline phosphatase	15.1 Bodansky units
Chloride as NaCl	544 mg. per 100 cc. (= 94 mEq.)
CO_2 capacity	56 vol. %
Total proteins	7.9 %
Albumin	4.5 %
Globulin	3.4 %
A/G ratio	1.3
Blood	
Nonprotein nitrogen	48 mg. per 100 cc.
Urea nitrogen	25.8 mg. per 100 cc.
Urea N/N.P.N. ratio	53.7
Urine	
Bence-Jones protein—negative	
Calcium excretion—increased about four times normal (rough estimate)	
Inorganic phosphate—0.416 Gm. per 24 hours (decreased)	
Protein — trace	

Chemically this patient presented the picture of hyperparathyroidism, as evidenced by the high serum calcium and the markedly increased calcium excretion in the urine. If one calculates the ionized calcium from the total calcium level and the total plasma proteins, using the McLean-Hastings[2] nomogram (fig. 3), one finds that the ratio of ionized calcium to non-ionized calcium remains essentially normal, the increase being approximately the same in both fractions. High calcium levels occur also in multiple myeloma, but the absence of Bence-Jones protein in the urine and of other supportive

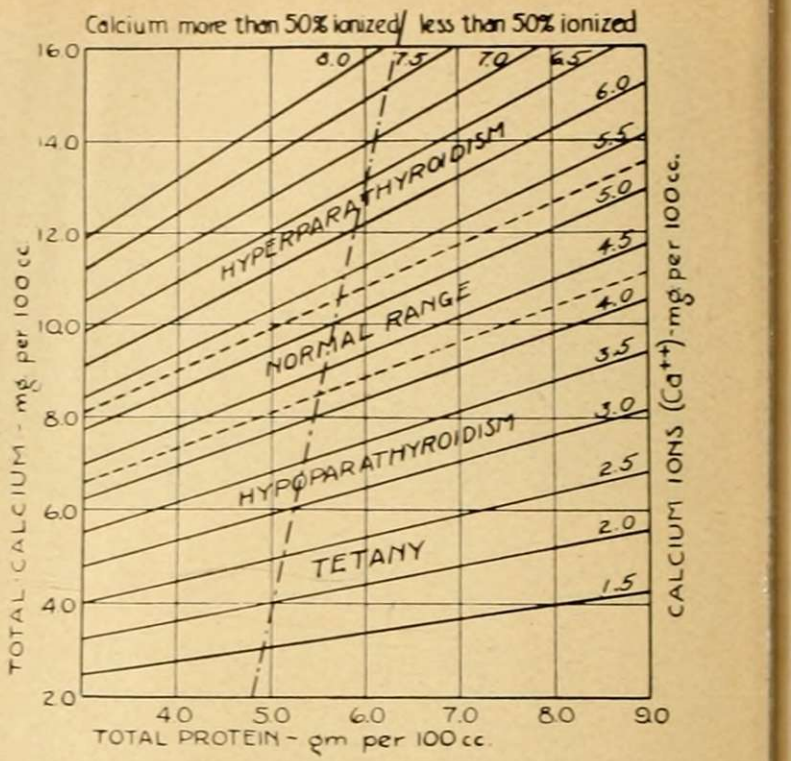


Fig. 3. The McLean and Hastings nomogram. If the total protein and total calcium are known, the ionized calcium (C++) can be read upon the chart.

parathyroidism there is usually a primary decrease in the inorganic phosphate level which is roughly proportional to the increase in calcium. This primary decrease in the phosphate level is usually followed by a secondary increase which is due to renal failure. The phosphate in this instance was steadily increasing, *a prognostic sign of bad import.* The blood nonprotein nitrogen (48 mg. per 100 cc.), urea nitrogen (25.8 mg. per 100 cc.),urea nitrogen/nonprotein nitrogen ratio (53.7 per cent), and the low phosphate excretion in the urine (0.416 Gm. per twenty-four hours) all give evidence of renal failure. The urea nitrogen/nonprotein nitrogen ratio is normally less than 45 per cent, and increases with renal damage. The steadily increasing alkaline phosphatase (12.1 Bodansky units on September 20, 15.1 on September 27) is characteristic of hyperparathyroidism. All of the above findings are indicative of hyperparathyroidism with superimposed renal failure. The renal failure possibly was due to necrosis and calcification of the renal tubular epithelium. Hemoconcentration and decreased blood flow through the kidney also may contribute to the renal failure.

The somewhat low plasma chloride level

per cent) was normal. The protein values were on the upper level of normal, and probably indicated slight dehydration.

In cases of this type one should follow carefully the serum calcium, phosphorus and phosphatase levels, the excretion of calcium and phosphorus in the urine, and the various kidney function tests. The urea nitrogen/nonprotein nitrogen ratio is one of the simplest and best tests of kidney function. After operation it is extremely important to follow the serum calcium content, as it may drop to very low levels and produce tetany.

DR. PHILIP HANDLER: The following discussion of the metabolism of calcium and phosphorus is included in the present conference in order to provide a suitable background for the rational consideration of any pathological state involving a disturbance in the normal metabolism of these two minerals. In its essence, the problem hinges about the fact that tertiary calcium phosphate is a substance exceedingly insoluble in water. In this sense it offers the same difficulty presented by uric acid, cholesterol, and other lipids.

All of calcium metabolism may be thought of as a dynamic equilibrium. The first problem, obviously, is the ingestion of a sufficient quantity of calcium. It is difficult indeed to construct any dietary regimen which will meet the calcium requirements unless milk and cheese are included. The absorption of calcium occurs largely in the first portion of the duodenum, where the intestinal contents are still relatively acid. An acid medium permits the existence of Ca $(H_2PO_4)_2$ and Ca HPO_4, both of which are considerably more soluble than the tertiary form, Ca_3 $(PO_4)_2$. Even so, such absorption will occur only in the presence of adequate amounts of vitamin D. The mechanism by which vitamin D effects this passage of calcium through the mucosa has not yet been elucidated.

There exist, largely in vegetable matter, a number of acids, notably oxalic, tartaric and phytic, which form insoluble calcium salts and tend to prevent the absorption of calcium. The presence in the intestine of fatty acids which form insoluble calcium soaps, as is seen in celiac disease, sprue, and obstructive jaundice, will also interfere with calcium absorption.

Normal plasma contains 9 to 11 mg. of calcium and 3 to 4.5 mg. of inorganic phosphorus (as phosphate) per 100 cc. in adults, and 4.5 to 6 mg. per 100 cc. in children. If these quantities were placed in water at *p*H 7.4 practically none would dissolve. Solution in plasma is made possible by the presence of protein, amino acids, and magnesium ions. The calcium in plasma exists in several forms. In normal plasma with a total protein concentration of 6.5 to 7.0 per cent, about half the calcium is bound to protein—largely to the albumin fraction—and, because it is not removed by dialysis, is referred to as non-diffusible calcium. The diffusible calcium is the fraction of physiological significance—for example, in the maintenance of normal neuromuscular function. This diffusible fraction is composed in part of true calcium ions (Ca++), and in part of a supersaturated solution of calcium phosphate. The ratio of diffusible and non-diffusible calcium is also dependent on plasma *p*H. A rise in plasma *p*H will decrease the amount of diffusible calcium, presumably through the formation of more Ca++-protein complex and more tertiary calcium phosphate. This reduction of the ionized calcium may produce tetany—for example, "gastric tetany." On the other hand a decrease in plasma *p*H increases the amount of diffusible calcium and may prevent tetany even when there is a low total calcium concentration, as, for example, in the moderate acidosis of sprue. The relationship between protein concentration, total calcium, and diffusible calcium at various levels can be ascertained by a nomogram (fig. 3).

Plasma may be regarded as a saturated solution of a salt, calcium phosphate, in equilibrium with a solid phase, bone. In a simple system of this sort this relationship is defined by the solubility product for the compound in question. Thus for a compound AB, $(A+) \times (B-) = Ksp$. Since Ksp is a constant, a rise in the concentration of A+ must automatically be accompanied by a fall in the concentration of B−. While the plasma-bone relationship is considerably more complex than this, it remains true that a rise in the plasma phosphate level will cause a drop in calcium, and *vice versa*. This fact explains the high calcium, low phosphate levels found in hyperparathyroidism. While the kidney is responsible for the bulk of phosphate excretion, calcium is largely excreted by the bowel.

Bone formation requires an adequate supply of calcium and phosphate (arriving at the osteoblasts from the diet by way of the plasma), an active carbohydrate metabolism

in the osteoblasts, the enzyme phosphatase, and a relatively alkaline *p*H (over 8). The calcium phosphate of bone and plasma are in constant dynamic equilibrium. Thus, forty-eight hours after the administration of sodium phosphate containing radioactive phosphorus, the latter can be found even in the densest portion of the shaft of adult long bones; it can be found in the provisional zone of calcification of growing bone within ninety minutes. Alkaline phosphatase is responsible for the hydrolysis of organic phosphate esters within the cartilaginous matrix. The local increase in inorganic phosphate concentration created by this reaction causes the calcium phosphate solubility product to be exceeded, with resultant precipitation. High alkaline phosphatase values in the plasma are found almost invariably when there is impairment of ossification or actual bone resorption from any cause.

The parathyroid hormone plays two independent roles. (1) It directly affects the kidney tubules, lowering the "renal threshold" for phosphate and thus increasing the urinary excretion of phosphate and decreasing the plasma phosphate concentration. This fall in plasma phosphate causes a rise in calcium, in accordance with the physicochemical principles stated above. A decrease in the plasma parathormone concentration results in an elevation of the renal threshold for phosphate, with a consequent increase in the plasma phosphate concentration and decrease in the plasma calcium concentration. (2) Independent of its effect on the kidney, parathormone directly stimulates bone resorption and osteoclasis, thereby sending both calcium and phosphate into the circulation. Hyperactivity of the parathyroids, or the administration of large amounts of parathormone to experimental animals, results in demineralization of the skeleton. The phosphate is excreted in the urine, and the calcium partly in the urine and partly through the bowel. During the course of hyperparathyroidism one finds high serum calcium and low serum phosphate levels, with moderately high blood alkaline phosphatase activity. This situation is accompanied by deposition of calcium phosphate in the soft tissues, most notably in the kidney. The precipitation of calcium phosphate in the tubules results in a loss of kidney function, and one observes high nonprotein nitrogen, calcium, phosphate, and protein concentrations in the blood. Because parathormone acts as a moderate diuretic and also increases the excretion of sodium, potassium and chloride ions, a patient with hyperparathyroidism is likely to show polyuria, polydipsia, nocturia, and dehydration.

In idiopathic hypoparathyroidism and following parathyroidectomy there occurs a rise in plasma phosphate, with a consequent fall in the serum calcium. If the ionized calcium falls below 2.5 mg. per 100 cc. of serum, tetany usually results (fig. 3).

The normal healthy parathyroid appears to be sensitive largely, if not exclusively, to the circulating ionized calcium level. Hence, any disturbance of calcium metabolism in which there is a tendency to low blood calcium levels is likely to be complicated by secondary hyperparathyroidism. In renal rickets and chronic Bright's disease, for example, the diminished phosphate excretion leads to an elevated serum phosphate level and a tendency to low serum calcium concentration. To combat the latter condition, hyperplasia of the parathyroid develops. However, since the diseased kidney cannot respond properly and there is little or no increase in phosphate excretion, hyperphosphatemia results. Bone resorption does occur, however, with consequent elevation of serum calcium and excretion of calcium through the bowel. In infantile rickets also there is a tendency to low serum calcium levels, because dietary calcium is poorly absorbed. Again the parathyroid responds, mobilizing calcium phosphate from the skeleton but also lowering the renal threshold for phosphate, so that one observes an essentially normal serum calcium concentration but a subnormal level of serum phosphate.

The above considerations undoubtedly apply to all other pathological states involving bone lesions and disturbances of calcium-phosphorus metabolism[3].

Radiological Discussion

DR. GEORGE BAYLIN: Radiologically the cardinal features of hyperparathyroidism are generalized decalcification of the bones, the appearance of cyst-like areas in both the long and flat bones, fractures and vertebral body deformities, and bone tumors (osteoclastomas).

3. (a) Shohl, A. T.: Mineral Metabolism, New York, Reinhold Publishing Corp., 1939.
(b) Duncan, G. G.: Diseases of Metabolism, Philadelphia, W. B. Saunders Co., 1942.
(c) Bodansky, M., and Bodansky, O.: Biochemistry of Disease, New York, Macmillan Co., 1940.

The decalcification is widespread, and marked thinning of the cortices and loss of medullary calcium cause the bones to become porous. Frequently the trabecular pattern is strikingly accentuated, but in later stages even these lamellae become decalcified, so that a ground-glass appearance of bone predominates. The vertebrae show a pronounced accentuation of the perpendicular bone striae surrounded by translucent areas of decalcification. Often there is biconcave deformity of the bodies, so that they resemble fish vertebrae. Compression fractures are common. The flat bones, especially in the skull, take on a granular appearance most prominent in the outer table. Careful stereoscopic study shows that the granular pattern is due to small areas of persistent normal bone surrounded by areas of decalcification.

The cystic changes are rather characteristic, though in themselves are not necessarily pathognomonic. They are usually well demarcated zones of translucency surrounded by a thin line of increased bone density. In the long bones they may cause expansion of the cortex to the point of actual loss of the cortical shadow. True tumors, usually of the osteoclastoma group, may develop. The cystic lesions and tumors are usually well delineated and show no evidence of malignancy, but in some cases true malignant changes may ensue. It is important to recognize the benign character of the usual lesions in order to prevent serious surgical errors. If a cyst has resulted in a complete absence of cortex and the x-ray shows some apparent perpendicular striations, the picture should be carefully evaluated. The absence of a soft tissue tumor mass, the well circumscribed medial border of the cyst or tumor, and the faint remnants of cortex beyond the apparent spicules, with an absence of subperiosteal reaction, all speak against malignancy. Conversely, a combination of the above factors should lead one to suspect malignant changes.

A skeletal change which has received scant attention, but which is quite important in the radiological survey, is the disappearance of the dense shadow of the lamina dura about the teeth. If, in the absence of any abscess or granuloma, the lamina cannot be demonstrated, then hyperparathyroidism must be suspected; for in other types of osteoporosis the lamina dura tends to persist—in fact, may often be even more prominent than usual.

Aside from the characteristic skeletal changes in hyperparathyroid disease, there are certain soft tissue aberrations of significance. The most striking change is the grouping of small, punctate areas of calcification in rosette fashion within the kidneys (fig. 1 and 2). These are actually outside the calices and are in the pyramids of the kidneys. Although this finding is occasionally seen in the absence of parathyroid disorders, it is very common in the disease under discussion. Some writers have stated that calculi in the calices and pelves are rather frequent, but in our experience true stones are very rare.

Another soft tissue change frequently noted by x-ray is widespread calcification in the vascular tree. Often the smaller vessels are involved to a greater extent than the larger ones.

Some workers stress the importance of careful x-ray study of the neck and mediastinum for tumor shadows, but we have thus far never been successful in demonstrating radiologically any tumefaction in cases of hyperparathyroidism.

Osteomalacia or osteoporosis of other types may cause some confusion, but the absence of cysts in these conditions makes differentiation possible. Moreover, the teeth will show an intact lamina dura, and skull changes will be absent or minimal.

Certain types of fibrous dysplasia may produce a somewhat similar picture, but the absence of generalized decalcification eliminates hyperparathyroidism. Moreover, the cases of polyostotic dysplasia tend to show unilateral skeletal changes, and there are no soft tissue abnormalities.

Multiple myeloma and metastatic carcinoma of bone are usually readily differentiated from the bone changes in hyperparathyroidism.

Surgical Discussion

DR. DERYL HART: The treatment of hyperparathyroidism is surgical, and consists in removal of the tumor or hypertrophied parathyroid glands. Precautions must be taken to avoid removal of all the parathyroid tissue, and following operation precautions must be taken to prevent the development of tetany.

The surgical approach is similar to that used for a thyroidectomy. It may be desirable, however, to use a longer incision and to cut across the ribbon muscles so as to give better exposure. In order to expose the

usual location of the parathyroid glands posterior to the thyroid, the lateral lobe of the thyroid on each side is mobilized by dividing the middle thyroid vein, and is then rolled medially. The recurrent laryngeal nerve should be identified so as to avoid injury to it. The tumor, after exposure, may be large and hard enough to be readily palpable, or it may be soft and molded in position, so that it is difficult to locate. However, it is always of sufficient size that microscopic examination of bits of tissue is not necessary. In the reported cases it has ranged in size from a hazel nut to an orange. It is sometimes cystic.

The greatest difficulty is in locating the parathyroid glands. Normally they are small, and they may vary widely in their location. They arise from the lateral anlage of the third and fourth pharyngeal pouches and, therefore, must be located between the middle cervical fascia (beneath the sternothyroid and sternohyoid muscles) and the prevertebral layer of the deep cervical fascia (on the anterior surface of the longus colli muscles). Since the structures in the neck migrate caudally with the growth of the vertebral column, the parathyroids may be located between these fascial planes anywhere from the pharynx to an indefinite distance down in the mediastinum.

The most frequent site of the tumors, which may be multiple, is beneath the inferior poles of the thyroid gland; next in frequency is the area beneath the superior poles. However, the tumors may occur within the thyroid gland, between the trachea and esophagus, posterior to the esophagus, or in the anterior or posterior mediastinum. If the tumor is not immediately evident when the thyroid lobe is rolled medially, a careful search must be made in these regions. In this search the terminal branches of the inferior thyroid arteries should be followed out, since they supply the blood to the parathyroid glands. The mediastinum may be examined by the method advocated by Churchill and Cope. One finger is inserted into the posterior mediastinum behind the esophagus and trachea, and one into the anterior mediastinum beneath the middle cervical fascia; the intervening structures can be palpated between the two fingers. Since the parathyroid tumor, even if it is in the mediastinum, receives its vascular pedicle from the neck, it can be delivered into the neck and removed.

Following operation there is danger of tetany, particularly in patients who have marked bony changes with a high serum phosphatase. As a prophylactic measure the patient should receive large amounts of calcium by mouth, and the blood calcium should be followed closely. If it drops to a dangerously low level (tetany is likely to develop at 7 to 8 mg. per 100 cc.) calcium gluconate or calcium chloride should be given intravenously every three or four hours. Parathyroid hormone should be given, but over a long period of time loses its effect. Viosterol in large doses also should be given. The danger of tetany usually is transient if parathyroid tissue has been left.

Urological Discussion

DR. E. P. ALYEA: The mere increase of calcium excretion in the urine is not in itself sufficient to cause a precipitation of stones in the urinary tract. The hormonal imbalance in hyperparathyroid disease upsets the calcium-phosphorus metabolism, and there is an excess excretion of calcium and phosphate ions in the urine. This in turn may disturb the colloid-crystalloid equilibrium, with the subsequent formation of calcified areas which are often quite typical in appearance. They are small, seed-like calculi occurring in the terminal end of the tubules in the pyramids and giving the appearance of small caps over the calices, so that the pyelogram shows a typical picture of a little calcified fluff capping each calyx (fig. 1 and 2). Stones also may form in the calices and pelves and are often bilateral, multiple, and recurrent.

In order to rule out this etiological factor in the formation of renal calculi, the serum calcium and phosphorus should be determined in all patients with multiple, bilateral, or recurrent renal calculi. For a time in this clinic these determinations were made on all patients with renal calculi, but the finding of abnormal blood calcium levels was so infrequent that this procedure was discontinued as a routine measure. The frequency with which hypercalcemia is found as an etiological factor in renal calculi varies in different clinics. In one it was found in as many as 10 per cent of all cases. However, our statistics in almost 2,000 cases of urinary stones show that less than 0.5 per cent were caused by hyperparathyroidism.

The x-ray picture described above is so typical that in any patients in which it is

present, even though the serum phosphorus and calcium may be within normal limits or equivocal, we feel that exploration of the parathyroid should be carried out. In 2 of our patients in whom no tumor was found on physical examination and in whom blood chemical studies were equivocal, a small parathyroid tumor was found at operation and removed.

While there are many known factors predisposing to the formation of urinary calculi, no single etiological factor is so definite as hyperparathyroidism. In this disease we know that the calcium-phosphorus equilibrium is disturbed and that a deposition of calcium-phosphate calculi in the parenchyma of the kidney, and sometimes in the pelves, results.

Orthopedic Discussion

DR. LENOX D. BAKER: This discussion of an unsettled endocrinological problem has been most interesting and informative. Frequently, as in the case shown today, the orthopedist is the first to see the patient with hyperparathyroid disease. After a complete survey the diagnosis usually is simple, but if only the clinical picture and the roentgenograms are considered, the diagnostic problem may be confusing. When attention is focused on the changes in a single bone, the picture in parathyroid adenoma may be that of a solitary cyst, enchondroma, or giant cell tumor. The roentgenograms and the clinical findings frequently resemble those of polyostotic fibrous dysplasia and may be not unlike those seen in dyschondroplasia (Ollier's disease), Paget's disease, multiple myeloma, or metastatic lesions. Other processes that may be mimicked are xanthomatosis (Hand-Schueller-Christian disease), primary renal insufficiency with hyperplasia of the parathyroids and cystic bone changes, senile osteoporosis, primary osteomalacia, or osteomalacia resulting from gastro-intestinal disturbances such as steatorrhea, in which there may be severe and rapidly progressing osteoporosis accompanied by pathological fractures.

I have brought roentgenograms of 2 patients diagnosed in this clinic as having polyostotic fibrous dysplasia. They both show the usual unilateral bone changes. One patient, a female, showed all the changes of Albright's syndrome, with brown pigmentation of the skin, precocious puberty, and other symptoms of endocrine imbalance. Even though detailed study of the roentgenograms usually will make it possible to differentiate polyostotic fibrous dysplasia from Recklinghausen's disease of bone, the two diseases may be confused by those not familiar with the clinical pictures and the roentgenological findings. Several reports in the literature describe patients who were subjected to exploration for parathyroid adenoma because of a mistaken diagnosis. Any patient who is seen with bony distortions, cysts, or cyst-like changes with pathological fractures should have a complete laboratory survey, such as has been done in the case presented today. A perusal of the literature will show us how closely bone changes are associated with other symptoms of endocrine imbalance.

ACUTE INCOMPLETE INVERSION OF THE PUERPERAL UTERUS

Report of Case with Postmortem Findings

W. C. THOMAS, M.D.
and
D. E. WARD, JR., M.D.
WINSTON-SALEM

The physiological process of childbirth causes many remarkable changes in the maternal body. In the great majority of the cases spontaneous retrogressive alterations occur following delivery, so that reproduction may again be possible. Infrequently, this swift-moving drama is interrupted by startling changes which may lead to a tragic ending. We present the following case to call attention to a rarely reported complication of labor.

Report of Case

The patient was an 18 year old white rural housewife. A most interesting fact in her family history is that both her mother and a maternal aunt "died during labor." Unfortunately, no further details of these deaths could be obtained. The patient's menstrual periods had been irregular and the flow scanty since the menarche at the age of 14 years. The last menstrual period was on December 23, 1943. There were no evidences of toxemia or of bleeding during the pregnancy. Labor began spontaneously at home on September 28, 1944, and lasted a total of eleven hours. During the first stage of labor, the patient received 3 grains

From the Department of Pathology, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C.

of Nembutal, ¼ grain of morphine sulfate with 1/150 grain of atropine sulfate, and inhalations of ether at frequent intervals. The position of the baby was right occiput anterior. The second stage of labor was carried out under ether anesthesia. A normal baby was delivered by outlet forceps. The placenta separated spontaneously and was expressed intact by slight pressure applied to the fundus of the uterus fourteen minutes after the delivery of the baby. Ergotrate (1/130 grain) was administered. The total blood loss was estimated to be 500 cc. The patient reacted from the anesthesia promptly and inquired about the baby. She then complained of nausea, and shortly thereafter vomited. This occurred again and several small blood clots were passed from the vagina. One hour after delivery she suddenly lapsed into a state of profound shock. Coramine was administered, the foot of the bed was elevated, and attempts were made to keep the body warm. No further vaginal bleeding occurred. The patient expired ten minutes after onset of the shock, before she could be hospitalized.

A postmortem examination was performed four hours after death. A slight amount of bloody fluid issued from the vaginal orifice. No blood clots were noted within the vagina. The cervix was in the usual immediate postpartum condition of dilatation; no lacerations were present. A relatively smooth, reddish, firm, rounded mass was located above the cervical opening completely filling it. The upper limit of the fundus of the uterus could not be palpated on examination of the abdomen. When the abdomen was opened, the uterine fundus was found to be incompletely inverted. All of the internal viscera were markedly congested with blood. Histological examination of sections through the entire uterus and vagina demonstrated that the placenta had been attached to the anterior and superior uterine walls. No pathological alterations were noted in the tissues of the myometrium on microscopic study. The diagnosis was acute incomplete inversion of the puerperal uterus and peripheral circulatory collapse.

Definitions

Inversion of the uterus means a turning inside out of the organ. In 85 per cent of the cases the inversion is complete and the uterine fundus protrudes through the vaginal orifice. Less commonly, as in this case, the uterus fails to pass through the cervical

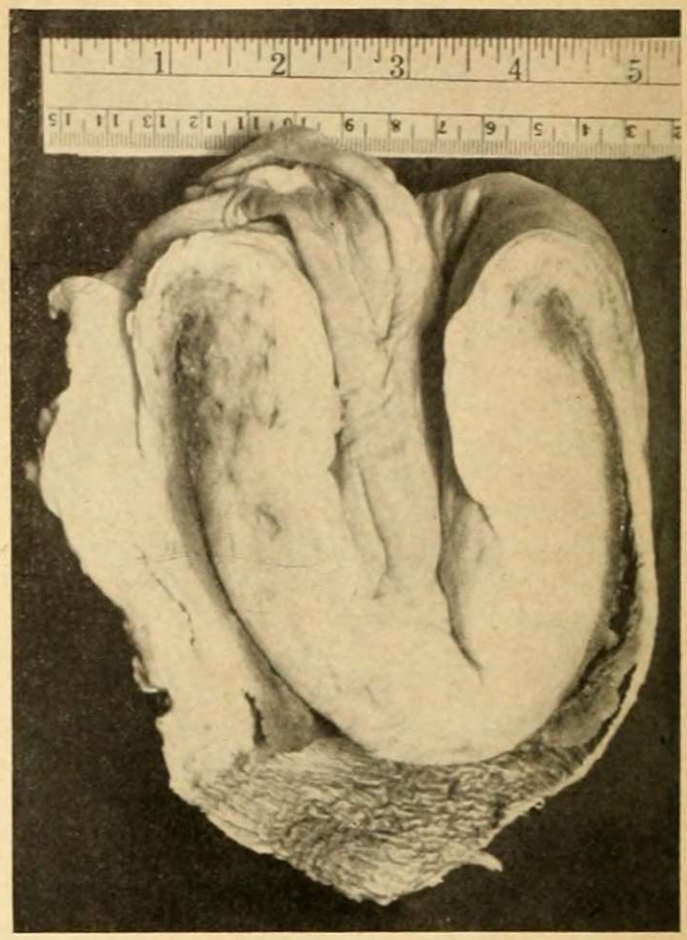


Fig. 1. Acute incomplete inversion of a puerperal uterus. Photograph of a sagittal section through the uterus, vagina, and urinary bladder.

opening, and the inversion is termed incomplete. The condition may be acute or chronic. If it occurs during the puerperium, it is referred to as puerperal in type. Other cases occur in association with neoplasms of the uterus and are designated as neoplastic uterine inversion. A very small group develop without relationship either to the puerperium or to neoplasms. We shall confine our remarks to the acute puerperal type of inversion.

Incidence

One case of acute uterine inversion occurs in every 50,000 deliveries, according to an average of the figures given in the various series of cases reported. The extremes reported in the literature are 1 case in 200,000 labors and 1 in 4,000. The true incidence will not be learned until the condition is universally recognized and reported as it occurs. The age period at which it occurs most commonly is between 20 and 30 years. Acute inversion develops most often in a primigravida. More cases are seen in private practice than on the service wards. No data are available in regard to familial or hereditary predisposition.

Cause

The mechanism of inversion is thought to be contraction of muscle fibers in the fundus of the uterus, with relaxation of the lower uterine segment. The predisposing factors and the manner in which this mechanism is brought into play are subjects of disagreement. One group holds that the condition is spontaneous in development. Several observations tend to add support to the claims of this group. Salvin[1d] reported 7 cases of spontaneous acute uterine inversion occurring in 3,500 consecutive births in cattle. Some cases have been reported in which the condition developed days after labor was completed. The non-essential role of the puerperium is stressed. And finally, the similarity of the process to intussusception developing in the gastro-intestinal tract is striking. The other group maintains that 90 per cent of the cases develop as the result of obstetrical mismanagement such as rough massage of the uterine fundus, strong traction on the uterine cord, and injudicious use of oxytocics. Both groups agree that in some instances there are abnormalities of the maternal and fetal structures which may contribute to uterine inertia. At any rate, the stigma of obstetrical mismanagement should be removed from these cases until by means of clear, critical, and unbiased observation the real cause of this condition is learned.

Diagnosis

Shock, hemorrhage, inability to palpate the upper limit of the uterine fundus, and protrusion of the fundus through the vaginal orifice are the signs most commonly encountered. The shock may occur without preceding hemorrhage and is usually far out of proportion to the actual blood loss. The vaginal bleeding may be quite profuse or very slight in amount. The fundus of the uterus cannot be palpated through the abdomen, whether the inversion is complete or incomplete. In most cases of complete inversion, the obstetrician is greatly surprised by the passage of the fundus with the placenta attached at the time he is expecting the placenta to be expelled. Acute inversion may occur as early as the fourth month of pregnancy or as late as the eighteenth day following delivery.

Treatment

Measures directed to combat shock should be instituted immediately. The uterus may then be returned to its usual position by non-operative or by operative means. The former method involves exerting manual pressure continuously against the inverted fundus until restoration is completed. This usually occurs in a matter of minutes, but contraction of the lower uterine segment may block the attempt. If operative methods are required, a laparotomy is performed and the uterine fundus is restored to its usual place by traction with or without incision of the lower uterine segment. Occasionally hysterectomy has been performed.

Prognosis

From 20 to 50 per cent of the cases of acute inversion of the puerperal uterus terminate fatally. The experience of any one observer is too small for definite conclusions to be drawn as to the relative efficacy of the various methods of treatment. Active and adequate therapy of shock and hemorrhage, which are responsible for the deaths that occur, should tend to lower the mortality rates. There are some reported cases, however, in which death occurred in spite of the availability and proper use of the best facilities.

Summary

1. A case of acute incomplete inversion of the puerperal uterus is presented in which postmortem examination of the uterus revealed no structural abnormalities. The family history of deaths occurring during labor is apparently unique in the literature.
2. A brief summary of available information on the condition is given.
3. A list of the most comprehensive articles dealing with the subject is appended[1].

1. (a) De Lee, Joseph B. and Greenhill, J. P.: The Principles and Practice of Obstetrics, ed. 8, Philadelphia, W. B. Saunders and Co., 1943, p. 818.
(b) McCullagh, W. McK. H.: Inversion of the Uterus: Report on 3 Cases and Analysis of 233 Recently Recorded Cases, J. Obst. and Gynaec. Brit. Emp. 32:280-297, 1925.
(c) Harer, W. B. and Sharkey, J. A.: Acute Inversion of Puerperal Uterus, Record of 21 Cases, J.A.M.A. 114: 2289-2292 (June 8) 1940.
(d) Salvin, M.: Etiology of Acute Inversion of Puerperal Uterus; Classification Based on Analysis of Literature and Animal Observation with Report of a Case, West. J. Surg. 50:147-155 (March) 1942.
(e) Phaneuf, L. E.: Inversion of the Uterus, Report of 5 Personal Cases, Surg., Gynec. and Obst. 71:106-109 (July) 1940.
(f) Jones, W. C.: Inversion of the Uterus, Surg., Gynec. and Obst. 16:632-650 (June) 1913.

FEMALE VENEREAL PROPHYLAXIS AND FEMININE HYGIENE

A New Applicator Using Soap With Sulfathiazole

Results in Cases of Vaginitis

William L. Gould, M.D.

Albany, New York

The venereal disease control program has met with greater success in men than in women, largely because the male has always had a ready means of prophylaxis. Education means much, but practical methods of prevention are also very important. I have always contended that, if the female were given a comparatively simple means of protecting herself against venereal disease, the results of the venereal disease control program would be equally as good in women as in men.

The ideal preventive should be small, compact, inconspicuous, and easy to use, yet highly efficient in its action. With this ideal in mind, I devised the applicator which is described below.

The Applicator and Its Use

The report of the Council on Pharmacy and Chemisty of the American Medical Association[1] shows that soap not only frees the skin of viable micro-organisms, but actually destroys some of these organisms, such as diphtheria bacilli, streptococci, pneumococci, meningococci, gonococci, and the Treponema pallidum. Its germicidal action against Neisseria gonorrhoeae is equal to that of a 0.5 per cent solution of phenol. The Council further reports that its activity is greatly enhanced by raising the temperature. The germicidal action of soap, plus that of a sulfonamide, should be a suitable combination for feminine hygiene and venereal prophylaxis.

The applicator which I have devised (fig. 1 and 2) is about the size of a toothbrush and, as it is packaged, looks somewhat like an ordinary toothbrush outfit. The stick itself is round, three eighths of an inch in diameter. One end is grooved to anchor the soap firmly. A cork attached to the other end fits into the container. The container may be colored, if desired, to hide the contents from view. When the soap is worn down, it fills the grooves of the applicator, so that a smooth surface is always maintained. The tip of the applicator is rounded to afford protection against injury to the mucosa. Instead of a wooden applicator stick, a cork stopper, and a glass container, plastic could be used to make the entire outfit or any part of it.

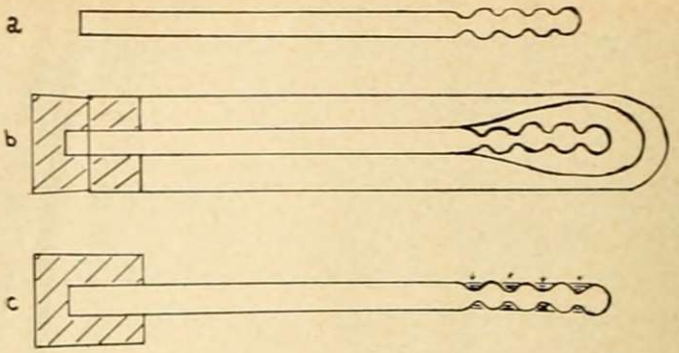


Fig. 1. Drawings of (a) applicator without soap attached, (b) applicator as it may be handily packaged, and (c) applicator after many uses. As the soap is worn down, it fills the grooves so that a smooth surface is always maintained.

The soap which I have used with this applicator contains 5 per cent sulfathiazole and 2 per cent sodium sulfite, the latter stabilizing the former. About 2 drams of soap are molded over the end of the applicator stick, each dram containing 3 grains of sulfathiazole. The antiseptic value of the soap itself is enhanced by the increased temperature of the vagina. Soap with a mild fragrance is preferred by those using the applicator.

The applicator may be repeatedly used with the comparative safety of a 5 per cent sulfathiazole ointment. Only a small amount of the sulfathiazole is worn down with each application (about 0.1 grain). As many as fifty applications may be made before the soap on the applicator is used up.

As a prophylactic agent, the applicator should be used before and after intercourse, being slowly inserted into the vagina in a rotary fashion and withdrawn in like manner, three to six times. The applicator is rotated simply by rolling the stopper between the fingers. The soap may or may not be moistened with water first. If the applicator is inserted and withdrawn slowly, the normal vaginal secretion affords sufficient moisture to leave a good soapy film in the vaginal vault. If a speculum is inserted immediately after the application, a fine layer of soap will be seen adhering to the walls of the vagina.

A douche may or may not be used, as desired, after application of the soap and sul-

1. The Report of the Council on Pharmacy and Chemistry of the American Medical Association, J.A.M.A. 124:1195-1201 (April 22) 1944.

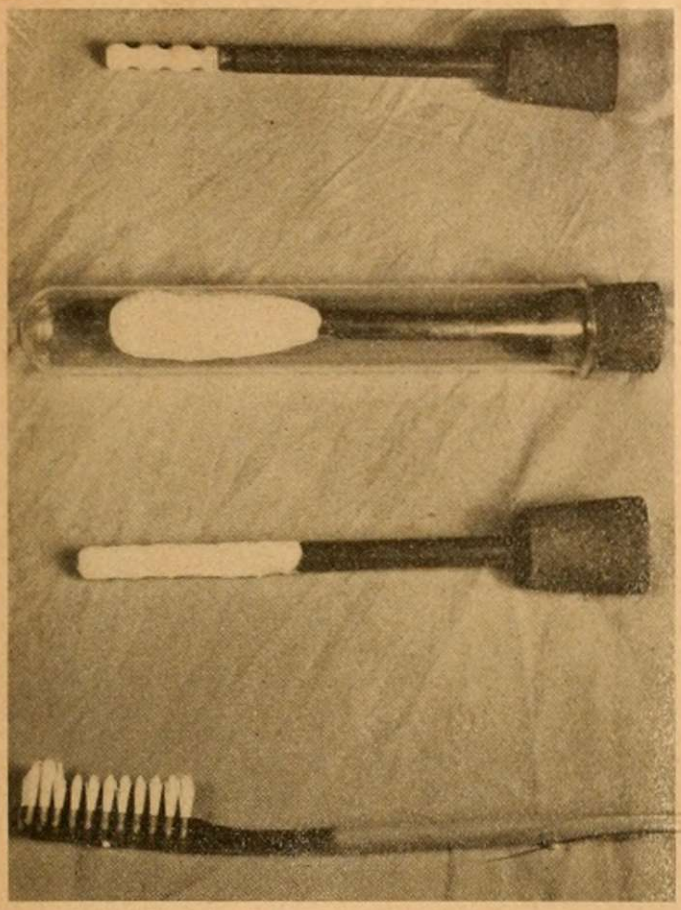


Fig. 2. Photograph of applicator without soap, packaged applicator, and applicator after many uses. A toothbrush is shown for comparative size.

fathiazole. The soap should be allowed to dry before the applicator is put back into the tube. Wet soap held within the container may soften and become displaced from the applicator.

The applicator has been used as a lubricant and antiseptic before bimanual and speculum examinations. It need not be confined to the use of this one combination—that is, soap and sulfathiazole with sodium sulfite. It is a simple means of effectively applying any medicament to any part of the vaginal cavity, including the cervix and vulva. The applicator should be used to coat the vulva before being inserted into the vaginal vault.

It would seem that this soap applicator may be used for any purpose for which the cumbersome douche is now used.

Treatment of Vaginitis

The soap and sulfathiazole applicator was tried in 30 consecutive cases of vaginal discharge, uncomplicated by any major pathological conditions. In patients with considerable discharge, the applicator was used according to the technique described three times a day. When the discharge was not so profuse, two applications daily were employed. After the initial instruction, the patient applied her own treatments. In none of the 30 cases was douching administered, the applicator being the only treatment given.

In 14 cases of moderate to profuse discharge, most of the secretion was stopped after three days. After five days, there was little or no secretion. In the 3 worst cases, the secretion was reduced about 50 per cent in five days. In these cases, the applications were continued thrice daily for ten more days, after which the discharge stopped.

In 16 patients with moderate to mild discharge, who used the applicator twice daily, there was little or no discharge after three days. After the cessation of the discharge, all patients were instructed to use the applicator only for prophylaxis or if any discharge recurred.

Four cases are reported briefly below:

Case 1. Mrs. J. K., aged 25, had had a profuse, irritating discharge for two months. The applicator was used for five days, the soap and sulfathiazole being applied not only to the vaginal canal, but also to the vulva, inasmuch as there was some tenderness about the left Bartholin gland. In three days the discharge became slight, and after five days it ceased.

Case 2. Mrs. P. D., aged 38, had had a moderate discharge for five years. This had become more profuse in the last six months. After fifteen days of treatment with the applicator the discharge had practically ceased, and the patient felt much better generally. Such symptoms as headaches, dizziness, weakness, and nervousness disappeared. In this case and a number of others, the vaginitis seemed to act as a focus of infection.

Case 3. Mrs. L. F., aged 24, had had such a profuse discharge for three years that she had to change her undergarments twice daily. Five years ago she was told that she had "ovary trouble." After the applicator was used three times daily for twelve days, the discharge had cleared up completely. The patient was also relieved of abdominal pains, headaches, lassitude and nervousness, and felt much better generally.

Case 4. Mrs. S. G., aged 43, had had a small amount of discharge irregularly for years. After she had used the applicator twice daily for two days, the discharge stopped. Since then, the applicator has been used only occasionally as was necessary.

Summary

A small, inconspicuous, easy-to-use vaginal applicator employing soap with sulfathiazole, and its use as a prophylactic and therapeutic agent are described.

The results obtained in 30 cases of vaginitis treated with the applicator are given.

THUMBNAIL SKETCHES OF EMINENT PHYSICIANS

JOSIAH C. TRENT, M.D., *Editor*

ANN ARBOR, MICHIGAN

THE EVOLUTION OF THE ASEPTIC PRINCIPLE IN SURGERY

XII

CONCLUSION

The aseptic ritual as finally worked out in von Bergmann's clinic, 1885-1892[1], was weak at two points: Neither the surgeon's hands nor the air over the operative field could be sterilized. Although most surgeons followed the aseptic technique recommended by von Bergmann, it was not uncommon for a surgeon to operate with an infected finger or hand. It was soon recognized, however, that the surgeon's hands were an important factor in the production of wound infection; the remedy generally recommended was a thorough washing of the hands for thirty minutes before every operation. Of course, thirty, or even sixty, minutes of scrubbing will not sterilize the hands. This fault in the aseptic technique was not corrected until a means of screening the hands completely from the wound was devised. Some European surgeons were using cotton gloves, perhaps as early as the 1880's, principally for the purpose of securing a firmer grip on their instruments, rather than with the idea of protecting the wound from contamination; the great Polish surgeon, Johann von Mikulicz-Radecki (1850-1905), a pioneer in asepsis, was apparently one of the first to conceive, some time before the year 1897, that these cotton gloves might be a useful adjunct to the aseptic technique[2].

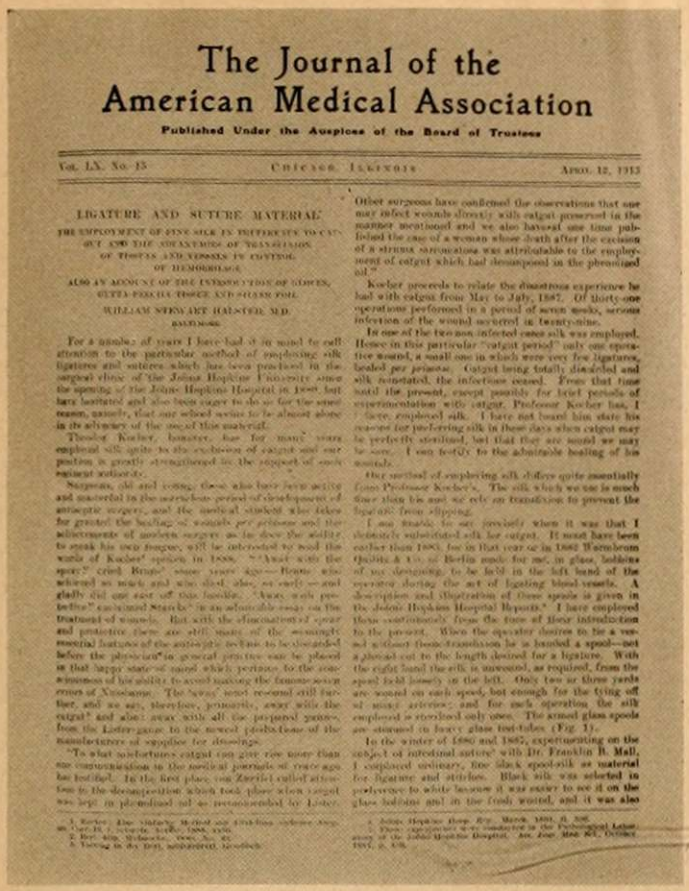
Meanwhile, however, superior devices had been evolved in America. Rubber gloves were introduced in William Stewart Halsted's clinic in 1889; at first, the scrub nurse alone wore them, to protect her hands from the irritant mercuric bichloride solution. Not until many years later did it become obligatory for all members of the operating team to wear gloves. In 1913, at the insistence of his residents and assistants, Halsted set down and published the operative technique which had been evolved in his clinic (see fig. 1). In this article[3] he described the introduction of rubber gloves, concluding with the remark that "operating in gloves was an evolution rather than an inspiration or happy thought and it is remarkable that during the four or five years when as operator I wore them only occasionally, we could have been so blind as not to perceive the necessity for wearing them invariably at the operating table."

William Stewart Halsted was born in New York City in 1852. After receiving his early education in private schools, he entered Yale University, where he was graduated in 1874. Although not a brilliant student, he was a distinguished athlete, and was captain of the football team in his senior year. He received his M.D. degree from the College of Physicians and Surgeons in New York in 1877, took a year's internship at Bellevue Hospital, then spent two years studying abroad, chiefly at Vienna. Upon his return to New York in 1880, he carried on a busy surgical practice for five years. He employed antisepsis in his operations and, in addition, advocated gentle handling of tissues and perfect hemostasis.

In 1884, after Carl Koller had described local anesthesia by cocaine, Halsted worked out a technique of regional anesthesia by cocaine nerve-block. Ignorant of the dangers of this new drug, he carried out experiments upon himself and became addicted to cocaine. Determined to break himself of the habit, he gave up his surgical practice and put himself in medical hands. He was unable to resume work until 1887, when he entered Dr. Welch's laboratory at the newly founded Johns Hopkins Hospital and Medical School. When the hospital officially opened in 1889, Halsted was made chief of the surgical clinic, and in 1890, professor of surgery.

In the clinic he applied the new principle of asepsis and elaborated his technique for securing perfect healing of surgical wounds by careful handling of tissues, the use of fine silk instead of catgut, hemostasis by

1. See previous sketch.
2. von Mikulicz-Radecki, J.: Das Operiren in steriliserten Zwirnhandschuhen und mit Mundbinde, Deutsche med. Wchnschr., 1897.
3. Halsted, W. S.: Ligature and Suture Material, J.A.M.A. 60:1119-1126 (April) 1913.



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LIGATURE AND SUTURE MATERIAL

THE EMPLOYMENT OF FINE SILK IN PREFERENCE TO CATGUT AND THE OCCASIONAL OMISSION OF TRANSFIXION OF TISSUES AND VESSELS IN CONTROL OF HEMORRHAGE

ALSO AN ACCOUNT OF THE INTRODUCTION OF GLOVES, GUTTA-PERCHA TISSUE AND GLASS TOOL

WILLIAM STEWART HALSTED, M.D.

BALTIMORE

Fig. 1. The first page of the article in which Halsted described the evolution of his aseptic technique, published in the Journal of the American Medical Association, April 12, 1913.

mosquito clamps, and transfixion ligatures. This technique is probably Halsted's greatest contribution to surgery. He gathered about him men of outstanding ability, and founded a school of surgery which is still referred to as the "Halsted school." In the limited space here available it is impossible to discuss even briefly all of his contributions to surgery. In addition to those already described, he devised classic operations for the radical repair of hernia and the radical removal of the breast for cancer. By the time of his death in 1922 he had achieved an international reputation and had exerted a profound influence on surgeons all over the world.

Early in the development of the aseptic technique bacteria from the nose and throat were recognized as a cause of wound infection. Sir William Watson Cheyne, one of Lister's pupils, states:

"It was quite clear in the early eighties that something should be done about the infection from the mouth and that we should be careful about speaking during an operation. As regards this point I myself was very careful for some time before masks were introduced. If I wished to speak to the onlookers I took a large swab or towel out of the 1:2000 sublimate lotion and threw it over the wound and then turned my head away from the wound while I said what I wanted to say."(4)

Why the idea of a gauze covering for the nose and mouth did not occur to many people at this time is difficult to understand. In 1897, von Mikulicz, influenced by the researches of Karl Fluegge on "droplet infection," began wearing a special mouth-mask during his operations(2). According to Sir D'Arcy Power(5), however, the discovery dates from 1900, when "Dr. William Hunter of the Charing Cross Hospital first advocated the use of gauze masks for surgeons and nurses to protect the patient from any dangers due to oral sepsis."

At present, of course, the wearing of masks during operations by all the individuals in the room is a matter of routine. It is well known, however, that no mask will completely prevent the emergence of bacteria from the nose and throat, and that these bacteria are still an important cause of infections in operative wounds. Harvey Grahame, in discussing the modern aseptic ritual(6), stated that "everything the surgeon, his assistants and nurses wear is free externally from bacteria. Contact with the surgical incision is made by only one thing which has not been specially treated—the air." Apparently Dr. Grahame was not aware of the fact that even the air had been "specially treated" by Dr. Deryl Hart(7), Professor of Surgery at Duke University. For the past ten years, Dr. Hart has irradiated the air in his operating rooms with ultraviolet light of a special wave-length which is highly bactericidal. His results have proved the effectiveness of this method in eliminating infections due to bacteria from the nose and throat.

Sterilization of the air thus completes the last important detail in our modern aseptic technique. There is one remaining weak point—the sterilization of the patient's skin. This detail, however, is of only minor importance compared with the great difficulties which surgeons have faced and solved.

J. C. T.

4. Cheyne, Sir W. W.: Lister and His Achievement, London, Longmans, Green and Co., 1925, p. 92.
5. Power, Sir D'Arcy: A Short History of Surgery, London, John Bale, 1933, pp. 58-59.
6. Grahame, Harvey: Surgeons All, London, Rich & Cowan Ltd., 1939, p. 365.
7. Hart, Deryl: Sterilization of the Air in the Operating Room by Special Bactericidal Radiant Energy, J. Thoracic Surg. 6:45-81 (Oct.) 1936.

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DECEMBER, 1945

WHAT PRICE INTERNATIONALISM?

In *Medical Economics* for November was published an article[1] that should be read by everyone interested in the future of this country. The editors of that journal say that it "is without doubt one of the most important articles published by *Medical Economics* in recent years . . . because it explains for the first time in any periodical the 'master plan' of the International Labour Organisation for socializing medicine in all countries of the world . . . this plan is already responsible for the establishment of state medicine in Chile and in New Zealand. Still more significant—though not generally known—is the fact that the Wagner-Murray-Dingell bill in this country was written largely by ILO leaders and that those same leaders are a powerful element in the current campaign for its passage."

The story of the International Labour Organisation sounds too fantastic to be true; yet the article was based upon information secured by a special investigator, and "every fact was checked and authenticated." Every doctor in North Carolina should read this article and tell his patients about it.

"The International Labour Organisation began as a private agency with headquarters in Basel, Switzerland"; then achieved official status as a subsidiary of the League of Nations. In 1934 a joint resolution sneaked through Congress made the United States a "member state" of the ILO. "The U. S. Government, like others, pays the expenses of its own delegates to the annual conferences. In addition, it pays dues to the ILO as a member state." And the taxpayer foots the bill.

The governing body, or the International Labour Conference, adopts certain recommendations "and copies of them are sent to every ILO member state." Such members—including the United States—must bring these recommendations before their legislatures within a year. "Nor does ILO authority cease there. Governments are bound by agreement to submit annual reports to the ILO, showing how ILO proposals have been acted upon."

At the International Labour Conference held in Philadelphia[2] from April 20 to May 1, 1944, seven recommendations, including one on medical care, were adopted. "Said President Roosevelt then: 'Under the constitution of the International Labour Organisation, these recommendations are forwarded to the member Governments for submission to their respective, competent national authorities. I shall accordingly submit them to the Congress in the regular way when certified copies are received.' "

The medical care program which was adopted for the guidance of the member states (including the United States) in developing their health services contained 114 detailed proposals. "A majority of the 114 proposals are embodied . . . in the Wagner-Murray-Dingell Bill of 1945."

Samuel Gompers, when he was president of the American Federation of Labor, withdrew from the American affiliate of the ILO (the American Association for Labor Legislation) and "denounced its objectives as un-American." Since then, however, two succes-

1. Labor's Program to Socialize Medicine Internationally, Medical Economics 23:36 (Nov.) 1945.

2. The delegates from this Government to the Philadelphia conference were Senator Thomas of Utah, a member of Senator Pepper's Sub-Committee on Wartime Health and Education, and Assistant Secretary of State Adolphe A. Berle, Jr., substituting for Miss Francis Perkins.

sive presidents of the United States have publicly paid tribute to the objectives of the ILO (witness President Truman's espousal of national health insurance in a special message to Congress).

Some wit has remarked that man shall not live by bread alone, but by catch-words. One of the most popular catch-words nowadays is internationalism. Under its aegis are gathered the advocates of many and varied ideologies, sure that it is broad enough to cover them all. Certainly no patriotic and far-seeing citizen would advocate our country's shirking its full share of responsibility for the maintenance of world peace. However, it is neither unpatriotic nor short-sighted to call attention to the machinations of those who are using the term "internationalism" to cover their attempts to socialize America. Such abuse of a noble word recalls Macaulay's famous phrase: "O Liberty! Liberty! how many crimes are committed in thy name!"

* * * *

HYPERTENSION

When the etiology of a disease is obscure, treatments are many. It is not surprising, then, that suggestions for the treatment of hypertension come thick and fast. Kempner[1] advises a diet composed of rice, sugar, fruit, iron and vitamins, with severe restriction of salt, fats, and animal proteins. Grollman and Harrison[2] revert to the old idea[3] of drastic salt restriction. Some observers advise reliance upon sulfocyanates[4], while others emphasize the predominance of heredity and the neurogenic element in the hypertensive syndrome. Surgery of the sympathetic nervous system has a definite but uncertain value. The removal of chromaffin tumors of the adrenal frequently produces a dramatic cure in paroxysmal hypertension.

It is probable that all of these suggestions are useful in selected cases, for hypertension is not a disease, but a symptom of diverse underlying pathology. It is irrational to apply the same therapy to all patients with a syndrome produced by different etiological factors, many of which are themselves uncertain and unproved.

The hypertensive pot is boiling, and this state of activity is highly desirable in the study of a syndrome which occupies the unenviable distinction of being one of the great killers of mankind.

Perhaps the safest course for the practitioner to follow is to adopt an eclectic attitude and individualize his cases, so far as modern means permit, remembering that sauce for the goose may not be sauce for the gander.

1. Kempner, Walter: Compensation of Renal Metabolic Dysfunction: Treatment of Kidney Disease and Hypertensive Vascular Disease with Rice Diet, III, North Carolina M. J. 6:61-87 (Feb.); 117-161 (March) 1945.
2. Grollman, Arthur; Harrison, T. R.; Mason, M. F.; Baxter, James; Crampton, Joseph, and Reichsman, Francis: Sodium Restriction in Diet for Hypertension, J.A.M.A. 129: 533-537 (Oct. 20) 1945.
3. von Mueller, Friedrich D.: Anniversary Issue in Honor of Eightieth Birthday, Muenchen med. Wchnschr. 85:1409 (Sept. 16) 1938.
4. Caviness, Verne S.: The Management of Hypertension, North Carolina M. J. 6:477-480 (Nov.) 1945.

* * * *

A COMMON OBJECTIVE

On November 19 President Truman submitted a National Health Program to Congress, and on the same day the latest version of the Wagner-Murray-Dingell bill was introduced in both houses. Two weeks later the House of Delegates of the American Medical Association passed a resolution advocating the development of a national voluntary prepayment care plan, designed to coordinate all prepayment medical care plans now in operation. In September the North Carolina Eye, Ear, Nose and Throat Society had adopted a resolution* urging the President of the Medical Society of the State of North Carolina to appoint "a State wide committee to include all medical specialties, hospital service plans and hospital administrators to recommend an augmented, specific and progressive medical and hospital care program."

In all these plans there is a common objective—that of providing a way whereby the people can have prepaid medical care. Messrs. Truman, Wagner, Murray, and Dingell may be quite sincere in thinking that the government-sponsored compulsory plan is best. The doctors of North Carolina and of the nation, however, *know* that voluntary insurance would cost the people much less, because those who administered it would feel more responsibility than would government bureaucrats; that it would ensure a far higher quality of service, because under it could be continued the sacred doctor-patient relationship; and that both doctors and patients would have far more self-respect, because they would alike maintain their independence.

A common objective, yes: but how divergent the methods of attaining that objective!

* This resolution will be published in the January issue of this JOURNAL.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

Bowman Gray School of Medicine of Wake Forest College

This 30 year old farmer's wife, para 0-0-0, was first seen in the outpatient department on June 5, 1945, complaining of "hurting in the breasts" for two months. She was having pain beneath the sternum made worse by walking, working, or eating. She had also been awakened from sound sleep by shortness of breath and a sensation of smothering which was relieved by sitting up. Physical examination revealed the temperature to be 98.9 F., pulse 80, respirations 18. The patient was overweight. The pupils reacted to light and accommodation; the eyegrounds were negative. The thyroid gland was diffusely enlarged to twice its normal size. A diastolic murmur was heard along the left sternal border, best at the junction of the second and third ribs. The lungs were clear. No peripheral edema was present. A cardiologist listened briefly to the heart and heard, in addition to what he took to be an aortic-diastolic murmur, a systolic murmur at the apex of the heart, but no mid-diastolic murmur. It was his impression that the patient had both mitral and aortic involvement. The electrocardiogram showed slurring of QRS_4, low voltage, deep S_2 and S_3, left axis deviation; Q_1 and Q_4 were present; T_1 and T_4 were inverted. The routine Kahn and Wassermann tests were both reported positive.

The patient was admitted to the hospital a month later with essentially the same complaint. The substernal oppression was always initiated by emotional upsets or exertion; it lasted not more than fifteen minutes, and was accompanied by some aching in the right arm only. The patient now gave a history of slight ankle edema. Physical examination revealed the blood pressure to be 120 systolic, 64 diastolic, the temperature 99.4 F., pulse 88, respirations 20. The patient was in no acute distress. The pupils reacted sluggishly to light and accommodation. The chest was clear to percussion and auscultation. The point of maximum impulse was in the fifth interspace at the midclavicular line; there was a grade 2 apical systolic murmur, a grade 1 aortic systolic murmur, and a grade 1 soft, blowing aortic diastolic murmur. No ankle edema was noted. The Kahn and Wassermann tests were positive on two occasions. The white cell count was 9800, with 48 per cent segmented polymorphonuclears, 5 per cent non-segmented, 4 per cent eosinophils, 41 per cent lymphocytes, 2 per cent monocytes. The husband's Kahn was negative.

The patient was digitalized slowly, 0.3 Gm. being given daily for seven days. Potassium iodide was given in increasing doses, along with water-soluble bismuth intramuscularly. The electrocardiogram on this admission showed a regression of the previous changes. The temperature and pulse were normal throughout the hospital stay. The respirations varied from 18 to 32 per minute. The patient was discharged on the ninth hospital day, essentially unimproved. It was planned to give eight weekly injections of bismuth before continuing further therapy.

The patient was readmitted eighteen days later at 1:20 a.m. *via* the emergency room. At 10 that night she had become dyspneic and had had substernal pain which was identical in nature to the previous pain, but which increased progressively in intensity and lasted two hours, until relieved by a hypodermic injection. Examination in the emergency room showed the blood pressure to be 100 systolic, 60 diastolic, pulse 92, respirations 32. The patient was dyspneic, pale, and her skin was cold and clammy. The heart sounds were distant and obscured by rales; no murmurs were heard; the point of maximum impulse was 2 cm. outside the midclavicular line. The liver was not palpable. Ten cubic centimeters of aminophyllin given intravenously on admission afforded some relief. The chest pain returned at 4 a.m., however, and was not relieved by nitroglycerin. Pantopon eased it, but her condition remained unimproved. She had substernal pain radiating down her right arm on two or three occasions during the day. That evening there were also radiations down the left arm to the elbow.

An electrocardiogram made on the day of admission revealed $S_{2,3,4}$ present, left axis deviation, T_1 slightly depressed and of low voltage, T_4 of low voltage and inverted. At this time the hemoglobin was 12.3 Gm., red cell count 3,650,000, sedimentation rate 17 mm. in an hour, white cell count 9200, with 65 per cent polymorphonuclears, 1 per cent eosinophils, 33 per cent lymphocytes, and 1

per cent monocytes. The urinalysis was negative.

About twenty-three hours after admission the patient complained of marked dyspnea without pain. She vomited twice and began having pains substernally and in her right arm. The heart rate was 150 per minute. Respirations varied from 30 to 35 per minute, and were shallow. The patient was given aminophyllin and pantopon with apparent improvement. Three hours later, however, her pulse became feeble and her heart ceased beating.

Discussion

DR. DAVID CAYER: This patient's initial complaint gives us two of the E's commonly associated with angina—namely, pain beneath the sternum brought on by *eating* or *effort*. She also gave a clear-cut history of paroxysmal dyspnea coming on at night, waking her from sound sleep and relieved by sitting up. We may assume from this that the patient was having episodes of left ventricular failure. Statistically, the most likely causes of left ventricular failure would be hypertension, aortic insufficiency, and coronary disease. The thyroid is described as being diffusely enlarged, and we would like to know if any other signs of hyperthyroidism were present. Since the patient is described as being overweight, however, and since she had no tachycardia, it is most likely that the other signs are not mentioned because they were negative. The first physical finding suggestive of an organic heart lesion was a diastolic murmur, which is described as being heard in the area typically associated with aortic insufficiency. It is of extreme importance in making an etiologic diagnosis in this case that we correctly interpret the systolic murmur which was said to have been heard at the apex of the heart.

The Wassermann and Kahn tests were reported positive. The electrocardiogram was interpreted as being consistent with an anterior infarct. However, the occurrence of clinical coronary heart disease or angina pectoris in a white female aged 30 is quite rare; in a series of almost 500 cases reported by White[1] considerably less than 1 per cent of the patients were white women of 30 or below.

The patient was admitted to the hospital about one month later, at which time she stated that now the third E of angina—*emotion*—would also precipitate her attacks of substernal pain, and for the first time she reported having had some slight ankle edema. The point of maximum impulse was in the fifth interspace at the midclavicular line; since she was reported as being obese, however, we cannot state that she had any actual cardiac enlargement. The murmurs previously described were still present, and in addition there was a grade 2 apical systolic murmur.

The patient was digitalized on this admission, and, following a course of potassium iodide, small doses of bismuth were begun very cautiously.

Eighteen days later, the patient was admitted by way of the emergency room because of dyspnea and severe substernal pain which she described as identical to her previous pain. The important points used in differentiating angina from myocardial infarction were now present, however: the pain was progressive in intensity, of two hours' duration, and was relieved only by hypodermic injection. The systolic pressure had fallen from 120 to 100—a drop which in a patient having clinical evidence of aortic insufficiency certainly represents "shock," due primarily to inadequate ventricular output rather than to a defect of return flow or filling of the ventricle. This conception is borne out by the description of the patient as being pale, cold, and clammy. Changes in the heart sounds usually do not accompany angina alone, and the sounds were described at this time as being distant and obscured by rales. The fact that no murmurs were noted probably means that the sounds were of such poor quality that none could be heard. The failure of nitroglycerin to relieve the pain, as well as the increased sedimentation rate and the vomiting, also substantiates the clinical diagnosis of myocardial infarction. An important observation made at this time was that the point of maximum impulse was 2 cm. outside the midclavicular line—a change of 2 cm. in a period of three weeks. This is certainly too short a time for hypertrophy to have occurred, and when all findings are considered, dilatation of the left ventricle is the most likely explanation. The day after admission, the patient complained of marked dyspnea and substernal pain; the heart rate rose rapidly, the pulse became feeble, and she expired.

The patient's clinical course is one of rapidly developing severe anoxemia of the car-

1. White, Paul D.: Heart Disease, New York, The Macmillan Company, ed. 3, 1944.

diac muscle. From the evidence we have, it might be due to either valvular insufficiency or coronary involvement. The blood pressure (which remained relatively normal until the final admission), as well as the absence of pulse changes in spite of the characteristic murmur of aortic insufficiency, is against marked valvular incompetency. In a person of this age and race, without known hypertension, the most likely etiologic factor would be rheumatic fever or syphilis. There is nothing in the history suggestive of any previous rheumatic infection, but relatively mild joint involvement may sometimes be overlooked in a young person who may nonetheless suffer severe cardiac damage.

The rapid progression of the disease, as well as the absence of any of the findings diagnostic of a stenotic valvular defect, certainly suggests syphilis. In a patient with syphilitic aortitis, the duration of symptoms may be extremely brief; not uncommonly, death is the first manifestation of the disorder. The patient's Wassermann tests were still strongly positive, although those done on the husband were negative. This finding is of considerable help in dating the possible onset of the patient's primary infection. She had been married for ten years and denied any extramarital contacts during this time, but did admit exposure prior to this. In all probability, the duration of infectivity of syphilis is about three years. We may assume then that the patient, since she did not infect her husband, probably acquired the disease at the age of 17 or even younger. This time interval is entirely compatible with the development of cardiovascular syphilis.

It would be of some interest to know whether or not the aorta had been fluoroscoped, since a description of dilatation of the first part of the aorta with an increase in expansile pulsation would again favor the diagnosis of syphilis. Such a finding would be unusual in rheumatic heart disease. It is well to remember, however, that the first portion of the aorta is often obscured by the heart shadow itself, and early anatomical changes may not be demonstrable. There is considerable doubt as to whether or not uncomplicated aortitis can be recognized clinically or radiologically. In general, by the time the characteristic murmur has developed and x-ray confirmation is present, the case can hardly be classed as uncomplicated.

Since some 20 per cent of individuals with syphilitic aortitis may have negative serology, this single finding must not be relied upon entirely, particularly in the presence of such clinical signs as the characteristic diastolic murmur, a change in the aortic second sound (which is described as being tympanitic or tambour-like), and a recently acquired aortic systolic murmur.

Syphilitic aortitis may pursue one of several courses. In about 55 per cent of the cases frank regurgitation develops, followed by congestive failure and death. About 22 per cent are characterized primarily by marked changes about the coronary ostia; the patients present themselves chiefly because of pain, and show electrocardiographic changes suggestive of infarct. I believe this latter course is the one which this particular patient followed. Why the Spirochaeta pallida has a particular affinity for the aorta and for the central nervous system is still not known. In any event, it invades the large blood vessels by way of the vasa vasorum—or perhaps in some instance by lymphatic extension—, and is followed by round cell infiltration, destruction of elastic tissue, and fibrosis. Then—depending on the localization and the balance between the processes of destruction and repair—it may produce aneurysm or infarction. The possibility of actual myocardial invasion must be considered, and some investigators have reported being able to demonstrate spirochetes in the heart muscle, although others have challenged this finding. In any event, actual gummas of the heart muscle are quite rare.

It is extremely important to remember that we are not dealing with an uncommon disease. It is estimated that some 240,000 people in the United States have cardiovascular syphilis, and that approximately 10 per cent of them die each year because of it. In all likelihood, when the clinical signs and symptoms make their first appearance, widespread organic change has taken place, and the examples of this disorder which show the classical water-hammer (Corrigan) pulse, the to-and-fro murmur over the femoral artery (Duroziez' sign), bobbing of the head, and bulging of the sternum represent impossible therapeutic problems. The presence of pain and nocturnal dyspnea in a patient with luetic aortitis is an extremely ominous sign. Actually, there is some question as to whether or not therapy at such a time is of any value, although the encouraging reports of some observers seem to warrant at least a trial. Specific treatment must be administered with extreme caution and

should probably never include arsenicals, but should be begun with iodides, followed by either mercury rubs or bismuth administered under careful observation. The advent of penicillin, which eliminates the toxicity of heavy metals, does not alter the principles of antiluetic therapy. Treatment with this drug can still produce marked Herxheimer reactions, or what Stokes speaks of as the therapeutic paradox or "fatal cure," due to further impairment of the coronary circulation by the too-rapid destruction of spirochetes or by an allergic response with edema. The answer to this problem lies, of course, in the early diagnosis and adequate treatment of syphilis itself. This disease may well be summed up in the words used by Stokes:

UBIQUITOUS — INSIDIOUS — DISASTROUS

Dr. Cayer's Diagnoses

1. Syphilis, generalized, tertiary stage.
2. Syphilitic aortitis with aortic insufficiency, stenosis of right and left coronary ostia, anginal syndrome, occlusion of right coronary artery(?), myocardial infarction, acute left ventricular dilatation.

Anatomical Discussion

DR. W. C. THOMAS: The patient did have an aorta which showed thickening of the wall and wrinkling of the inner surface. The orifices of the coronary arteries were completely occluded by the process in the aorta. The arteries were otherwise patent. The musculature of the heart was discolored by blood. Microscopic examination revealed marked destruction of the wall of the aorta. Foci of necrosis and perivascular round cell infiltrations were evidences of the type of inflammatory reaction of the tissues to the process of unknown cause. The heart muscle showed extreme capillary dilatation surrounding the myocardial fibers. No degenerative or inflammatory reaction was seen in the myocardium. Numerous sections were stained by the Levaditi technique, but no spirochetes were found in the tissues.

This case best fits into the picture of what is described as "luetic" aortitis. The literature on this subject is controversial and occasionally highly inflammatory[2]. The pathogenesis of the lesion is not yet satisfactorily explained. The dogmatists resort to the use of magic, mysticism, and folklore—which at the present time are masquerading under the names of "allergy," "virus," and "local tissue susceptibility"—to explain away those things which we do not understand. *Proper* use of the above terms, of course, is not condemned.

The myocardial changes illustrate the response of the myocardium to sudden occlusion of the coronary artery orifices. A slower developing process leads to the remarkable combination of complete coronary artery blockage and a normal myocardium[3]. This compensatory response by the thebesian veins has been emphasized by Wearn[4].

Anatomical Diagnoses

1. *Aortitis, acute and subacute; probably part of the syphilitic story*
2. *Occlusion of the orifices of the coronary arteries*
3. Congestion of the myocardium, marked

Closing Discussion

DR. GEORGE HARRELL: This case illustrates all too well a preventable complication of a common disease. It might be well to say something about the Wassermann test. As a negative report, it has the same value as any other negative finding. As Dr. Cayer has pointed out, it does not preclude the possibility of syphilis. Likewise, single or even repeated positive serological tests may occur in patients who do not have syphilis. False positive serological reactions are known to accompany many acute infectious diseases and to result from a too-sensitive reagent or even a laboratory error. Positive tests should be checked, if necessary, by having duplicate samples run by other laboratories, as well as by correlating the findings with the clinical information. A patient is not treated solely on the basis of a single positive serologic report, nor is there a routine form of therapy for all patients. In each case, the treatment must be "tailored" to fit the individual patient, and must be based on a complete, thorough examination and careful correlation of all the findings.

2. Saphir, O.: Syphilitic Myocarditis, Arch. Path. 13:266 (Feb.); 436 (March) 1932.

3. Leary, T. and Wearn, J. T.: Two Cases of Complete Occlusion of Both Coronary Orifices, Am. Heart J. 5:412-423 (April) 1930.

4. Wearn, J. T.: The Role of the Thebesian Veins in the Circulation of the Heart, J. Exper. Med. 47:293-316 (Feb.) 1928.

CASE REPORTS FROM THE TUMOR CLINIC

North Carolina Baptist Hospital

Case 10

Mrs. B., a 74 year old widow, was first seen in the outpatient department on June 1, 1942. Her chief complaint was a sore on her nose. This lesion had been present for a year, and she described it as a crusted area about the size of a dime. The crust would fall off from time to time and she assumed it was getting well, but the scab always formed again. For six months she did nothing about the lesion, but in the six months prior to her visit here she had seen several physicians, who prescribed various ointments. The last week in May she consulted still another doctor, who told her that the lesion was probably malignant and referred her to this hospital.

Her family history and past history were non-contributory. The review of systems revealed that she had been known to have arteriosclerotic cardiovascular disease, with anginal attacks, for a number of years.

Physical examination revealed her to be an elderly woman who did not appear at all ill. Her temperature, pulse, and respiratory rate were normal; her blood pressure was 128 systolic, 84 diastolic. The eyes, ears, mouth, and throat were not remarkable. On the apex of the nose was a flat, crusted lesion, 1 by 2 cm., with rolled borders. The ulcer was firm and did not seem to be attached to the underlying cartilage. Facial, parotid, submaxillary, superficial, and deep cervical nodes were not palpable, and the rest of the physical examination was essentially negative, except for numerous extrasystoles.

Tissue for biopsy was removed from the lesion on the nose.

Tumor Clinic Discussion

PATHOLOGIST: In spite of the gross appearance of this lesion, which is that of a squamous cell carcinoma, the pathological section reveals a typical basal cell lesion with projections of epithelial cells down into the subcutaneous tissue. The cells showed a small amount of cytoplasm, round nuclei, and occasional mitotic figures. This lesion appears to have arisen from a hair follicle.

RADIOLOGIST: In this type of carcinoma x-ray therapy gives very gratifying results. Basal cell lesions about the nose, if the cartilage is not involved, can be cured with minimal scarring by adequate x-ray therapy given early in the process. We usually give about 4,500 roentgen units of superficial therapy over a period of five days.

SURGEON: This lesion should be treated with x-ray. The radiologists get much better cosmetic results than do the surgeons in the treatment of basal cell carcinoma.

Tumor Clinic Opinion

Recommendation: X-ray therapy as soon as possible.

Prognosis: Excellent.

Credit: Type of carcinoma.

Follow-Up Note

On June 8, the same day that she was presented to the Tumor Clinic, Mrs. B. entered the hospital for x-ray therapy. A physical examination made at that time revealed the same findings as were noted on her previous visit. A urinalysis and complete blood count were normal. A chest fluoroscopy showed arteriosclerotic cardiovascular disease. There was no evidence of metastasis to the lungs.

In the next five days, Mrs. B. received a total of 4,854 roentgen units. She was discharged on June 14, 1942, in good condition. The ulcer healed nicely, with an excellent cosmetic result. She has now been well for three years.

Blood—The Journal of Hematology

The launching issue of **Blood—The Journal of Hematology**, to appear in January, will establish another significant "first" in the annals of American scientific publications. Devoted exclusively to the field of the blood and blood-forming organs, the new periodical will serve a notably advancing branch of medical practice and research that has never till now had an organ of its own in the Western Hemisphere.

Dr. William Dameshek of Boston is editor-in-chief, with Dr. Charles A. Doan, Columbus, O., Dr. Thomas Hale Ham, A.U.S., Edgewood Arsenal, Md., Dr. Roy R. Kracke, Birmingham, Ala., Dr. Nathan Rosenthal, New York, and Dr. Maxwell M. Wintrobe, Salt Lake City, as associate editors. Dr. George R. Minot of Boston is consulting editor. An advisory editorial board has been named from among ranking specialists to represent all aspects of hematologic work. International interest is assured through a board of foreign contributing editors. Editorial offices are at 25 Bennet Street, Boston, and business affairs will be in the hands of Grune and Stratton, 381 Fourth Avenue, New York, who will publish the journal. Waverly Press, Baltimore, are the printers.

The journal will be published bimonthly, constituting an annual volume of approximately 500 pages. Monographic supplements and special symposium numbers will also be issued.

MEDICOLEGAL ABSTRACT

J. F. OWEN, M.D., LL.B.
RALEIGH

HOSPITALS: *A mentally incompetent person is not entitled to payment by the state for work which he was persuaded, but not compelled, to do at a state hospital because of the therapeutic value thereof.*

This case was instituted first in the probate court, where the state sought to recover from the guardian of an incompetent person $811.39 for expenditures incident to the incompetent's care while a patient in a state hospital. The guardian in his answer entered a counter-claim and set-off for service rendered by the patient while confined at the hospital—namely, that of working in the laundry. It should be mentioned in this connection that at the time of his admission to the hospital the patient had no estate, but subsequently acquired $959.56 by inheritance. His entire estate at the time of the trial was $959.56 plus $1395.50, the latter amount being a paid-up insurance policy.

The hearing before the probate court resulted in an award to the state of the sum demanded and a denial of the counter-claim and set-off of the guardian of the incompetent person. The case was then appealed to the circuit court, where the judgment referred to above was affirmed. Subsequently the matter was brought to the attention of the Supreme Court, which had the following comment to make: "We conclude that the incompetent was persuaded and not compelled to work, which was the taking of articles of laundry as they came out of the mangle and folding them and placing them in form ready for use. According to the medical testimony this work had a therapeutic value for the patient, that it was better for him to be so employed than to be doing nothing. Such work afforded plaintiff no grounds for compensation." The orders of the courts above were therefore affirmed.

From a legal standpoint and from the facts presented, the courts could not do otherwise than to deny the claim of compensation for the patient. Medically, however, it is rather difficult to envisage how a full working day in a laundry could be construed to be solely a therapeutic procedure. It is usually assumed that a patient who has improved sufficiently to perform this type of work would be able to engage in some gainful occupation outside of an institution. This, of course, would depend upon all facts connected with the individual case. However, in this particular instance the court ruled that the charge of peonage and violation of the Federal Constitution was without basis, and ruled that the patient was not entitled to compensation for his work during the time he was confined to the institution. (V. 18 N.W. Reporter, p. 268. Michigan Supreme Court, spring term, 1945.)

Cancer Mortality

The mortality from cancer, particularly among women, is beginning to come under control. This is indicated by the experience among the many millions of Industrial policyholders of the Metropolitan Life Insurance Company and is confirmed by other sources. In the past decade, for example, the age-adjusted death rate from cancer among insured white females dropped 11 per cent at ages 1 to 74 years; virtually every important age group shared in the improvement. The current mortality from the disease among women in the broad age range 35 to 64 is the lowest in a third of a century, having dropped by one fifth during that period.

Among white male policyholders, too, a favorable indication is noted. The distinctly upward trend which has been manifested for many years has been stemmed. In fact, during the past decade, at no age beyond 25 years has the cancer death rate among these men shown any increase, and at some age periods the mortality has tended downward recently.

That the organized movement to control cancer is bearing fruit is evident from the fact that people, and more especially women, are seeking diagnosis and treatment earlier in the course of the disease, when the chances of cure are best. For example, among the patients at the cancer clinics in Massachusetts, the average delay between first symptoms and visit to physician was reduced from somewhat more than six months in the period 1927 to 1935, to 3.3 months in 1943.

To give further impetus to this movement, the Metropolitan Life Insurance Company is conducting a special campaign during October. At that time, the Company's more than 20,000 Field Representatives, in cooperation in many communities with official and voluntary agencies, will distribute to practicing physicians a special packet of new information on cancer. Included will be the American Cancer Society's booklet, "The General Practitioner and the Cancer Patient"; a reprint of recent studies of cancer mortality prepared by the statisticians of the Metropolitan; a reproduction of the Company's educational advertisement on cancer, "Cancer Has Its Hopeful Side!," appearing during October in national magazines with a combined circulation of about 30,000,000 readers; and a copy of the Company's new leaflet for laymen. "There is Something **You** Can Do About Cancer." As part of this "message of hope about cancer," Metropolitan Field Representatives will endeavor to place the latter publication in more than one million homes. In addition, these representatives will place in prominent locations in their communities 6,000 window cards urging early diagnosis of cancer.

TUBERCULOSIS ABSTRACTS

A Review for Physicians

ISSUED MONTHLY BY THE NATIONAL TUBERCULOSIS ASSOCIATION

VOL. XVIII DECEMBER, 1945 NO. 12

PATIENTS and their relatives very properly seek from their physicians the latest word on chemotherapy in tuberculosis. Inquiries reach flood stage whenever a new "success" story, often baseless or fragmentary, appears in the public press. Hinshaw and Feldman do the profession a service by presenting in condensed form the present status of drug therapy.

CHEMOTHERAPY IN TUBERCULOSIS

Efforts to develop an effective medicinal treatment for tuberculosis have undoubtedly been under way ever since this great human pestilence was recognized. The writings of ancient physicians contain repeated reference to herbs and other natural products alleged to be of therapeutic value. When Ehrlich and his contemporaries learned of the value of metallic salts in treating syphilis and parasitic diseases, hope was revived that some such preparation might be of aid in treating tuberculosis. The use of gold salts in the treatment of tuberculosis appears to have been an outgrowth of this line of research, but treatment with these has not withstood the test of time.

The unprecedented success of the sulfa drugs in treatment of many bacterial diseases of man renewed hope that tuberculosis might eventually yield to some such drug, and experiments on guinea pigs have given definite support to these hopes.

In 1939 and 1940 the sulfonamide drugs were shown to have some retarding effect on the rate of development of tuberculosis of guinea pigs, but in no instance did the drugs actually arrest the disease.

The drugs of the sulfone series (promin, diasone and promizole) were the first preparations to succeed in actually arresting tuberculosis in the highly susceptible guinea pig. This led to high hopes that sulfone drugs might be of value in the treatment of human tuberculosis. Several hundred tuberculosis patients have now received treatment with these drugs. Experience has tempered the early enthusiastic hopes of some physicians.

Most sulfone drugs, unfortunately, have a much more toxic effect on human beings than on guinea pigs. It is suspected that some sulfone drugs are altered in the human body and become ineffective. The possibility that sulfone drugs may be of aid in treatment of certain unusual varieties of human tuberculosis has not been excluded, but no definite place has been found for these drugs in treatment of the usual types of tuberculosis. The use of sulfone drugs under any circumstances has not progressed beyond the experimental stages.

The only sulfone drug which has been approved by the Federal Drugs Administration for sale is promin. This is available in jelly form for application on the surface of external tuberculous lesions. The effectiveness of promin has not been completely established even for this special use.

The amazing success of penicillin in treatment of several infectious diseases again aroused hopes that this or a similar antibiotic substance might be developed which would be effective against tuberculosis. Penicillin itself appears to have no effect on tuberculosis in guinea pigs or in man, but many other substances may be extracted from living micro-organisms which can suppress the growth of bacteria which produce disease.

Of these only streptothricin and streptomycin need now be considered. Streptothricin and streptomycin are both derived from soil-inhabiting fungi (*Actinomyces lavendulae* and *Actinomyces griseus*). Both restrain the growth of tubercle bacilli in the test tube. Streptothricin is somewhat toxic to guinea pigs and does not restrain the development of tuberculosis in these animals.

Streptomycin is well tolerated by guinea pigs, and extensive investigation has shown that it does inhibit in them the growth of experimental tuberculosis. In a third of the guinea pigs treated streptomycin apparently will eradicate advanced tuberculosis. In the

other two thirds treatment with streptomycin will bring the disease to a stage that can be regarded as arrested.

Adequate study of streptomycin in treatment of human tuberculosis remains to be done. Certain obstacles lie in the path of further progress along this line.

Many students of tuberculosis believe that results comparable to those noted in acute diseases, such as pneumonia, should not be anticipated in drug therapy of as generally chronic a condition as tuberculosis. In any disease successful treatment with drugs merely permits recovery by natural processes, and the promptness of such recovery depends on the nature of the disease process and the defensive powers of the patient.

Tuberculosis, however, by virtue of its usual chronicity produces destructive changes in tissues. Healing or repair of these tissues is exceedingly slow. Furthermore, in extensive tuberculosis of the lungs the destructive changes offer serious mechanical handicaps to healing. When such mechanical handicaps exist a corrective mechanical type of treatment, such as the conventional surgical collapse procedures, is used rather than treatment with a drug. The physician therefore does not hope for any alternative chemical remedy when surgery is indicated. Rest therapy, usually in the planned environment of a sanatorium, will probably remain the fundamental remedy for tuberculosis. No drug now available is likely to supplant rest completely. At this time it would appear foolish to discard the known benefits of rest treatment for the uncertainties of treatment with a new drug.

Patients are frequently eager to receive newly developed drugs even when the hope of benefit is remote. Usually it is impossible to secure such drugs under these circumstances due to present-day legal restrictions designed to prevent unwise distribution of drugs whose safety and efficacy have not been determined.

The distribution of new drugs for the necessary preliminary, laboratory and clinical trials is entirely in the hands of the manufacturers. Investigators receiving drugs for this purpose must have proper facilities to carry out the contemplated research accurately and safely. They also may be called on to account for all of the drug supplied and to submit complete reports of their researches which eventually are forwarded to the Federal Security Agency. Obviously, it is impossible for research workers to share their supplies of new drugs before the necessary research is completed.

The channels through which information about new scientific developments flows are direct and dependable. When a research worker has completed a project, he submits a report to the editors of one of the many medical and scientific journals, and usually publication of the results of his work follows within a few months. This enables other research workers and physicians to utilize promptly any of these new facts either in treatment of patients or in the development of new scientific information. The prompt publication of results is an ethical responsibility of the scientist to aid others engaged in similar problems. No one need fear that he will be denied any valuable secret remedy.

Newspaper reporters and authors of magazine articles recognize the news value of scientific discoveries. Occasionally they use sources of information less authoritative than those of established medical journals, to the chagrin of research workers and to the confusion of patients. Human lives may be lost needlessly if patients who have tuberculosis choose to forsake or refuse well-established methods of treatment in the hope of receiving remedies inadequately tried or of unproved effectiveness.

Chemotherapy in Tuberculosis, H. C. Hinshaw, M.D., and William H. Feldman, D.V.M., The NTA Bulletin, Oct. 1945.

Mississippi Valley Medical Society 1946 Essay Contest

The Mississippi Valley Medical Society is resuming its annual Essay Contest, which has not been held during the war. In 1946 it offers a cash prize of $100.00, a gold medal, and a certificate of award for the best unpublished essay on any subject of general medical interest (including medical economics) and practical value to the general practitioner of medicine. Certificates of merit may also be granted to the physicians whose essays are rated second and third best. Contestants must be members of the American Medical Association who are residents of the United States. The winner will be invited to present his contribution before the next annual meeting of the Mississippi Valley Medical Society to be held at St. Louis, Mo., September 25, 26, 27, 1946, the Society reserving the exclusive right to publish the essay first in its official publication—the **Mississippi Valley Medical Journal** (incorporating the **Radiologic Review**). All contributions shall not exceed 5000 words, be typewritten in English in manuscript form, submitted in five copies and must be received not later than May 1, 1946.

Further details may be secured from Harold Swanberg, M.D., Secretary, Mississippi Valley Medical Society, 209-224 W. C. U. Building, Quincy, Illinois.

BULLETIN BOARD

A FIVE-YEAR PLAN FOR CANCER CONTROL THROUGH A SIX-POINT PROGRESSIVE PROGRAM FOR THE STATE OF NORTH CAROLINA*

After much study and personal investigation of various clinics in several eastern states, your chairman has formulated certain recommendations for a North Carolina cancer control program.

Objectives

Such a program should have the following objectives:

1. The program should be stable, permanent, modern, progressive, and beneficial to the greatest number of citizens of the state.

2. The program should meet with the approval of the majority of physicians in the Medical Society of the State of North Carolina.

3. The Cancer Committee of the Medical Society and the State Board of Health should work together in that manner which will most effectively and efficiently achieve the ultimate aims of the program—to serve the maximum number of cancer patients and to safeguard the greatest number of citizens of the state.

4. The initial scope of the program should be limited, in order that a safe, solid, and efficient foundation may be established. From such a foundation unlimited future expansion will be possible.

5. Physicians, organizations and communities should be urged to enter cooperatively into the effort to standardize a system for examination of patients, detection of malignancies, confirmation of diagnosis, management of cases, plan of terminal care, and maintenance of the all-important follow-up records on individual cases. Under such a system the results can be tabulated by the State Board of Health and used as a guide in planning future work.

Methods

It has been a mistake in the past to attack cancer by applying the major part of our money and energy to cases already well developed and, in the majority of instances, developed beyond control. Our present aim should be to destroy the enemy (cancer) before it exists.

1. The first step should be the employment of a director of cancer control for the state of North Carolina. The director should be a well qualified physician with enough age and experience to mold physicians, lay leaders, and community organizations into workable units with an over-all single long-time purpose. This physician would have offices in the State Board of Health. He would be responsible to the secretary of the State Board of Health and to the Cancer Committee of the State Medical Society.

2. Through the State Superintendent of Public Instruction and the State Department of Education, a course in cancer prevention during the senior years should be required in every high school in the state. The course of instruction should be standardized, consisting of lectures in elementary anatomy and physiology, and discussions of the pathology, diagnosis and management of cancer. These should be supplemented by charts, films and microscopic demonstration of normal and pathologic tissue. The chairmen of the cancer committees of the local county medical societies should arrange for these courses to be given by qualified physicians who have furnished the material for the lectures and equipment for the demonstrations. The course should be held one hour weekly for three months and conducted in conjunction with the school health coordinated program now in existence. By such a method, knowledge of cancer and its control is acquired at an early and impressionable age, yielding maximum benefits in the years to come. It is estimated that in four years' time, the necessity for at least 50 per cent of the energy, time, and money now expended on education of the too-often uninterested and careless public would be eliminated.

3. The next step in the cancer control program should be the establishment of clinics for health maintenance and cancer prevention open to all citizens. In Philadelphia the International Cancer Research Foundation sponsors seven such clinics. In the first nine months of operation they examined 1663 apparently well persons—264 men and 1499 women; 886 of these were referred to physicians for medical and surgical care which would otherwise have been delayed weeks, months, or years until symptoms developed. The positive findings included 10 malignant

* Adopted unanimously by the Cancer Committee of the Medical Society of the State of North Carolina, Ivan Procter, M.D., Chairman, at a meeting held in Durham on October 23.

lesions, 91 suspected malignancies, 234 cervical lesions, 297 cases of cardiovascular disease, 213 skin lesions, 198 cases of hemorrhoids, 156 varicosities, 173 cystoceles, 131 rectoceles, 59 gastro-intestinal disturbances, 33 hernias, 29 papillomas, 18 fibromyomas, 18 myomas, 13 lipomas, 10 fibromas of the uterus, and 17 unclassified benign tumors. The teeth required attention in 48 patients and the feet in 120. In these clinics a minimum of thirty minutes is devoted to the examination of each patient.

4. The fourth step should be the establishment of tumor clinics for the diagnosis and management of suspected or developed cases of cancer. After the educational program and the clinics for health maintenance and cancer prevention are in satisfactory operation, we should then begin to establish diagnostic and treatment clinics, commonly called tumor clinics. Each of these should be under the direction of a physician certified by his national specialty board, and should meet the minimum requirements of the American College of Surgeons. In North Carolina these clinics can probably best be operated after the plan of the control program being employed in the state of Georgia. This over-all program is intended to attack the cancer problem in its incipiency.

5. The next step would be the establishment of nursing homes for the care of terminal cases of cancer. The Free Cancer Hospital in Atlanta is an example.

6. There should be developed a standard plan of record-keeping to be used by all units of cancer control within the state. A system of follow-up study on individual patients should be maintained through the use of full-time public health nurses. Data thus obtained can easily be compiled by the State Board of Health for statistical purposes and may be used in planning future control policies.

In conclusion, the six points of our plan of action should be as follows:

1. Leadership. Secure a qualified physician as director of the state program.
2. Education
   - A. Education of high school students through the State Department of Education. Work for legislative action to institute a high school course in cancer control.
   - B. Education of physicians through refresher courses at medical schools, clinics and lectures at medical centers, and traveling clinics to visit every county in the state.
3. Prevention. Establish clinics for health maintenance and cancer prevention.
4. Diagnosis and treatment. Establish tumor clinics.
5. Nursing care. Establish nursing homes for terminal cases.
6. Records. Institute a complete follow-up record system through full-time public health nurses.

Plaque for Dr. Hubert A. Royster

At the meeting of the North Carolina alumni of the University of Pennsylvania Medical School held at Pinehurst in May, 1944, Dr. Hubert A. Royster was the luncheon speaker.

Since 1944 was the fiftieth anniversary of Dr. Royster's graduation from the University of Pennsylvania, it was suggested by Dr. Frank K. Sharpe of Greensboro that some recognition be made of Dr. Royster's connection with the University of Pennsylvania as a student, and with the medical and surgical profession of North Carolina during the ensuing years. This idea was enthusiastically and unanimously adopted.

After consultation with the University of Pennsylvania authorities it was decided to place a plaque on the wall of one of the University of Pennsylvania hospital rooms. With the aid of Dr. Robin C. Buerki, superintendent of the hospital, a plaque was prepared and fixed in place. This plaque reads as follows:

HUBERT ASHLEY ROYSTER M.D.
RALEIGH, NORTH CAROLINA
Class of 1894
BRILLIANT STUDENT PIONEER SURGEON
FIRST STUDENT TO SERVE AT THE
SOUTHEASTERN DISPENSARY
July 1893

Presented by the North Carolina Alumni of The University of Pennsylvania Medical School on the occasion of the Fiftieth Anniversary of Doctor Royster's graduation

Dr. Royster lives in Raleigh, and while he is not now engaged in practice, he is actively interested in the doings of the Pennsylvania Alumni Association, of the state and county medical societies, and of the Raleigh Academy of Medicine.

This recognition of Dr. Royster is an indication of the high regard and personal esteem in which he is held by the North Carolina alumni of the University of Pennsylvania Medical School, and by all his colleagues in North Carolina.

News Notes from the North Carolina Tuberculosis Association

The second annual Postgraduate Institute for Negro Physicians, sponsored by the Forsyth County Tuberculosis Association and the Twin City Medical Society, was held in Winston-Salem on October 31 and November 1. Thirty-nine physicians registered for the Institute and much interest was manifested. The program included scientific sessions on tuberculosis, obstetrics, gynecology, and pediatrics. Discussion leaders were specialists in these fields and came from various places throughout the country. In addition to the scientific sessions a panel discussion by visiting physicians was held at the Winston-Salem Teachers' College for community leaders.

State Board of Medical Examiners

At a meeting of the State Board of Medical Examiners, held in Raleigh on November 7, thirty-nine physicians were licensed by the endorsement of credentials. One physician was refused permission to take the State Board examination because he did not have a certificate from a grade A medical school.

Dr. Roy McKnight of Charlotte was elected president of the board.

State Hospitals

Dr. David A. Young, general superintendent of mental hygiene, has announced the appointment of Donald S. Carter of New York City as practicing clinical psychologist for the state hospitals.

News Notes from the State Board of Health

Dr. Carl V. Reynolds, State Health Officer, has issued this statement:

Diphtheria deaths in North Carolina through September of this year increased 60 per cent over the corresponding period of 1944, while there has been an increase, to date, of 42 per cent in the number of cases reported. During October an average of twelve diphtheria cases was reported every single day—one every two hours.

Numerically, 580 cases of diphtheria were reported in North Carolina from January 1 through September 30, 1945, compared with only 338 for the corresponding period of 1944, an increase of 242 this year, through September. The total number of cases reported during October was in excess of 375, bringing the 1945 total, to date, up to nearly 1,000 cases.

Of the 35 diphtheria deaths reported in North Carolina through September of this year—an increase of 13, or 60 per cent, over last year—23 of the victims died because of parental neglect. To put it still more bluntly, these were illegal deaths, because they represented children 5 years of age and under—all born at least a year after the passage, in 1939, of the state law which provides that every baby born in this state shall be immunized against diphtheria between 6 and 9 months of age.

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The following item appeared in the **Charlotte Observer** recently:

"Back in 1895, currently with Roentgen's great discovery, Dr. Henry Louis Smith, then a professor of physics at Davidson College, made the first X-ray picture in the United States.

"Dr. Smith was a professor at Davidson College when news of the X-ray was cabled to America. Roentgen had invented it, but Dr. Smith realized the German physicist was making pictures of the human body through the use of the Crookes' tube, which he too had in his laboratory. Using this tube, Dr. Smith constructed an X-ray apparatus and then made the first X-ray picture in the United States."

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Dr. S. D. Craig of Winston-Salem has been assigned to direct the surplus properties program of the State Board of Health, with headquarters in Raleigh. Dr. Craig will act as liaison officer in the handling of matters affecting surplus government property that can be used by hospitals and public health agencies in North Carolina.

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During the year 1944 there were 1132 residence deaths from tuberculosis in the state. Of this number 684 or 60 per cent were non-white, while 448 or 40 per cent were white. The white death rate was 16.5 per hundred thousand, while the non-white death rate was 64.8 per hundred thousand population. Thus it appears that the death rate was in the ratio of almost four non-white to one white.

At least one-fifth of the population of our state is located in the cities and towns of 10,000 population and over. This urban population accounts for at least one-third of our annual tuberculosis deaths. This means that the city tuberculosis death rate is at least twice as great as the tuberculosis death rate in the state as a whole.

A study of tuberculosis death certificates for 1944 reveals that only three counties in the state escaped. These three—Alleghany, Clay and Graham—are all mountain counties. All other counties report from 1 to 80 deaths from tuberculosis during the year. By averaging the deaths for each county in the state for the five-year period, 1938-1942, we find that 38 counties exceeded the average death rate for the whole state for that same period. Thirty-five of those 38 counties with high rates are found in the eastern half of the state. With the exception of a few of the larger towns, this probably parallels rather closely the distribution of the Negro population of the state.

Western North Carolina Medical Center

The Western North Carolina Medical Center for the treatment of venereal diseases will be transferred from the Charlotte Sanatorium to the site occupied by the hospital unit at Morris Field near Charlotte on January 1.

News Notes from the Bowman Gray School of Medicine of Wake Forest College

Dr. William L. Venning, Instructor in Pediatrics, resigned on November 1, 1945, to enter the private practice of pediatrics in Charlotte.

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Dr. Robert B. Lawson, who has been on a year's leave of absence on fellowship with the National Foundation for Infantile Paralysis working in the laboratories of the William Hooper Foundation at the University of California, will return to his position as Assistant Professor of Pediatrics on January 1, 1946.

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Through the generosity of Dr. Frank Lock and the Alumni Association of the Bowman Gray School of Medicine, the Library has obtained two valuable files of journals: **The Journal of Obstetrics and Gynaecology of the British Empire** and **The American Journal of Tropical Medicine.**

Regional Meeting, American College of Physicians

The regional meeting of the American College of Physicians of North Carolina was held in Durham on November 30. Speakers for the afternoon program, presented in the Duke Hospital amphitheatre, were Drs. Julian M. Ruffin and Keith S. Grimson of Durham, Dr. John H. Ferguson of Chapel Hill, Dr. Robert L. McMillan of Winston-Salem, and Dr. William T. Rainey of Fayetteville. Dr. Frederic M. Hanes, Professor of Medicine at the Duke University School of Medicine, was guest speaker at the dinner meeting held at the Hope Valley Country Club. Dr. Paul F. Whitaker, governor for North Carolina, presided over the dinner meeting, and Dr. J. P. Rousseau, chairman of the committee on arrangements, at the afternoon session.

Fourth District Medical Society

Drs. H. H. Bradshaw and Felda Hightower of the Department of Surgery, Bowman Gray School of Medicine of Wake Forest College, were guest speakers at the meeting of the Fourth District Medical Society, held in Rocky Mount on November 13.

Fifth District Medical Society

The Fifth District Medical Society met in Dunn as guests of the Harnett County Medical Society on December 6. A scientific program was presented at the afternoon meeting by Dr. Joseph S. Hiatt, Jr., of Sanatorium, Dr. Robert Felton of Carthage, Drs. Kenneth Pickrell and Jay Arena of Durham, Dr. J. A. Shaw of Fayetteville, and Dr. Roscoe D. McMillan of Red Springs. A dinner was served following the election of officers.

Sixth District Medical Society

A meeting of the Sixth District Medical Society was held at the State Hospital in Raleigh on November 8, with 79 in attendance. Speakers were Drs. E. R. Tyler and Keith S. Grimson of Durham, and Drs. A. S. Oliver, Charles R. Bugg, and David A. Young of Raleigh. Dr. R. Bruce Wilkins of Durham was elected president of the society, succeeding Dr. W. S. Cozart of Fuquay Springs. Dr. Joseph Thompson of Creedmoor was elected vice-president and Dr. P. G. Green of Burlington secretary-treasurer.

Dr. Roscoe D. McMillan spoke briefly as representative of the State Society.

Eighth District Medical Society

The Eighth District Medical Society held a meeting at Sedgefield Inn, Greensboro, on November 15. Among the speakers were Major Purvis L. Martin, M.C., A.U.S., ORD, Greensboro; Dr. George T. Wood, High Point; Drs. James P. Hendrix and Maurice H. Greenhill of Duke University School of Medicine; Dr. Roscoe D. McMillan, Red Springs; and Dr. David Cayer of the Bowman Gray School of Medicine of Wake Forest College.

Officers of the Eighth District Society are Dr. R. O. Lyday, Greensboro, president; Dr. W. T. Clary, Greensboro, secretary-treasurer; and Dr. S. F. LeBauer, Greensboro, vice president.

Edgecombe-Nash Counties Medical Society

Dr. E. C. Toone, Associate Professor of Medicine at the Medical College of Virginia, was guest speaker at the November meeting of the Edgecombe-Nash Counties Medical Society, held in Tarboro on November 7.

Forsyth County Medical Society

A dinner meeting of the Forsyth County Medical Society was held in Winston-Salem on November 13. Dr. Ivan Procter of Raleigh spoke on the subject, "X-Ray Study of 1,000 Obstetrical Pelves."

Mecklenburg County Medical Society

The Mecklenburg County Medical Society celebrated the 50th anniversary of x-ray at its November meeting. The speakers were Drs. R. H. Lafferty, Allan Tuggle, J. Rush Shull, J. E. Hemphill, and O. D. Baxter of Charlotte, and Dr. J. P. Rousseau of Winston-Salem.

Stanly County Hospital

A drive has been opened to obtain $750,000 for the establishment of a county hospital in Stanly County. Headquarters of the drive are in the Albemarle City Hall.

Wayne County Tuberculosis Survey

Dr. S. B. McPheeters, superintendent of public health for Wayne County, has announced a plan for tuberculosis control in Wayne County, which will be put into effect as soon as the necessary personnel and equipment can be secured. The plan is to give free chest x-rays to the 42,000 citizens of the county above 12 years of age, and to all positive reactors below that age. The x-rays will be repeated every other year for five years, after which they will be limited to special groups. Wayne is the second county in the nation to inaugurate such a far-reaching tuberculosis control program.

Wilson County-City Hospital

The Wilson County Medical Society has recommended that a county-town hospital be established, and has appointed the following committee to look into the project: Dr. C. A. Woodard, chairman; Dr. E. L. Strickland, Dr. Badie T. Clark, Dr. R. L. Fike, Dr. C. E. Simons, and Dr. G. W. Mitchell. The commissioners of Wilson County have also named a committee to represent their group.

Camp Davis Hospital

The 2000-bed Camp Davis hospital, recently taken over by the marine corps, will be reopened "in the immediate future" as a unit of the medical department of Camp Lejeune. It will be used for personnel of the marine corps, navy, and Royal Netherlands marines.

News Notes

Dr. M. B. Bethel of Concord became Charlotte's city health officer on December 1, succeeding Dr. George Hays of the United States Public Health staff, who had been serving in that position under a loan arrangement. Dr. Frank L. Wilson of Salisbury has been appointed director of the Cabarrus County Health Department to fill the position Dr. Bethel is leaving.

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Dr. W. K. McDowell has tendered his resignation as health officer for Halifax County, effective December 31.

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Dr. Mercer C. Parrott, chief surgeon at Parrott Memorial Hospital, Kinston, died at his hospital on November 17.

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Dr. and Mrs. James S. Gamble of Lincolnton were killed instantly on November 4 when their private plane crashed at a Charlotte airport.

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Dr. Ledyard deCamp has recently moved from Fayetteville to Charlotte, where he will be associated with Dr. Oren Moore in the practice of obstetrics and gynecology.

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Dr. W. E. Woodruff of Winston-Salem has joined the surgical staff of the Randolph Hospital in Asheboro.

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Dr. Charles Bunch, who served in the navy as a commander and was until recently on the surgical staff of U. S. Naval Base Hospital 8, Pearl Harbor, T. H., has returned to his office in the Professional Building at Charlotte. He has resumed his association with Dr. T. C. Bost in the practice of general surgery.

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Dr. Oscar W. Cranz, who was recently placed on inactive duty with the rank of commander, after three years of service with the navy medical corps, has rejoined the staff of Memorial General Hospital in Kinston.

Drs. Paul C. Bratten and C. A. Peabody, recently discharged from the armed services, have opened offices in Winston-Salem for the general practice of medicine and surgery.

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Major James Watson, M.C., formerly director of mental hygiene of the North Carolina State Board of Charities and Public Welfare, has been transferred from Northport, New York, to the position of Chief Neuropsychiatrist of the Veterans Administration Mental Hygiene Clinic in Cleveland, Ohio.

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Dr. R. E. Fox, Director of County Health Administration of the State Board of Health, was elected secretary-treasurer of the Section on Public Health of the Southern Medical Association, and Mr. J. M. Jarrett, Director of the Division of Sanitary Engineering, was named second vice president of the American Public Health Association, Southern Branch.

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Word has been received that Dr. Julius Burge of York, South Carolina, who was formerly on the staff of the Western North Carolina Sanatorium, has been liberated from a Japanese prison camp in the Philippines.

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Dr. Ernest Harold Williams of Rocky Mount, who recently received an honorable discharge from the army, after 42 months in Hawaii and Saipan, is doing general practice in the Martin Hospital, Mullins, South Carolina.

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Dr. Tom A. Williams, director of the Asheville Mental Hygiene Clinic, has gone to Winter Park, Florida, for the winter. During his absence the clinic will be operated by Drs. Billig and Bradley of the staff of Highland Hospital. Dr. Williams will return to Asheville on April 1.

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Dr. Henry P. Royster of Philadelphia, son of Dr. and Mrs. Hubert A. Royster of Raleigh, was married recently to Miss Ethel R. Fisher of Reedsville, Pennsylvania.

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The following doctors who have recently been discharged from the armed services are resuming civilian practice in North Carolina:

Dr. Horton Camp of Pittsboro
Dr. Samuel S. Cooley of Black Mountain
Dr. Frank Edmondson of Tarboro
Dr. William D. Farmer of Greensboro
Dr. B. A. Helsabeck of Winston-Salem
Dr. Frank M. Killian of Franklin
Dr. Maurice LeBauer of Greensboro
Dr. James F. Marshall of Winston-Salem
Dr. J. H. McNeill of North Wilkesboro
Dr. Robert T. Odom of Winston-Salem
Dr. Gordon Smith of Rocky Mount
Dr. J. B. Stevens of Greensboro

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AUXILIARY

CHRISTMAS MESSAGE

It is now another Christmas—the first in four long years that the theme of the first Christmas message, "Peace on earth, good will toward men," seems appropriate. It speaks a message of joy to a confused world which is in dire need of that which Christmas expresses—more love, more understanding sympathy, more real charity in all human relations. With V-E and V-J days in the background we approach the coming year with renewed hope for an enduring peace.

At this season Dr. Jekyll is very much in evidence. We put our rights in the background and our privileges and duties in the foreground. We enjoy our greatest peace and satisfaction in giving and doing for others, especially those who are less fortunate. Someone has said, "What a spendid world this would be if the true spirit of Christmas prevailed every day!"

The spirit of Christmas, I think, is manifest in all Auxiliary activities. Auxiliary members have been sympathetic and cooperative in all phases of the work; for this I am profoundly grateful. They have responded admirably to the various calls to help out with the war effort. We have come to know, during this emergency period, a completeness of service and satisfaction in the knowledge that we belong to an organization which is striving to do its share. How clearly we see now how worth while were the sacrifices! Working extra hours, doing without an abundance of things, and salvaging and rationing may have been a little troublesome at times, but what a far cry from the heroic life-and-death sacrifices our fighting men have made! Thanks to them, we in the United States were spared much of the suffering and horror visited upon the rest of the world.

Now, as the holiday season approaches, let us not be unmindful of those who gave their all or break faith with them by failing to do our part in solving the problems of peace. We shall be called upon to make many more sacrifices. We shall do it cheerfully. May we, as doctors' wives, working together in sympathy and affection, strive now to give ourselves to the task of winning and perpetuating the peace. May ours be a single aim: "So united, so strong, so forceful, that

no smallest opportunity for service shall pass us by." Let us all look back and be thankful, look forward and be hopeful, reach out and be helpful.

May the friendships and associations made and services rendered during this Auxiliary year ever be cherished memories.

In closing, I wish to extend best wishes to each of you for much happiness, not only on Christmas Day but on every day during the year.

Henry Van Dyke's message cited by our national president, Mrs. David W. Thomas, gives the living and enduring qualities of the real Christmas spirit:

"I am thinking of you today because it is Christmas, and I wish you happiness. And tomorrow, because it is the day after Christmas, I shall still wish you happiness; and so on clear through the year. I may not be able to tell you about it every day, because I may be far away; or because both of us may be very busy. But that makes no difference. The thought and wish will be there just the same. I mean to try not to be unfair to you or injure you in any way. In my pleasure, if we cannot be together, I would like to share the fun with you. Whatever joy or success comes to you will make me glad. Without pretense and in plain words, good will to you is what I mean, in the spirit of Christmas."

MRS. ERICK BELL, *President*
Wilson

BOOK REVIEWS

Diseases of the Breast. By Charles F. Geschickter, M.A., M.D., Lieut. Commander, Medical Corps, United States Naval Reserve; Director of The Francis P. Garvan Cancer Research Laboratory; Pathologist, St. Agnes Hospital, Baltimore. With a special section on treatment in collaboration with Murray M. Copeland, A.B., M.D., F.A.C.S. Ed. 2. 826 pages, with 593 illustrations. Price, $12.00. Philadelphia: J. B. Lippincott Company, 1945.

In this second edition of his classic work on diseases of the breast, Dr. Geschickter has brought the book up to date, and made numerous revisions and additions to the text. Much new material has been added on parasitic infestations, cosmetic considerations concerning underdeveloped and pendulous breasts, penicillin therapy for infectious mastitis, the criteria of operability and inoperability of mammary carcinoma, and other subjects. The physiology and endocrinology of the breast are fully covered in the chapter dealing with this subject. The bibliography has been brought up to date. The table of contents and index are adequate, and are arranged so that the material in the book is readily available for quick reference.

The numerous illustrations include excellent photographs of most of the lesions described. Numerous photomicrographs illustrate the pathology of the lesions described, and whenever feasible the photograph of the clinical lesion and the photomicrograph of the pathological changes are shown close together in the text, so that correlation is easily possible. A fine group of illustrative drawings show the characteristics of the various lesions described in a very clear manner, and many concise charts and tables are used to illustrate and clarify the important points which are made in the text.

It is a little discouraging to note that the section on mammary cancer shows that we have made little progress in the management of this condition, and that the rate of survival has not appreciably improved in the last three or four decades. It is also discouraging to note that the number of early cases diagnosed has not appreciably increased, in spite of the publicity and educational programs of the past few years. Dr. Geschickter advocates the procedure which has been suggested by others, of teaching all women to palpate their own breasts carefully at least six times a year, and report immediately to their physician if a slight lump is felt. In discussing the relation of trauma to malignant lesions, he points out that "relatively insignificant trauma often attracts the attention of the patient to a preexisting neoplasm." He also states that "any mass which is present one or more weeks following an injury but which was not observed immediately following the trauma should be explored."

This book has been enthusiastically received since the original edition appeared, and the reviewer highly recommends the second edition for any physician who sees female patients.

Bacillary Dysentery, Colitis and Enteritis. By Joseph Felsen, B.A., M.D., Director of Medical Research, Bronx Hospital, New York; Director of International and Pan-American Dysentery Registry. 618 pages with 145 illustrations. Price, $6.00. Philadelphia and London: W. B. Saunders Company, 1945.

Dr. Felsen, through the establishment of the "International Dysentery Registry" as well as his own years of study on infections with the dysentery bacilli, has compiled in this monograph an authoritative and comprehensive review of the subject. The book is subdivided into three parts: the first takes up acute bacillary dysentery; the second, chronic ulcerative colitis and chronic ileitis; and the third, or appendix, the technical methods of laboratory procedures used in the diagnosis of bacillary dysentery. This section is followed by almost one hundred pages of valuable bibliography.

The author writes clearly and succinctly, and there are a large number of excellent illustrations of gross pathological material, photomicrographs and reproductions of x-rays, as well as numerous summaries and tables of data and differential diagnosis. The sections on treatment are up to date and factual. While not all readers may be as certain as Dr. Felsen of the common pathogenesis of chronic ulcerative colitis and bacillary dysentery, this fact does not in the least detract from the value of the monograph.

Dr. Felsen's book is recommended without reservation, since it is the most comprehensive American monograph on a common and often poorly managed group of diseases.

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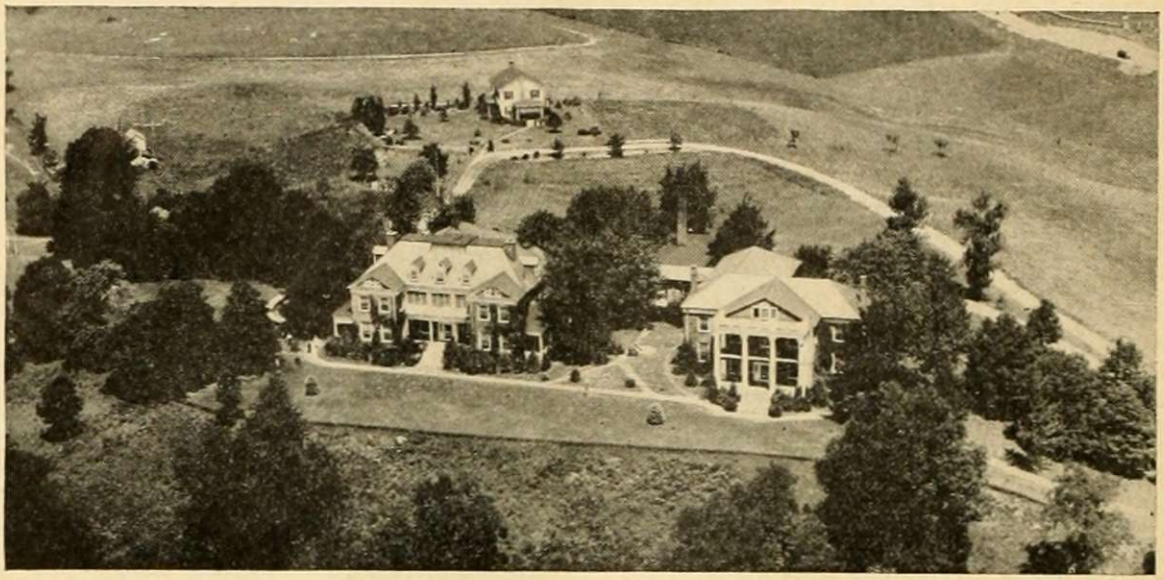

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INDEX TO ADVERTISERS

AR-EX Cosmetics, Inc. 546
Ayerst, McKenna & Harrison XII
Bristol Laboratories VIII
Broadoaks Sanatorium XXVIII
Burroughs Wellcome and Company ..... XVI-XXI
S. H. Camp and Company XXII
Charlotte Eye, Ear, and Throat Hospital XXX
Ciba Pharmaceutical Products, Inc. ..... XIV-XV
Commercial Solvents Corporation XXIII
Cook County Graduate School of Medicine XXVI
J. L. Crumpton XI
Dairy Council XXVIII
Drug Specialties, Inc. XX
Glenwood Park Sanitarium XXXII
Charles C. Haskell and Company V
Inter-Ocean Casualty Company XXXIII
Eli Lilly and Company ..... Insert and XVIII
M & R Laboratories XXV
Mead Johnson & Company XXXVI
Parke, Davis and Company ..... XXXIV-XXXV
William Perske XXX
Philip Morris & Company, Ltd., Inc. XVII
Physicians Casualty Association
Physicians Health Association 546
Pilot Life Insurance Company 540
Pinebluff Sanitarium III
Powers and Anderson, Inc. XXIV
R. J. Reynolds Tobacco Company VII
Saint Albans Sanatorium 538
Schenley Laboratories, Inc. VI
Schieffelin & Company XXXII
Julius Schmid, Inc. XXVII
G. D. Searle & Company XIX
Smith, Kline & French ..... XXIX-XXXI
Southern Dairies XIII
Spencer Corsets XXVI
Stuart Circle Hospital XXXIII
Thompson Homestead School XXVI
Tucker Hospital XX
Upjohn II
Wachtel's, Inc. XX
War Bonds XXVI
Westbrook Sanatorium XXIV
Winchester Surgical Supply Company
Winchester-Ritch Surgical Company III
Winthrop Chemical Company, Inc. IX
Wyeth, Inc. ..... Insert

Hayfever Plants. Their Appearance, Distribution, Time of Flowering, and Their Role in Hayfever. By Roger P. Wodehouse, Ph.D., Associate Director of Research in Allergy, Lederle Laboratories. 245 pages, with 73 illustrations. Price, $4.75. Waltham, Mass.: The Chronica Botanica Co.; New York: G. E. Stechert and Co., 1945.

This book makes available to physicians and others interested in hay fever information which they have long needed. For the first time in a separate volume are described in orderly arrangement all the plants known to cause hay fever, and also most of those to which suspicion has become seriously attached. A number of innocent plants which have been erroneously suspected are also mentioned for purposes of clarification.

The descriptions are concise, yet sufficiently complete to enable one to recognize the various species. Those who are looking for a book without technical botanical terms will of course be disappointed. Anyone who wishes to work in this field intelligently must add certain technical descriptive terms to his vocabulary. The author has thoughtfully prepared a glossary of these terms, however, which should be adequate for the interpretation of the descriptions even by those who have had no training in botany.

Although the author explains clearly that pollen grains produced by the plants are the real cause of hay fever, his treatment of this phase of the subject will be disappointing to the physician who would like to master pollen morphology well enough to do pollen counts.

A Manual of Surgical Anatomy. Prepared under the Auspices of the Committee on Surgery of the Division of Medical Sciences of the National Research Council, by Tom Jones and W. C. Shepard. 254 pages with 267 illustrations on 138 figures, 153 in colors. Price, $3.00. Philadelphia and London: W. B. Saunders Company, 1945.

This is an exact duplication of the earlier edition of the **Manual of Surgical Anatomy** reviewed in the October issue of this **Journal**, except for the fact that it is much smaller in size and would readily fit into a large pocket. This smaller volume was prepared primarily for military use, where space is all-important. It is not quite as satisfactory as the larger, because of the loss of some fine detail. Fortunately, the explanatory index making up the last third of the book has not been decreased in size and is still excellent in view of its brevity.

American Red Cross First Aid Textbook. Prepared by the American Red Cross for the Instruction of First Aid Classes. Revised edition. 254 pages with 264 illustrations. Paper, 60¢; cloth, $1.00. Philadelphia: The Blakiston Company, 1945.

This small, pocket-sized edition has been greatly improved in binding, illustrations, and text. The illustrations have been increased from 114 to 264, and appear much more natural and easier to interpret for the layman; in addition there are for the first time anatomical and physiological basic explanations that can readily be understood by the layman. The sections on shock, artificial respiration, and fractures have been brought up to date, utilizing much of the information acquired and many of the methods developed during the war.

The 1945 edition of this text is so much improved that the reviewer feels that it could well be called a new book rather than a revised edition.

Facial Prosthesis. By Arthur H. Bulbulian, M.S., D.D.S., F.A.C.D., Director, Museum of Hygiene and Medicine, The Mayo Foundation, Rochester, Minn. 241 pages with 202 illustrations. Price, $5.00. Philadelphia and London: W. B. Saunders Company, 1945.

In this monograph, the author discusses in detail the various substances which may be used in making facial prostheses, their advantages and disadvantages, and their clinical application. He gives detailed instructions for making plaster casts of the component parts of the face, and then molding latex and other materials to supply an artificial part which will defy detection. In one volume he has brought together complete instructions for making facial prostheses which will be invaluable to anyone undertaking this type of work.

Rorschach's Test. II. A Variety of Personality Pictures. By Samuel J. Beck. 402 pages. Price, $5.00. New York: Grune and Stratton, 1945.

The author of this volume is one of the outstanding Rorschach workers in the country. He introduced his own modification of the original personality test, which differs mainly in the scoring. The subjects of administration and scoring were discussed in a previous volume. The present book deals with the interpretation. There is a short and very pertinent discussion of the "psychological significance" of each scoring symbol, which should be very helpful to the beginner. This part is clearly written and contains much valuable information. The advanced student also will find it a helpful reference. An interesting selection of case studies follows the introductory section. The discussion of "normal" and abnormal personality structures (the latter is almost exclusively limited to schizophrenias and different types of neuroses) is followed by an unusual chapter demonstrating variations in the results of the Rorschach test correlated with changes originating either in the environment or within the patient. Such changes were spontaneous or were produced by treatment, severe psychic trauma, and so forth. This last chapter is of great importance and illustrates very well a number of interesting theoretical problems connected with the test. Its implications are far-reaching.

The reviewer misses among the presented case material a number of psychotic syndromes. The manic-depressive group, for instance, is represented by only one case; organic deterioration, epilepsy—to name but a few groups—are not discussed at all. It is hoped that a later edition or an additional volume might include the missing material.

Another disadvantage is the manner of approach used in the present work. The author illustrates psychiatric syndromes, such as the schizophrenias, by case histories, but does not give a thorough discussion of the syndrome itself. Such an approach necessarily lacks completeness and leaves the beginner wondering, since the Rorschach test—a complicated procedure—necessitates a well-rounded and complete discussion of all phases of the test. But, in spite of that lack, Beck's latest publication is a very valuable addition to the rapidly mounting Rorschach literature, and its rich case material should make it an excellent reference book.

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INDEX TO VOLUME 6

January	Pages 1 to 60
February	Pages 61 to 116
March	Pages 117 to 184
April	Pages 185 to 228
May	Pages 229 to 264
June	Pages 265 to 308
July	Pages 309 to 352
August	Pages 353 to 396
September	Pages 397 to 436
October	Pages 437 to 468
November	Pages 469 to 504
December	Pages 505 to 546

KEY TO ABBREVIATIONS

Aux—Auxiliary
C—Correspondence
CPC—Clinico-Pathological Conference
ML—Medicolegal Abstract
PM—President's Message
PsyC—Psychosomatic Conference
SM—Secretary's Message
TC—Tumor Clinic
TS—Thumbnail Sketch

AUTHORS

Adler, Alexandra, 45—PsyC
Alyea, E. P., 514
Baker, Lenox D., 515
Baretz, Louis H., 364
Baylin, George, 512
Bell, Mrs. Erick, 347, 394, 536—Aux
Best, James E., 480
Boyette, Dan P., 359
Bradshaw, Howard H., 294—CPC; 445
Bridger, Mrs. D. H., 465—Aux
Brockmann, Harry L., 234
Broome, Robert, A., Jr., 274
Callaway, J. Lamar, 34
Carson, Merl J., 323
Carter, Thomas L., 52—PM
Caviness, Verne S., 412, 477
Cayer, David, 103, 525—CPC
Clare, R. H., 174—C
Clark, Henry T., Jr., 507
Cobb, Donnell B., 92
Cocke, Charles Hartwell, 437
Cornell, Edward Lyman, 385—C
Cunningham, John R., 232
Davis, C. B., 366
Dick, Macdonald, 274
Donegan, Charles K., 46—PsyC
Dubin, I. N., 105, 252—CPC
Dunn, Richard B., 283
Easley, Eleanor Beamer, 329—TS
Ellis, Ralph V., 190
Farrington, R. K., 404
Fike, Mrs. R. L., 302, 434—Aux
Flower, Arthur H., 34
Gobbel, Walter G., 493—CPC
Goodman, E. G., 406
Gould, William L., 518
Graves, Robert W., 243
Greenhill, Maurice H., 7; 46—PsyC
Handler, Philip, 511
Hanes, Frederic M., 440, 507
Hansen-Pruss, O. C., 43—CPC
Harper, F. T., 96, 448
Harrell, George T., Jr., 170, 378, 424, 527—CPC
Harrell, Mrs. George T., 261—Aux
Hart, Deryl, 513
Hayman, J. M., Jr., 397
Hill, Mrs. M. D., 464—Aux
Hurdle, S. W., 278
Jeffreys, Everett O., 380—CPC
Johnston, Christopher, 492—CPC
Keefer, Chester S., 229
Kempner, Walter, 61, 117
Kilgore, Samuel, 44—PsyC
King, H., 43—PsyC
Lawson, Robert B., 201
LeBauer, S. F., 285
Lee, Albert F., 482
Lock, Frank R., 185; 426—CPC
London, Arthur H., Jr., 498—C
MacMillan, Elbert A., 380—CPC
Margolis, George, 43—CPC
Margolis, Lester H., 243
Martin, B. M., 432—C
McBee, Paul, 476
McCracken, Joseph P., 25
McGeachy, Mrs. R. S., 181—Aux
McLeod, J. P. U., 498—C
McMillan, Robert L., 211—CPC; 442
McMillan, Roscoe D., 108, 258—SM
Menefee, E. E., Jr., 42—CPC
Miller, R. B., 257—C
Moore, Oren, 343—PM
Morehead, Robert P., 295—CPC
Morris, L. M., 315
Murphy, G. W., 475
Noojin, Ray O., 34
Orgain, Edward S., 250—CPC; 295
Ormond, Allison L., 194
Owen, J. F., 47, 108, 174, 213, 257, 298, 336, 384, 429, 458, 485, 529—ML
Papineau, Alban, 408
Parran, Thomas, 469
Preston, George H., 1
Raney, R. Beverly, 88
Rankin, C. E., 162
Reid, Charles H., Jr., 416

Reynolds, Carl V., 50—C
Rousseau, J. P., 315
Royal, Mrs. D. M., 434—Aux
Rucker, Pierce, 353
Saunders, J. R., 22
Saunders, Mrs. J. T., 112—Aux
Smith, C. T., 444
Sprunt, W. H., 278
Stevick, C. P., 369
Stocker, Frederick W., 198
Suggs, W. Durwood, 31
Suitt, R. Burke, 45—PsyC
Taylor, Haywood M., 510
Thomas, W. C., 173, 212, 380, 426, 456, 527—CPC; 515
Thorp, Adam T., 327, 484
Trent, Josiah C., 37, 98, 165, 204, 246, 288, 372, 418, 449, 485, 520—TS
Venning, William L., 359
Wagner, Robert F., 300—C
Ward, D. E., Jr., 515
Whitaker, Paul F., 52, 176, 215, 309—PM
White, James Watson, 244
Williams, John R., Jr., 239; 425, 454—CPC
Wrenn, Creighton, 107—C
Young, David A., 505
Yow, Martha Dukes, 185

ORIGINAL ARTICLES

Abdominal Conditions, Acute, Roentgenological Aids in the Differential Diagnosis of [Rousseau and Morris] 315
Acetone and Alcohol in the Production of Symptoms of Coma, The Synergistic Effect of [Reid] 416
Adenoma, Parathyroid: A Clinical and Biochemical Discussion [Hanes—Ed.] 507
Alcohol in Status Asthmaticus, The Intravenous Use of [McLeod] 498—C
Alcohol, The Synergistic Effect of Acetone and, in the Production of Symptoms of Coma [Reid] 416
Adrenal glands, atrophy of the, 169—CPC
Aortitis, syphilitic, with occlusion of the coronary arteries, 524—CPC
Appert, Nicolas [Trent] 288—TS
Arm, fibrosarcoma of the, 381—TC
Aseptic Principle in Surgery, The Evolution of the (Thumbnail Sketches of Eminent Physicians) 37, 98, 165, 204, 246, 288, 328, 372, 418, 449, 485, 520
Asthmaticus, Status, The Intravenous Use of Alcohol in [McLeod] 498—C
Asthmaticus, Status, The Treatment of [Goodman] 406
Auricle, myxoma of the, 491—CPC
Autopsy [Owen] 384—ML
Baccalaureate Sermon: The Beloved Physician [Cunningham] 232
Bacterial Endarteritis, Patent Ductus Arteriosus with Superimposed Subacute: General Considerations and Report of a Cure by Surgical Ligation [Dick and Broome] 274
Beloved Physician, The (Baccalaureate Sermon) [Cunningham] 232
Bergmann, Ernst von, and Gustav Neuber [Trent] 485—TS
Breach of warranty [Owen] 458—ML
Breast, carcinoma of the, 253—TC
Breast, recurrent carcinoma of the, 42—CPC
Carcinoma of the breast, 253—TC
Carcinoma of the breast, recurrent, 42—CPC
Carcinoma of the cervix, 187—TC
Carcinoma of the large bowel, 189—TC
Carcinoma of the skin, 528—TC
Carcinoma of the stomach, 296, 333, 494—TC
Carcinoma of the vulva, 427—TC
Cardiovascular Disease, Recent Advances in the Treatment of [Orgain] 265
Case Reports Broaden a Tumor Clinic's Usefulness [Lock and Yow] 185
Caudal Analgesia, Vagitus Uterinus during Continuous [Thorp] 327
Cervix, carcinoma of the, 187—TC
Cesarean Section, Rupture of the Uterus Subsequent to, with Report of Three Cases [Brockmann] 234
Cesarean Section, with Special Reference to the Lower Uterine Segment Operations [Suggs] 31
Cholecystitis, Chronic Non-Calculous [Smith] 444
Clinico-Pathological Conference, Bowman Gray School of Medicine of Wake Forest College, 169, 210, 293, 378, 423, 454, 524
Clinico-Pathological Conference, Duke University School of Medicine, 42, 103, 250, 491
Coccidioidomycosis [McCracken] 25
Coma, The Synergistic Effect of Acetone and Alcohol in the Production of Symptoms of [Reid] 416
Community Hospital, The Organization of a [Bradshaw] 445
Congenital and Hereditary Abnormalities of the Extra-Ocular Muscles [White] 244
Constriction Rings, Retraction and [Rucker] 353
Cryptophthalmus and Syndactylism, Bilateral: Case Report [Thorp] 484
d'Arconville, Madame Marie-Genevieve-Charlotte Thiroux [Trent] 246—TS
Diabetic Patient, The Management of the [Caviness] 412
Diarrhea in Infants, A Review of Recent Ideas Concerning [Carson] 323
Digitalis, Some Notes on the Practical Use of [McMillan] 442
Doctors Take Warning! [Murphy] 475
Dying declarations [Owen] 174—ML
Eclampsia, The Prevention of [Lee] 482
Education of a Child Handicapped by Loss of Hearing, The [Rankin] 162
Employee Health at the North Carolina Shipbuilding Company, Maintenance of [Davis] 366
Epilepsy, 43—PsyC
Evidence [Owen] 47, 108, 257—ML
Expert testimony [Owen] 298—ML
Extra-Ocular Muscles, Congenital and Hereditary Abnormalities of the [White] 244
Female Venereal Prophylaxis and Feminine Hygiene: A New Applicator Using Soap with Sulfathiazole. Results in Cases of Vaginitis [Gould] 518
Fibrosarcoma of the arm, 381—TC
Filariasis, The Early Manifestations of [Hayman] 397
Fracture Fixation with the Kirschner Wire, A Simple Method of [Cobb] 92
Fractures of the Humerus, Treatment of, with the Hanging Cast [Raney] 88
Future of Medicine, Meeting the [Keefer] 229
Gallbladder Disease, The Medical Management of [LeBauer] 285
Glomerulonephritis, acute, 423—CPC
Governor's Plan, A Rural Physician Opposes the [Carter] 52—PM
Hanging Cast, Treatment of Fractures of the Humerus with the [Raney] 88
Headaches, Chronic [Williams] 239
Hearing, The Education of a Child Handicapped by Loss of [Rankin] 162
Hodgkin's disease, 103—CPC
Hospital, The Organization of a Community [Bradshaw] 445
Hospitals [Owen] 529—ML
Hyperinsulinism and Hypoglycemia [Papineau] 408
Hypertension, The Management of [Caviness] 477
Hypertension, The Usefulness of Repeated Ophthalmoscopic Examinations during the Treatment of [Stocker] 198
Hypertensive Vascular Disease, Treatment of Kidney Disease and, with Rice Diet: Compensation of Renal Metabolic Dysfunction [Kempner] 61, 117

Hypoglycemia, Hyperinsulinism and [Papineau] 408
(Iced Intestine), Chronic, Fibrous, Encapsulated Peritonitis [Farrington] 404
Immunization, The Need for Widespread Whooping Cough [Lawson] 201
Immunization, Whooping Cough, in North Carolina [Stevick] 369
Intravascular Accident, The [Sprunt and Hurdle] 278
Inversion, Acute Incomplete, of the Puerperal Uterus: Report of Case with Postmortem Findings [Thomas and Ward] 515
Kidney Disease and Hypertensive Vascular Disease, Treatment of, with Rice Diet: Compensation of Renal Metabolic Dysfunction [Kempner] 61, 117
Kirschner Wire, A Simple Method of Fracture Fixation with the [Cobb] 92
Koch, Robert [Trent] 449—TS
Kyphoscoliosis, 250—CPC
Large bowel, carcinoma of the, 189—TC
Leeuwenhoek, Antony von, "Father of Bacteriology" [Trent] 98—TS
Leukemia, acute myeloid, 42—CPC
Liability, joint and several [Owen] 429—ML
Lister, Joseph [Trent] 418—TS
Medicine and Public Health in a Post-War World [Parran] 469
Medicine, Meeting the Future of [Keefer] 229
Medicolegal Abstracts [Owen] 47, 108, 174, 213, 257, 298, 336, 384, 429, 458, 495, 529
Meningitis, Pneumococcic, in Children, with Report of Four Cases [Boyette and Venning] 359
Mental Health in North Carolina, The Present Status of [Greenhill] 7
Mental Hygiene, Planning for [Preston] 1
Moral turpitude [Owen] 495—ML
Morganton, The Proposed Program for the State Hospital at [Saunders] 22
Multiple Sclerosis, The Occurrence of Myasthenia Gravis in a Patient with: Report of a Case [Margolis and Graves] 243
Myasthenia Gravis in a Patient with Multiple Sclerosis, The Occurrence of: Report of a Case [Margolis and Graves] 243
Myocardial infarction with dissection, 454—CPC
Myoma of the left auricle, 491—CPC
Narcolepsy, with Report of Four Cases [Harper] 96
Neuber, Gustav, and Ernst von Bergmann [Trent] 485—TS
North Carolina, Psychiatry in [Young] 505
North Carolina Shipbuilding Company, Maintenance of Employee Health at the [Davis] 366
North Carolina, The Present Status of Mental Health in [Greenhill] 7
Ophthalmoscopic Examinations during the Treatment of Hypertension, The Usefulness of Repeated [Stocker] 198
Ovulation, Painful—Not a Surgical Condition [McBee] 476
Parathyroid Adenoma: A Clinical and Biochemical Discussion [Hanes—Ed.] 507
Pasteur, Louis [Trent] 372—TS
Patent Ductus Arteriosus with Superimposed Subacute Bacterial Endarteritis: General Considerations and Report of a Cure by Surgical Ligation [Dick and Broome] 274
Penicillin Therapy in a Case of Treatment-Resistant Syphilis, Favorable Response to [Noojin, Callaway, and Flower] 34
Peptic Ulcer, The Pathogenesis of [Best] 480
Peribronchitis [Hanes] 440
Peritonitis, Chronic, Fibrous, Encapsulated (Iced Intestine) [Farrington] 404
Pleurisy with and without Effusion, The Significance of [Ormond] 194
Pneumococcic Meningitis in Children, with Report of 4 Cases [Boyette and Venning] 359
Pollinosis, Principles Frequently Neglected in the Treatment of [Ellis] 190
"Pott's puffy tumor," 378—CPC
Pregnancy, The Increasing Incidence of Toxemias of the Third Trimester of [Dunn] 283
President's Message [Whitaker] 309
Pringle, Sir John, Pioneer in Antiseptics [Trent] 204—TS
Prostatic Conditions in the Aging, The Management of [Baretz] 364
Psychiatry in North Carolina [Young] 505
Psychosomatic Conference, Duke University School of Medicine, 43
Public Health in a Post-War World, Medicine and [Parran] 469
Pyelonephritis, chronic, 423—CPC
Redi, Francesco, and the Theory of Spontaneous Generation [Trent] 165—TS
Renal Metabolic Dysfunction, Compensation of: Treatment of Kidney Disease and Hypertensive Vascular Disease with Rice Diet, III [Kempner] 61, 117
Retraction and Constriction Rings [Rucker] 353
Retroperitoneal sarcoma, 456-TC
Rheumatic fever, 210—CPC
Rice Diet, Treatment of Kidney Disease and Hypertensive Vascular Disease with: Compensation of Renal Metabolic Dysfunction [Kempner] 61, 117
Roentgenological Aids in the Differential Diagnosis of Acute Abdominal Conditions [Rousseau and Morris] 315
Rupture of the Uterus Subsequent to Cesarean Section, with Report of Three Cases [Brockmann] 234
Rural Physician, A, Opposes the Governor's Plan [Carter] 52—PM
Sarcoma, retroperitoneal, 456—TC
Semmelweis, Ignaz Philipp, and His Contribution from Obstetrics [Easley] 328—TS
Skin, carcinoma of the, 528—TC
State Hospital at Morganton, The Proposed Program for the [Saunders] 22
Status Asthmaticus, The Intravenous Use of Alcohol in [McLeod] 498—C
Status Asthmaticus, The Treatment of [Goodman] 406
Statute of limitations [Owen] 336—ML
Stomach, carcinoma of the, 296, 333, 494—TC
Syndactylism, Bilateral Cryptophthalmus and: Case Report [Thorp] 484
Syphilis, Favorable Response to Penicillin Therapy in a Case of Treatment-Resistant [Noojin, Callaway, and Flower] 34
Syphilitic aortitis, with occlusion of the coronary arteries, 524—CPC
Thumbnail Sketches of Eminent Physicians: The Evolution of the Aseptic Principle in Surgery, 37, 98, 165, 204, 246, 288, 328, 372, 418, 449, 485, 520
Toxemias of the Third Trimester of Pregnancy, The Increasing Incidence of [Dunn] 283
Tuberculosis, Changing Ideas in the Treatment of Pulmonary [Cocke] 437
Tuberculosis of the lung, miliary, 293—CPC
Tumor Clinic, North Carolina Baptist Hospital, Case Reports from the, 185, 253, 296, 333, 381, 427, 456, 494, 528
Uterus, Puerperal, Acute Incomplete Inversion of the: Report of Case with Postmortem Findings [Thomas and Ward] 515
Uterus, Rupture of the, Subsequent to Cesarean Section, with Report of Three Cases [Brockmann] 234
Uveoparotitis: Case Report [Harper] 448
Vaginitis, Results in Cases of, Female Venereal Prophylaxis and Feminine Hygiene: A New Applicator Using Soap with Sulfathiazole [Gould] 518
Vagitus Uterinus during Continuous Caudal Analgesia [Thorp] 327
Venereal Prophylaxis, Female, and Feminine Hygiene: A New Applicator Using Soap with Sulfathiazole. Results in Cases of Vaginitis [Gould] 518
Vulva, carcinoma of the, 427—TC
Whooping Cough Immunization in North Carolina [Stevick] 369
Whooping Cough Immunization, The Need for Widespread [Lawson] 201
X-ray negatives [Owen] 213—ML

EDITORIALS

Accelerating Education at the Wrong End, 422
Aitchison, Harry, 451
Australian Appraisal, An: Sister Kenny, 41
Australia's Experience with Government Medicine, 209
"Backwaters of Medicine, The," 248
British Doctors and Compulsory Insurance, 101
Brotherhood of Medical Men, The, 168
Cancer, The Problem of (Guest Editorial—Reynolds) 206
Challenge to North Carolina Doctors, A, 489
Coburn, General, Retires, 489
Collier's Editorial Schizophrenia, 374
Common Objective, A, 523
Compensation Cases, A Revised Fee Table for, 330
Compulsory Insurance, British Doctors and, 101
"Consistency, O . . . !" 290
Constructive Program for Medical Care, A, 376
Doctor-Patient Relationship, The, 41
Doctors, A Layman Looks at, 102, 488
Don't Let George Do It, 490
Draft Rejection Figures, North Carolina's, 39
Drunkenness, Tests for, 331
Education at the Wrong End, Accelerating, 422
Fee Table for Compensation Cases, A Revised, 330
Gompers, Samuel, vs. the Wagner-Murray-Dingell Bill, 451
Government Medicine, Australia's Experience with, 209
Harrison, Major Edward T., 102
Henry, Dr. Hugh Carter, 490
Hypertension, 523
Infant Deaths from Mechanical Suffocation, 375
Information Bulletin for Medical Officers, 376
Internationalism, What Price? 522
Job Well Done, A, 375
Kenny, Sister: An Australian Appraisal, 41
Lawmakers to Be Educated, Why Not Require Our? 249
Lay View of Medical Progress, A, 41
Layman Looks at Doctors, A, 102, 488
"Matter of the Utmost Urgency and Importance, A," 330
Medical Care, A Constructive Program for, 376
Medical Education, Have the Armed Forces Crippled? 100
Medical Men, The Brotherhood of, 168
Medical Officers, Information Bulletin for, 376
Medical Progress, A Lay View of, 41
Medicine, Politics, Basketball, and Labor Unions, 168
Medicines in 1945, The Best, 453
Mental Hygiene in North Carolina, Politics and, 207
Morphine Addiction, 453
Mortality, North Carolina's 1944, 168
North Carolina Doctors, A Challenge to, 489
North Carolina, Politics and Mental Hygiene in, 207
North Carolina's Draft Rejection Figures, 39
North Carolina's 1944 Mortality, 168
Oldham, Mr.—Right and Wrong, 40
Pardonable Doubt, 490
Politics and Mental Hygiene in North Carolina, 207
"Pseudodoxia Pediatrica," 331
Raleigh Academy of Medicine, Diamond Anniversary of the, 102
Revised Fee Table for Compensation Cases, A, 330
Roosevelt's Death, A Lesson to Be Learned from President, 292
Roster, Omission of Transactions and, 375
Service Men, The, Speak Their Minds, 421
Smith, Dr. William H., 489
State Society Meeting Postponed, 100
Suffocation, Mechanical, Infant Deaths from, 375
Sulfonamides, The Prolonged Use of, 167
Tests for Drunkenness, 331
Transactions and Roster, Omission of, 375
V-E Day, 248
V-J Day, 420
Wagner-Murray-Dingell Bill, Samuel Gompers vs. the, 451
Wagner-Murray-Dingell Bill, The New, 291
"Waste of Medical Service, A," 452

SOCIETIES AND INSTITUTIONS

American Academy of Pediatrics, 498
American Association on Mental Deficiency, 501
American Board of Obstetrics and Gynecology, 223
American Board of Ophthalmology, 436
American Cancer Society, 467
American College of Chest Physicians, 223, 260, 500
American College of Physicians, 535
American College of Radiology, 468
American College of Surgeons, 60, 114
American Foundation for Tropical Medicine, 115
American Geriatrics Society, 501
American Hospital Association, 260, 261
American Red Cross, 219, 386
Auxiliary, 59, 112, 181, 223, 261, 302, 347, 434, 464, 501, 536
  Officers, 348, 388
  Transactions of Executive Board, 388
Baruch Committee on Physical Medicine, 500
Board of Medical Examiners of North Carolina, 179, 221, 345, 463, 534
Bowman Gray School of Medicine of Wake Forest College, 57, 183, 222, 433, 499, 534
Cancer Control Month, 219, 223
Charlotte Medical Library, 221
Charlotte Mental Hygiene Society, 346, 463
Chicago Medical Society, 501
Correspondence, 50, 107, 174, 257, 300, 385, 432, 461, 498
County Societies, 57, 111, 183, 222, 260, 306, 346, 386, 433, 463, 500, 535
District Societies, 301, 463, 499, 535
Hospital Saving Association, 344
International College of Surgeons, 467
Lee County Hospital, 467
Maternity and Infancy Care Program for the Wives and Babies of Service Men, 432
Medical and Surgical Relief Committee, 115, 387, 436
Medical College of the State of South Carolina, 467
Medical Society of the State of North Carolina
  Annual Session, Cancellation of, 108, 174
  Cancer Committee, 178, 433, 532
  Committee on Post-War Planning, 215
  Committee on Revision of Fee Schedule, 343
  Committee to Advise with Members of the Governor's Commission, 108
  Executive Committee, 108, 179, 259, 336
  Finance Committee, 339
  Legislative Committee, 108, 178
  President's Message, 52, 176, 215, 309, 343
  Secretary's Message, 108, 258, 338
Meharry Medical College, 115
Military Personnel, Civilian Medical Care for, 220
National Conference on Medical Service, 60, 114
National Foundation for Infantile Paralysis, 223, 308
National Tuberculosis Association
  Tuberculosis Abstracts, 48, 106, 175, 214, 255, 299, 334, 383, 430, 459, 496, 530
North Carolina Hospital and Medical Care Commission, 52, 109, 216
North Carolina League for Crippled Children, 184
North Carolina Legislature, 176, 216
North Carolina Pathological Society, 463
North Carolina Pediatric Society, 498
North Carolina Radiological Society, 433
North Carolina State Board of Health, 57, 111, 180, 221, 259, 301, 461, 499, 534
  List of Reportable Diseases, 50
North Carolina Tuberculosis Association, 111, 183, 222, 259, 301, 386, 432, 463, 499, 533
Office of Pharmacal Information, 436, 487
Planned Parenthood Federation, 116, 387
Proprietary Association of America, 300
Russian War Relief, 115
Southern Medical Association, 306
State Hospitals, 534
Surgeon General's Office, News Notes from, 60, 260, 306, 346, 382, 387, 433, 436, 463, 468, 487, 500, 546
Sutton Mental Hospital, 500
United Nations Relief and Rehabilitation Administration, 387, 431, 501
United States Civil Service, 260
United States Department of Agriculture, 306
United States Pharmacopoeia, 260
United States Public Health Service, 223
University of North Carolina, 183, 259, 301, 345
Watts Hospital Symposium, 57
Western Reserve University, 184
Women's Field Army, 223

BOOK REVIEWS

ALLPORT, NOEL L.: The Chemistry and Pharmacy of Vegetable Drugs, 226

American Red Cross First Aid Textbook, rev. ed., 539

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1944, 503

BABCOCK, WAYNE H.: Principles and Practice of Surgery, 303

BAUER, JULIUS: Constitution and Disease, ed. 2, 348

BEARDWOOD, J. T. AND KELLY, H. T.: Simplified Diabetic Management, ed. 4, 182

BECK, SAMUEL J.: Rorschach's Test. II. A Variety of Personality Pictures, 539

BELLOWS, JOHN G.: Cataract and Anomalies of the Lens, 262

BIERRING, WALTER L. (Ed.): Rypins' Medical Licensure Examinations, ed. 5, 434

BISPHAM, WILLIAM N.: Malaria, Its Diagnosis, Treatment and Prophylaxis, 181

BLACKFAN, KENNETH D. AND DIAMOND, LOUIS K.: Atlas of the Blood in Children, 112

BOYD, MARK F.: Preventive Medicine, ed. 7, 395

BRAY, W. E.: Synopsis of Clinical Laboratory Methods, ed. 3, 226

BULBULIAN, ARTHUR H.: Facial Prosthesis, 539

BUNNELL, STERLING: Surgery of the Hand, 58

CAMERON, A. T.: Recent Advances in Endocrinology (ed. 5) 434

CANTAROW, ABRAHAM AND TRUMPER, MAX: Clinical Biochemistry, ed. 3, 503

COLE, W. H. AND ELMAN, ROBERT: Textbook of General Surgery, ed. 4, 113

CONANT, NORMAN F., MARTIN, DONALD S., SMITH, DAVID T., BAKER, ROGER D., AND CALLAWAY, J. LAMAR: Manual of Clinical Mycology, 112

COWDRY, E. V.: A Textbook of Histology, ed. 3, 113

CRAIG, CHARLES F.: Etiology, Diagnosis and Treatment of Amebiasis, 114

DEUTSCH, HELENE: The Psychology of Women, Vol. II. Motherhood, 349

DOOLEY, M. S. AND HOLMES, MAYNARD E.: (Eds.): Interns Handbook, 182

DRINKER, CECIL K.: Pulmonary Edema and Inflammation, 502

FELDMAN, MAURICE: Clinical Roentgenology of the Digestive Tract, ed. 2, 349

FELSEN, JOSEPH: Bacillary Dysentery, Colitis and Enteritis, 537

FISHBEIN, MORRIS (Ed.): Doctors at War, 395

FISHBEIN, MORRIS (Ed.): Medical Uses of Soap, 304

FLAGG, PALUEL J.: The Art of Resuscitation, 262

FOX, SIDNEY A.: Your Eyes, 467

GECKELER, EDWIN O.: Plaster of Paris Technic, 58

GESCHICKTER, CHARLES F.: Diseases of the Breast, ed. 2, 537

GIFFORD, SANFORD R.: A Textbook of Ophthalmology (ed. 3) 467

GOLDEN, ROSS: Radiologic Examination of the Small Intestine, 349

GRINKER, ROY R. AND SPIEGEL, JOHN P.: Men under Stress (in and after Combat), 395

HAMBLEN, E. C.: Endocrinology of Women, 225

HARLEY, DAVID: Medico-Legal Blood Group Determination, 226

HAYMAKER, WEBB AND WOODHALL, BARNES: Peripheral Nerve Injuries, 304

HERRELL, WALLACE E.: Penicillin and Other Antibiotic Agents, 304

HERTZLER, ARTHUR E.: Ventures in Science of a Country Surgeon, 114

JANNEY, JAMES C.: Medical Gynecology, 263

JONES, TOM AND SHEPARD, W. C.: A Manual of Surgical Anatomy, 467, 539

KAHN, REUBEN L.: Technique of the Standard Kahn Test and of Special Kahn Procedures, 182

KAPLAN, OSCAR J. (Ed.): Mental Disorders in Later Life, 467

KARPMAN, BEN: Case Studies in the Psychopathology of Crime, Vol. 2, 113

KOLMER, JOHN A.: Penicillin Therapy, 304

KOLMER, JOHN A., AND BOERNER, FRED: Approved Laboratory Technic, 182

LANDSTEINER, KARL: The Specificity of Serological Reactions, rev. ed., 466

LEVINE, SAMUEL A.: Clinical Heart Disease, ed. 3, 303

LULL, CLIFFORD B. AND HINGSON, ROBERT A.: Control of Pain in Childbirth, 59

MAJOR, RALPH H.: Physical Diagnosis, ed. 3, 348

Manual of Clinical Mycology (Military Medical Manuals), 112

Manual of Tropical Medicine (Military Medical Manuals), 226

Marihuana Problem in the City of New York, 227

MOORE, DOM THOMAS VERNER: Personal Mental Hygiene, 227

MUSSER, JOHN H. (Ed.): Internal Medicine, ed. 4, 303

New and Nonofficial Remedies, 1945, 504

NISSEN, RUDOLF: Duodenal and Jejunal Peptic Ulcer. Technic of Resection, 304

OBERNDORF, CLARENCE P.: The Psychiatric Novels of Oliver Wendell Holmes, 182

PORTIS, SIDNEY A. (Ed.): Diseases of the Digestive System, ed. 2, 181

Proceedings of the Rudolf Virchow Medical Society in the City of New York, vol. 3, 1944, 227

RANKIN, FRED W. AND GRAHAM, A. STEPHENS: Cancer of the Colon and Rectum, 466

RASMUSSEN, ANDREW THEODORE: The Principal Nervous Pathways, ed. 3, 503

RICHARDSON, HENRY B.: Patients Have Families, 182

ROBERTSON, H. E.: Hydronephrosis and Pyelitis of Pregnancy, 113

SELIGER, ROBERT V.: Alcoholics Are Sick People, 262

SELIGER, ROBERT V.: A Guide on Alcoholism for Social Workers, 435

SHASTID, THOMAS HALL: My Second Life, 435

SIMMONS, J. S., WHAYNE, TOM F., ANDERSON, G. W., AND HORACK, H. M.: Global Epidemiology, 58

SPIEGEL, E. A., AND SOMMER, I.: Neurology of the Eye, Ear, Nose and Throat, 226

STERN, RUDOLPH: Trauma in Internal Diseases, 262

STONE, EMERSON L.: The New-Born Infant: A Manual of Obstetrical Pediatrics, ed. 3, 502

TIDY, SIR HENRY LETHEBY: A Synopsis of Medicine, ed. 8, 502

UMBREIT, W. W., BURRIS, R. H., AND STAUFFER, J. F.: Manometric Techniques and Related Methods for the Study of Tissue Metabolism, 466

WAKSMAN, SELMAN A.: Microbial Antagonisms and Antibiotic Substances, 466

WHITE, PAUL DUDLEY: Heart Disease, ed. 3, 58

WODEHOUSE, ROGER P.: Hayfever Plants. Their Appearance, Distribution, Time of Flowering, and Their Role in Hayfever, 539

WOHL, MICHAEL G. (Ed.): Dietotherapy: Clinical Application of Modern Nutrition, 395

YATER, WALLACE MASON: Fundamentals of Internal Medicine, ed. 2, 225

IN MEMORIAM

Baker, Horace Mitchell, 264
Jones, William Merritt, 228
McPherson, Robert Gray, 396
Montgomery, Harry Maurice 350
Schoonover, Robert Arnold, 504

News Notes from the Office of the Surgeon General

Army Exceeds Quota on Release of Doctors

The Army's quota of 13,000 doctors to be released to civilian life by December 31 has been exceeded six weeks in advance of the deadline, Major General Norman T. Kirk, Surgeon General of the Army, has announced.

The total number of doctors who have been separated from the service reached 13,320 for the week ending November 16.

From a peak strength of over 45,000 doctors, General Kirk has announced that all but 11,000 will be out of the service by the first of June. In order to do this the Army must continue to follow its policy of expediting the release of doctors as well as other Medical Department personnel in every way possible.

* * * *

General Kirk Receives Distinguished Service Medal

Major General Norman T. Kirk, Surgeon General of the Army, has been awarded the Distinguished Service Medal by General Brehon Somervell, Commanding General of the Army Service Forces, in recognition of his "outstanding leadership . . . in directing the largest Medical Department in the history of the United States Army."

* * * *

Fellowships Offered in Neuropsychiatry

For the benefit of those interested in neuropsychiatry, the Austin Riggs Foundation of Stockbridge, Massachusetts, has announced that fellowships for three years' training in this specialty are now open. Army personnel who wish to go into the field of neuropsychiatry may apply to Doctor Charles H. Kimberly, Medical Director, Austin Riggs Foundation, Stockbridge, Massachusetts.

* * * *

Qualified Reserve Officers to Receive Promotion

Qualified reserve officers who have not yet received a promotion while on active duty will receive one promotion as they are separated, the War Department has announced. To be eligible for this promotion, the officer must have served two years in his present rank since September 16, 1940, and must have an efficiency rating of at least 35. This does not apply to promotions above the rank of colonel.

* * * *

Army Personnel Receive Influenza Inoculations

All Army personnel have been ordered inoculated during the months of October and November with a new influenza vaccine as a preventive measure against influenza epidemics, the Office of The Surgeon General has announced.

The vaccine, made by injecting influenza virus into chick embryo, is to be administered in a single injection. Experimentation with the new vaccine was started early in 1943, but sufficient quantities for mass inoculation were not made available until the present year.

Army to Release Twenty-Three Hospitals by January 1

Release by the Army of twenty-three hospitals out of its wartime peak of sixty-five by January 1, 1946, has been announced by Major General Norman T. Kirk, The Surgeon General. Camp Butner Convalescent Hospital in Durham is one of these hospitals.

These hospitals will be offered to the Veterans' Administration or back to their former owners in the case of leased properties.

The following North Carolina doctors have received promotions from the rank of major to that of lieutenant colonel:

Dr. Edward P. Brunson, Albemarle
Dr. Maurice L. LeBauer, Greensboro
Dr. Ben M. Meriwether, Asheville
Dr. William R. Pitts, Charlottesville

Dr. Elbert L. Persons of Durham has recently been promoted from the rank of lieutenant colonel to that of colonel.

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