

Presidential Address*

The Heritage of Corpulence

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OBESITY is a disorder which, like venereal disease, is blamed upon the patient. The finding that treatment doesn't work is ascribed to lack of fortitude. Corpulence in America is regarded along with narcotic addiction as something wicked, and I shall not be surprised if soon we have a prohibition against it in the name of national security. The condition is referred to in disparaging terms, including the most impolite references to the appetite. Appetite is held to be the cause, but I say it is hunger. I wish to propose that obesity is an inherited disorder and due to a genetically determined defect in an enzyme; in other words, that people who are fat are born fat, and nothing much can be done about it. I would like further to propose that the more serious of the consequences of being fat are not due to the corpulence but to the inherited defects; if this be so and we like food, we might as well eat up and be happy.

I am sure that these concepts will be accepted with reluctance, but why the hesitancy in ascribing obesity to inheritance? Everyone is pleased to believe that stature is largely determined by genes and that genes have to do with the color of the hair and the size of the feet and, with a large and growing list of metabolic derangements, so why can't heredity be credited with determining

one's shape? Some people will even go so far as to admit that there are different genetically determined constitutional builds ranging from the pyknic to the asthenic—from thick to thin—but still they shy away from agreeing that obesity is inherited.

No originality can be claimed for these thoughts about fatness. Indeed, one is hard pressed to bring an idea to the subject which has not been alluded to before. All that one can do is to gather one's thoughts into one camp, and then await having to retreat.

There can be no denying that obesity can be experimentally induced by means other than selective inbreeding. Hypothalamic lesions electrically or chemically induced can lead to obesity, excessive quantities of insulin or of cortisone can stimulate overeating and overweight, but these are rare causes in man; here we are considering only the common or garden varieties of adiposity, the kind that we see every day.

One can also fatten animals by stuffing and doubtless we could do the same thing to ourselves if we put our minds to it. Paté de foie gras is made thus, reminding one of the fatty liver and cirrhosis sometimes found in the obese. But I do not consider this a common cause of overweight in man; not many people try to get into the circus this way—they become candidates spontaneously.

Inactivity helps in gaining weight: the stuffed goose gains better if confined.

* Read before the 44th annual meeting of The Endocrine Society in Chicago, June 22, 1962.

and the fattening of livestock before slaughter works well when the animals are cooped up; past-President Ingle's technician made rats fat through a kind of mismanagement in home economics—cramped space and large doses of tender loving care. Many of our moderately fat patients sit like bumps on a log and, though one is tempted to assign a cause and effect relationship here, it would be interesting to know whether adiposity and inertia go together for some reason common to both. If fatty acid is needed for energy, a deficit could indeed promote lethargy and indolence. Viewed this way, fat people are inert because they lack the juice to give them zip.

We do not have far to look to see caricatures of fatness impellingly to be ascribed to genes. The assorted sizes and shapes of the people around us testify to heredity as centrally important. The steatopygia of the Hottentot must surely have arisen by natural selection, and, other theories to the contrary, I think the determining factor was sexual, particularly as the evolution of this extraordinary excrescence arose at a time when pillows had not been invented. Also, consider the pig: his corpulence and gluttony resulted from man's artificial selection; selective breeding provided us with this hulk with his hoggish ways, and no one will convince me that his gormandizing is provoked by parental oversolicitude. Might I cite a family of eight siblings in evidence that huge corpulence can be genetically determined. Our patient at 24 was 5 feet 4 inches tall and weighed 457 pounds; he was one of eight children. His brothers, aged 10, 15 and 21, weighed respectively 275, 380 and 340 pounds, but four other siblings interspersed in age among these butterballs were of normal proportions. This looks more like the work of genes than the product of a groaning family

board. When obesity has arisen in animals as a consequence of inbreeding or from chance mutation, something about the mode of inheritance can be deduced, but in man the conviction of the "primacy of gluttony" has discouraged genetic investigation, and our information is scant indeed.

All the terrible consequences of overweight are reiterated by physicians and exploited by the makers of reducing machines, cosmeticians, saunaists, the makers of reducing pills and special foods. The insurance companies use statistics to show the many ways in which obesity shortens the life span. Thus good eating joins the increasing list of pleasant things that we must avoid in order to live longer, miserably. We mustn't smoke or drink, we mustn't sit and dream when we should be exercising our muscles, we should avoid the airplane and the automobile, and certainly we shouldn't cross the street if we are to live. And now the American people, after having struggled to produce the best and most abundant food supply in the world, are being told that they must not eat it. The Soviets, we are told, still have trouble meeting the farm quotas, but they are chubby nonetheless.

Although it may be correct that there is a statistical correlation between overweight and the incidence of a number of diverse disorders, there is precious little information about what happens to fat people when they reduce. So few really fat people ever get thin and stay thin that no one can find out whether reducing weight reduces the hazards associated with corpulence.

Many of the serious disorders of the obese, particularly those involving the arteries, resemble the complications of diabetes, suggesting a common defect in the two conditions. Now the vascular disorders in diabetes correlate poorly in

severity and in time with the magnitude of the disturbance in the handling of sugar. They may occur early or late and with or without regulation with insulin. The losing of weight in the obese diabetic may correct the disturbed metabolism of sugar, but does it correct the many other concomitants of diabetes? I don't think anyone knows.

The only thing we hear about fatness in America today is that it is bad, but, like everything that is taboo, I think that it must have its good points or else everyone would not get so upset about it. Some degree of feminine plumpness has always been popular, and I don't think that the food faddists will get far in trying to destroy this image.

A most interesting aspect of the problem of rotundity is where the plumpness happens to be. It is a remarkable thing how tastes change: Where is the best location for the fat to make the lady most attractive and desirable? Currently we are passing through a stage which might be referred to as the pectoral era; the rotundity must be confined to the upper chest, in front, and at all costs it must be there. If it isn't, then resort must be had to some sort of mammary tournure, preferably one made of something that feels like fat, such as sponge rubber, or:

"What the good Lord has forgotten,
We make out of cotton."

There must be no bulges elsewhere and, if by chance there are (and this is more likely than not), then they must be obliterated by costly devices of lycra or of rubber, lace and satin, which force the lower trunk and nether regions into the shape of an inflated sausage.

Not long ago the stylists, such as Petty, brought into prominence the lower limb and gave rise to what might be called the leg-thigh-hip or cheesecake era, which has nearly passed from the

scene; most of the last authentic specimens have drifted into private collections, but a few have been brought together in New York City and can be viewed at Radio City Music Hall.

After the first World War, localized corpulence of any kind was out. A thoracic binder obliterated any shapeliness there might be above, and a sacklike enclosure hid most of what was below. The only featured attraction was the knees, and mostly bony ones at that. Hideous as this fashion was in its deformation of the shapely, it imposed an impossible problem for the obese: plumpness inevitably showed through. Perhaps this was the beginning of our national hysteria over fatness. We are all born equal so we must all weigh equal.

We will not go farther back in history than the first of this century, a time when ladies had to bulge at both ends and be slim between, like a dumbbell. A torturous vise, or abdominal tourniquet, squeezed the midriff, pushing fat upward and downward. But to push much downward and at the same time to get it around to the back proved difficult and resort was therefore had to artificial devices which might be referred to as gluteal falsies, called bishops, or bustles, giving rise to a condition called pseudopygia. This era was heaven for the piano-legged, for whether fat or thin the lower limbs were at all times obscured from view.

The frequent plaint of the obese: "Everything I eat turns to fat," long a source of amusement, now has been shown to be prophetically correct. In the thin and the thick alike fat is deposited as made and is then released as free fatty acid (soap, really) to serve as fuel. Any excess soap is made back into fat in the liver and returned to the depots. To turn what is eaten into fat, to move it and to burn it requires dozens

of enzymes and the processes are strongly influenced by a variety of hormones. Release of fatty acid is promoted by the hormones of the adrenal medulla and by the sympathetic nervous system and is directly or indirectly stimulated by several pituitary hormones, including corticotropin, the intermedins, thyrotropin and growth hormone. The reverse process, reincorporation of fat into the depots and the conversion of other food to fat, tends to be reduced by these hormones, but to be strongly promoted by insulin. When we further note that the adrenal cortex plays a permissive role, that the thyroid speeds the consumption of fat, that glucagon exerts an effect, and further note the sex difference (attributable to sex hormones) in the distribution of adipose tissue, we come to realize what a complex role the endocrine system plays in the regulation of fat.

Now just suppose that any one of these (or other unlisted) regulatory processes were to go awry. Suppose that the release of fat or its combustion was somewhat impeded, or that the deposition or synthesis of fat was promoted; what would happen? Lack of food is the cause of hunger and, to most of the body, soap is the food; it is easy to imagine that a minor derangement could be responsible for a voracious appetite. It seems likely to me that hunger in the obese might be so ravaging and ravenous that skinny physicians do not understand it. Peculiarly enough, the very fat are night-eaters, because, it is said, they suffer from "night-starvation," a term applied to only one other condition that I know of.

There is no reason to suppose that only one of these mechanisms ever goes wrong; it is far more likely any one of a number of defects could be the fundamental basis for obesity just as

there are several in glycogen-storage disease. There are so many possibilities here that I am willing to give odds that obesity is caused by a metabolic defect. I would not want to wager about how many enzymes determine the shape of voluminous pulchritude.

This theory would explain why dieting is so seldom effective and why most fat people are miserable when they fast. It would also take care of our friends, the psychiatrists, who find all kinds of preoccupation with food, which pervades dreams among patients who are obese. Which of us would not be preoccupied with thoughts of food if we were suffering from internal starvation? Hunger is such an awful thing that it is classically cited with pestilence and war as one of our three worst burdens. Add to the physical discomfort the emotional stresses of being fat, the taunts and teasing from the thin, the constant criticism, the accusations of gluttony and lack of "will power," and the constant guilt feelings, and we have reasons enough for the emotional disturbances which preoccupy the psychiatrists.

All of us know that we can't get fat people to become slim by suggesting a diet, so we conclude, for the time being at least, that obesity is incurable. The people who know most about how to treat the condition, or so they say, are our friends in the pharmaceutical industry. In the mail that we throw away every day we see extolled one or another kind of pep-pill or goof-ball. Take this and the fat melts away. The advertising is interesting: some will say that a particular brand is less likely to give you the jitters or to keep you awake at night; others will exploit this property and say that theirs will keep you from being "tired all the time." Some of the compounds are supposed to work only if they are righthanded.

It looks as though the attainment of overweight can, in most instances, somehow make up for an enzymatic, or hormonal, deficit in the use of fat. The corpulent usually attain a certain adiposity and stay that way. Perhaps the fatty organ in its expanded size can do its job of providing food much as a goiter can make sufficient thyroxine, if it is big enough. Looked upon in this way the lipo-hypertrophy becomes a sort of adipose struma. Sometimes, though, the gain in weight is unending and lethal: huge proportions are achieved to the point of immobility, dieting is intolerable, any check to the process is fleeting, and the bulk eventually overwhelms.

There must be differing degrees of genetic defect because there are differing sizes of the plump. In its mildest form, the tendency to obesity can be curbed without intolerable discomfort, and by constant thought and constant dieting, or by exercise, milady can stay several pounds below her natural weight. But dieting doesn't cure, it must be continued forever; whenever it is relaxed the extra flab returns. At the other extreme, there are the hugely obese who, like everyone else, lose weight on fasting, but are nonetheless incurable. I have to admit that this form of progressive obesity ends with death at an early age. Are they too fat to breathe? And why does the heart stop? Is the genetic defect lethal? Or, could it be that the hugely overgrown adipose organ can at times be caused to liberate its product into the blood in such quantity as to be toxic and even fatal?

The travail of the obese in trying to slim by diet could not be better expressed than by the statement of a pa-

tient to his doctor, recited in 1825: "Sir I have followed your prescription as if my life depended on it, and I have ascertained that during this month I have lost some three pounds, or a little more. But in order to reach this result, I have been obliged to do such violence to all my tastes and all my habits—in a word, I have suffered so much—that while giving you my best thanks for your kind directions, I renounce any advantages from them and throw myself for the future entirely into the hands of Providence!"

Under Yonder Beech Tree
by Robert Hillyer

The weeping beech tree forms a leafy cave
Cool as the hollow in a breaking wave;
There in a hammock made of woven mesh,
Mrs. Moran lays down her weary flesh.
The summer murmur, resonant and deep,
Vies with the shadows in persuading sleep.
Her pretty hands, her face as delicate
As shell, her feet too dainty for her weight,
All, frail as Dresden, seem not quite designed
With Mrs. M's anatomy in mind.
While appetite quells vanity, she dreams
Not of a lover but of chocolate creams.

One word might yet arouse her sense of duty
To trim the expanding pedestal of beauty,
But let it go unsaid. On sun-drenched days
The ghost of Gauguin or Gaston Lachaise
Might find in such heaped indolence of mood
A masterpiece of tropic amplitude.
Beauty is in the eye of the beholder;
Though she accumulates below the shoulder,
Mrs. Moran, asway in massive calm,
Suggests Tahiti and the coco-palm—
Full summer ease in one exotic touch
Amid a world that diets overmuch.

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