

We have grown pretty sure that the tendency to accumulate abnormal fat is a very definite metabolic disorder, much as is diabetes. I have always held that overeating is the result of the disorder, not its cause. and that we can make little headway until we need an intellectually satisfying interpretation of what is happening in the obese body that is able to withstand clinical facts. In dealing with a disorder in which the patient must take an active part in the treatment, it is, I believe, essential that he or she have an understanding of what is being done and why. Only then can there be intelligent cooperation between physician and patient.

### Obesity a Disorder

As a basis for our discussion we postulate that obesity in all its many forms is due to an abnormal functioning of some part of the body. Persons suffering from this particular disorder will get fat regardless of whether they eat excessively, normally or less than normal. A person who is free of the disorder will never get fat, even if he frequently overeats.

A loss of weight brought about by dieting, treatments with thyroid, appetite-reducing drugs, laxatives, violent exercise, massage, or baths is only temporary and will be rapidly regained as soon as the reducing regimen is relaxed. The reason is simply that none of these measures corrects the basic disorder.

While there are great variations in the severity of obesity, we shall consider all the different forms in both sexes and at all ages as always being due to the same disorder. Variations in form would then be partly a matter of degree, partly an inherited bodily constitution and partly the result of a secondary involvement of endocrine glands such as the pituitary, the thyroid, the adrenals or the sex glands. On the other hand, we postulate that no deficiency of any of these glands can ever directly produce the common disorder known as obesity.

If this reasoning is correct, it follows that a treatment aimed at curing the disorder must be equally effective in both sexes, at all ages and in all forms of obesity. Moreover, any claim that the disorder has been corrected must be substantiated by the ability of the patient to eat normally of any food he pleases without regaining abnormal fat after treatment. Only if these conditions are fulfilled can we legitimately speak of curing obesity rather than of reducing weight.

### The Significance of Regular Meals

In the early Neolithic times another change took place which may well account for the fact that today nearly all inherited dispositions sooner or later develop into manifest obesity. This change was the institution of regular meals. In pre-Neolithic times, man ate only when he was hungry and only as much as he required to still the pangs of hunger. Moreover, much of his food was raw and all of it was unrefined. He roasted his meat, but he did not boil it, as he had no pots, and what little he may have grubbed from the Earth and picked from the trees, he ate as he went along.

The whole structure of man's omnivorous digestive tract is, adjusted to the continual nibbling of tidbits. It is not suited to occasional gorging. Thus the institution of regular meals, particularly of food rendered rapidly, placed a great burden on modern man's ability to cope with large quantities of food suddenly pouring into his system from the intestinal tract.

The institution of regular meals meant that man had to eat more than his body required at the moment of eating so as to tide him over until the next meal. Food rendered easily digestible suddenly flooded his body with nourishment of which he was in no need at the moment. Somehow, somewhere this surplus had to be stored.

### Three Kinds of Fat

In the human body we can distinguish three kinds of fat. The first is the structural fat which fills the gaps between various organs, a sort of packing material. Structural fat also performs such important functions as bedding the kidneys in soft elastic tissue, protecting the coronary arteries and keeping the skin smooth and taut. It also provides the springy cushion of hard fat under the bones of the feet, without which we would be unable to walk.

The second type of fat is a normal reserve of fuel upon which the body can freely draw when the nutritional income from the intestinal tract is insufficient to meet the demand. Such normal reserves are localized all over the body. Fat is a substance which packs the highest caloric value into the smallest space so that normal reserves of fuel for muscular activity and the maintenance of body temperature can be most economically stored in this form. Both

these types of fat, structural and reserve, are normal, and even if the body stocks them to capacity this can never be called obesity. But there is a third type of fat which is entirely abnormal. It is the accumulation of such fat, and of such fat only, from which the overweight patient suffers. This abnormal fat is also a potential reserve of fuel, but unlike the normal reserves it is not available to the body in a nutritional emergency. It is, so to speak, locked away in a fixed deposit and is not kept in a current account, as are the normal reserves.

When an obese patient tries to reduce by starving himself, he will first lose his normal fat reserves. When these are exhausted he begins to burn up structural fat, and only as a last resort will the body yield its abnormal reserves, though by that time the patient usually feels so weak and hungry that the diet is abandoned. It is just for this reason that obese patients complain that when they diet they lose the wrong fat. They feel famished and tired and their face becomes drawn and haggard, but their belly, hips, thighs and upper arms show little improvement. The fat they have come to detest stays on and the fat they need to cover their bones gets less and less. Their skin wrinkles and they look old and miserable. And that is one of the most frustrating and depressing experiences a human being can have.

### Injustice to the Obese

Obese patients may feel ashamed of what they have been led to believe is a lack of control. They may feel horrified by the appearance of their nude body and the tightness of their clothes. In the first place, more caloric energy is required to keep a large body at a certain temperature than to heat a small body. Secondly the muscular effort of moving a heavy body is greater than in the case of a light body. The muscular effort consumes calories which must be provided by food. Thus, all other factors being equal, a fat person requires more food than a lean one. One might therefore reason that if a fat person eats only the additional food his body requires he should be able to keep his weight stationary. Yet every physician who has studied obese patients under rigorously controlled conditions knows that this is not true. Many obese patients actually gain weight on a diet which is calorically deficient for their basic needs. There must thus be some other mechanism at work.

### Glandular Theories

At one time it was thought that this mechanism might be concerned with the sex glands. Such a connection was suggested by the fact that many juvenile obese patients show an underdevelopment of the sex organs. The middle-age spread in men and the tendency of many women to put on weight in the menopause seemed to indicate a causal connection between diminishing sex function and overweight. Yet, when highly active sex hormones became available, it was found that their administration had no effect whatsoever on obesity. The sex glands could therefore not be the seat of the disorder.

### The Thyroid Gland

When it was discovered that the thyroid gland controls the rate at which body-fuel is consumed, it was thought that by administering thyroid gland to obese patients their abnormal fat deposits could be burned up more rapidly. This too proved to be entirely disappointing, because as we now know, these abnormal deposits take no part in the body's energy-turnover -they are inaccessibly locked away. Thyroid medication merely forces the body to consume its normal fat reserves, which are already depleted in obese patients, and then to break down structurally essential fat without touching the abnormal deposits. In this way a patient may be brought to the brink of starvation in spite of having a hundred pounds of fat to spare. Thus any weight loss brought about by thyroid medication is always at the expense of fat of which the body is in dire need.

Treatment with thyroid brings about a small loss of weight, but this is not due to the loss of any abnormal fat. It is entirely the result of the elimination of a mucoid substance, called myxedema, which the body accumulates when there is a marked primary thyroid deficiency. The observation that normal persons -though not the obese -lose weight rapidly when their thyroid becomes overactive may have contributed to the false notion that thyroid deficiency and obesity are connected.

### The Pituitary Gland

The next gland to be falsely incriminated was the anterior lobe of the pituitary. This most important gland lies well protected in a bony capsule at the base of the skull. It has a vast number of functions in the body, among which is the regulation of all the other important endocrine glands. The fact that various signs of anterior pituitary deficiency are often associated with obesity raised the hope that the seat of the disorder might be in this gland. But although a large number of pituitary hormones have been isolated and many extracts of the gland prepared, not a single one or any combination of such factors proved to be of any value in the treatment of obesity. Quite recently,

however, a fat-mobilizing factor has been found in pituitary glands, but it is still too early to say whether this factor is destined to play a role in the treatment of obesity.

### The Adrenals

It was discovered that a condition which in some respects resembles a severe case of obesity - the so called Cushing's Syndrome - was caused by a glandular new-growth of the adrenals or by their excessive stimulation. An abnormal stimulation of the adrenal cortex could produce signs that resemble true obesity, but there is no evidence to suggest that in obesity there is any excess of adrenocortical activity; in fact, all the evidence points to the contrary. There seems to be rather a lack of adrenocortical function and a decrease in the secretion of ACTH from the anterior pituitary lobe.

### The Diencephalon or Hypothalamus

Deep down in the human brain there is a part which we have in common with all vertebrate animals - the diencephalon. It is a very primitive part of the brain and has in man been almost smothered by the huge masses of nervous tissue with which we think, reason and voluntarily move our body. The diencephalon is the part from which the central nervous system controls all the automatic animal functions of the body, such as breathing, the heart beat, digestion, sleep, sex, the urinary system, the autonomous or vegetative nervous system and via the pituitary the whole interplay of the endocrine glands.

It has long been known that the content of sugar in the blood depends on a certain nervous center in the diencephalon. When this center is destroyed in laboratory animals, they develop a condition similar to stable diabetes. It has also long been known that the destruction of another diencephalic center produces a voracious appetite and a rapid gain in weight in animals which never get fat spontaneously.

### The Fat-Bank

Assuming that in man such a center controlling the movement of fat does exist, its function would have to be much like that of a bank. When the body assimilates from the intestinal tract more fuel than it needs at the moment, this surplus is deposited in what may be compared with a "current" account. Out of this account it can always be withdrawn as required. All normal fat reserves are in a "current" account, and it is probable that a diencephalic center manages the deposits and withdrawals.

When now the deposits grow rapidly while small withdrawals become more frequent, a point may be reached which goes beyond the diencephalon's banking capacity. Just as a banker might suggest to a wealthy client that instead of accumulating a large and unmanageable "current" account he should invest his surplus capital, the body appears to establish a fixed deposit into which all surplus funds go but from which they can no longer be withdrawn by the procedure used in a "current" account. In this way the diencephalic "fat-bank" frees itself from all work which goes beyond its normal banking capacity. The onset of obesity dates from the moment the diencephalon adopts this labor-saving ruse. Once a fixed deposit has been established the normal fat reserves are held at a minimum, while every available surplus is locked away in the fixed deposit and is therefore taken out of normal circulation.

### Three Basic Causes of Obesity

#### (1) The Inherited Factor

Assuming that there is a limit to the diencephalon's fat banking capacity, it follows that there are three basic ways in which obesity can become manifest. The first is that the fat-banking capacity is abnormally low from birth. Such a congenitally low diencephalic capacity would then represent the inherited factor in obesity. When this abnormal trait is markedly present, obesity will develop at an early age in spite of normal feeding; this could explain why among brothers and sisters eating the same food at the same table some become obese and others do not.

#### (2) Other Diencephalic Disorders

The second way in which obesity can become established is the lowering of a previously normal fat-banking capacity owing to some other diencephalic disorder. It seems to be a general rule that when one of the many diencephalic centers is particularly overtaxed; it tries to increase its capacity at the expense of other centers. This scenario may occur during menopause, the stable type of diabetes, and in Cushing's syndrome in which obesity is due to the withdrawal of energy from the diencephalic fat-bank in order to make it available to the highly disturbed center which governs the anterior pituitary adrenocortical system.

Whether obesity is caused by a marked inherited deficiency of the fat-center or by some entirely different diencephalic regulatory disorder, its insurgence obviously has nothing to do with overeating and in either case

obesity is certain to develop regardless of dietary restrictions. In these cases any enforced food deficit is made up from essential fat reserves and normal structural fat, much to the disadvantage of the patient's general health.

### (3) The Exhaustion of the Fat-bank

A third way in which obesity can become established is when a presumably normal fat-center is suddenly (with emphasis on suddenly) called upon to deal with an enormous influx of food far in excess of momentary requirements. At first glance it does seem that here we have a straight-forward case of overeating being responsible for obesity, but on further analysis it soon becomes clear that the relation of cause and effect is not so simple. In the first place we are merely assuming that the capacity of the fat center is normal while it is possible and even probable that the only persons who have some inherited trait in this direction can become obese merely by overeating.

Secondly, in many of these cases the amount of food eaten remains the same and it is only the burn of fuel which is suddenly decreased, as when an athlete is confined to bed for many weeks with a broken bone or when a man leading a highly active life is suddenly tied to his desk in an office and to television at home.

When a person suffers a long period of deprivation as with chronic illness, his diencephalon adjusts to the low food intake. When these conditions change and he is free to eat all the food he wants, this may overwhelm his fat-regulating center. During the WWII about 6000 grossly underfed Polish refugees who had spent harrowing years in Russia were transferred to a camp in India where they were well housed, given normal British army rations and some cash to buy a few extras. Within about three months, 85% were suffering from obesity.

In a person eating whole unrefined food, the digestion is slow and only a little nourishment at a time is assimilated from the intestinal tract. When such a person is suddenly able to obtain highly refined foods such as sugar, white flour, butter and oil these are so rapidly digested and assimilated that the rush of incoming fuel which occurs at every meal may eventually overpower the diencephalic regulatory mechanisms and thus lead to obesity.

### Psychological Aspects

Much has been written about the psychological aspects of obesity. The diencephalon is also the seat of our primitive animal instincts, and just as in an emergency it can switch energy from one center to another, so it seems to be able to transfer pressure from one instinct to another. Thus, a lonely and unhappy person deprived of all emotional comfort and gratification except the stilling of hunger and thirst can use these as outlets and develop obesity. Yet once that has happened, no amount of psychotherapy or analysis, happiness, company or the gratification of other instincts will correct the condition.

### Compulsive Eating

No end of injustice is done to obese patients by accusing them of compulsive eating. Most obese patients do not suffer from compulsive eating; they suffer genuine hunger -real, gnawing, torturing hunger. Even their sudden desire for sweets is merely the result of biochemical imbalance in which these food choices allay the pangs of hunger. This has nothing to do with diverted instincts. Patients suffering from real compulsive eating are comparatively rare.

### Reluctance to Lose Weight

Some girls look upon their weight as a safeguard against erotic involvements, of which they are afraid. They work out a pattern of life in which their obesity plays a determining role and then become reluctant to upset this pattern and face a new kind of life which will be entirely different after their figure becomes normal and often very attractive. They fear that people will like them -or be jealous -on account of their figure rather than be attracted by their intelligence or character only. Psychotherapy can be helpful, as it enables these patients to see the whole situation in the full light of consciousness.

In all other cases the best psychotherapy can do in the usual treatment of obesity is to render the burden of hunger and never-ending dietary restrictions slightly more tolerable. Patients who have successfully established an erotic transfer to their psychiatrist are often better able to bear their suffering as a secret labor of love.

There are thus a large number of ways in which obesity can be initiated, though the disorder itself is always due to the same mechanism, an inadequacy of the diencephalic fat-center and the laying down of abnormally fixed fat deposits in abnormal places. This means that once obesity has become established, it can no more be cured by eliminating those factors which brought it on than a fire can be extinguished by removing the cause of the conflagration. Thus a discussion of the various ways in which obesity can become established is useful from a preventative point of view, but it has no bearing on the treatment of the established condition. The elimination of

factors which are clearly hastening the course of the disorder may slow down its progress or even halt it, but they can never correct it.

### Not by Weight alone

Weight alone is not a satisfactory criterion by which to judge whether a person is suffering from the disorder we call obesity or not.. When a patient is carefully examined one finds many signs of potential obesity, which is just about to become manifest as overweight. The patient distinctly feels that something is wrong , that a subtle change is taking place. There are a number of signs and symptoms which are characteristic of obesity.

### Signs and symptoms of obesity

The bodily signs may be divided into such as have developed before puberty, indicating a strong inherited factor, and those which develop at the onset of manifest disorder. Early signs are a disproportionately large size of the two upper front teeth, the first incisor, or a dimple on both sides of the sacral bone just above the buttocks. When the arms are outstretched with the palms upward, the forearms appear sharply angled outward from the upper arms. The same applies to the lower extremities. The patient cannot bring his feet together without the knees overlapping; he is, in fact, knock-kneed.

The beginning accumulation of abnormal fat shows as a little pad just below the nape of the neck, colloquially known as the Duchess' Hump. There is a triangular fatty bulge in front of the armpit when the arm is held against the body. When the skin is stretched by fat rapidly accumulating under it, it many split in the lower layers. When large and fresh, such tears are purple, but later they are transformed into white scar-tissue. Such striation, as it is called, commonly occurs on the abdomen of women during pregnancy, but in obesity it is frequently found on the breasts, the hips and occasionally on the shoulders. In many cases striation is so fine that the small white lines are only just visible. They are always a sure sign of obesity, and though this may be slight at the time of examination such patients can usually remember a period in their childhood when they were excessively chubby.

Another typical sign is a pad of fat on the insides of the knees, a spot where normal fat reserves are never stored. There may be a fold of skin over the pubic area and another fold may stretch round both sides of the chest, where a loose roll of fat can be picked up between two fingers. In the male an excessive accumulation of fat in the breasts is always indicative, while in the female the breast is usually, but not necessarily, large. Obviously excessive fat on the abdomen, the hips, thighs, upper arms, chin and shoulders are characteristic, and it is important to remember that any number of these signs may be present in persons whose weight is statistically normal; particularly if they are dieting.

A human figure, male or female, can only be judged in the nude; any opinion based on the dressed appearance can be quite fantastically wide off the mark, and apart from frankly psychotic patients such as cases of anorexia nervosa; a morbid weight fixation does not exist. I have yet to see a patient who continues to complain after the figure has been rendered normal by adequate treatment.

### Fat but not Obese

While a person who is statistically underweight may still be suffering from the disorder which causes obesity, it is also possible for a person to be statistically overweight without suffering from obesity. For such persons weight is no problem, as they can gain or lose at will and experience no difficulty in reducing their caloric intake. They are masters of their weight, which the obese are not. Moreover, their excess fat shows no preference for certain typical regions of the body, as does the fat in all cases of obesity. Thus, the decision whether a borderline case is really suffering from obesity or not cannot be made merely by consulting weight tables.

### The Treatment Of Obesity

If obesity is always due to one very specific diencephalic deficiency, it follows that the only way to cure it is to correct this deficiency. At first this seemed an utterly hopeless undertaking. The greatest obstacle was that one could hardly hope to correct an inherited trait localized deep inside the brain, and while we did possess a number of drugs whose point of action was believed to be in the diencephalons, none of them had the slightest effect on the fat-center. There was not even a pointer showing a direction in which pharmacological research could move to find a drug that had such a specific action. The closest approach were the appetite-reducing drugs -the amphetamines--- --but these cured nothing.

### A Curious Observation

Froehlich had described cases of extreme obesity and sexual underdevelopment in youths suffering from a growth in the anterior pituitary lobe, producing what then became known as Froehlich's disease. However, it was very soon discovered that the identical syndrome, though running a less fulminating course, was quite common in patients whose pituitary gland was perfectly normal. These are the so-called "fat boys" with long, slender hands, breast enlargement, large hips, buttocks and thighs with striation, knock-knees and underdeveloped genitals, often with undescended testicles.

It also became known that in these cases the sex organs could be developed by giving the patients injections of a substance extracted from the urine of pregnant women. The purified extract was accordingly called "Human Chorionic Gonadotrophin" whereby chorionic signifies that it is produced in the placenta and gonadotropin that its action is sex gland directed.

The usual way of treating "fat boys" with underdeveloped genitals is to inject human Chorionic Gonadotrophin (hCG). Four interesting things emerged. The first was that when fresh pregnancy-urine from the female ward was given in quantities of about 300 cc. by retention enema, as good results could be obtained as by injecting the pure substance. The second was that small daily doses appeared to be just as effective as much larger ones given twice a week. Thirdly, and that is the observation that concerns us here, when such patients were given small daily doses they seemed to lose their ravenous appetite though they neither gained nor lost weight. Fourthly, their shape changed even though they were not restricted in diet. Specifically, there was a distinct decrease in the circumference of their hips.

#### Fat on the Move

Remembering this, it occurred to me that the change in shape could only be explained by a movement of fat away from abnormal deposits on the hips, and if that were so there was just a chance that while such fat was in transition it might be available to the body as fuel. This was easy to find out, as in that case, fat on the move would be able to replace food. It should then be possible to keep a "fat boy" on a severely restricted diet without a feeling of hunger, in spite of a rapid loss of weight. When I tried this in typical cases of Froehlich's syndrome, I found that as long as such patients were given small daily doses of hCG they could comfortably go about their usual occupations on a diet of only 500 Calories daily and lose an average of about one pound per day. It was also evident that only abnormal fat was being consumed, as there were no signs of any depletion of normal fat. Their skin remained fresh and turgid, and gradually their figures became entirely normal. The daily administration of hCG appeared to have no side-effects.

From this point we tried the same method in all other forms of obesity. It took a few hundred cases to establish that the mechanism operates the same way and without exception. I found that, though most patients were treated as outpatients, gross dietary errors rarely occurred. On the contrary, most patients complained that the two meals of 250 calories each were more than they could manage, as they continually had a feeling of just having had a large meal.

#### Pregnancy and Obesity

Pregnancy seems to be the only normal human condition in which the diencephalic fat banking capacity is unlimited. It is only during pregnancy that fixed fat deposits can be transferred back into the normal current account and freely drawn upon to make up for any nutritional deficit. During pregnancy, every ounce of reserve fat is placed at the disposal of the growing fetus. Were this not so, an obese woman, whose normal reserves are already depleted, would have the greatest difficulties in bringing her pregnancy to full term. There is considerable evidence to suggest that it is the hCG produced in large quantities in the placenta which brings about this diencephalic change.

Though we may be able to increase the diencephalic fat banking capacity by **injecting hCG, this does not in itself affect the weight**, just as transferring monetary funds from a fixed deposit into a current account does not make a man any poorer; to become poorer it is also necessary that he freely spends the money which thus becomes available. In pregnancy the needs of the growing embryo take care of this to some extent, but in the treatment of obesity there is no embryo, and so a very severe dietary restriction must take its place for the duration of treatment.

Only when the fat which is in transit under the effect of hCG is actually consumed can more fat be withdrawn from the fixed deposits. In pregnancy it would be most undesirable if the fetus were offered ample food only when there is a high influx from the intestinal tract. Ideal nutritional conditions for the fetus can only be achieved when the mother's blood is continually saturated with food, regardless of whether she eats or not, as otherwise a period of starvation might hamper the steady growth of the embryo. It seems that hCG brings about this continual saturation

of the blood, which is the reason why obese patients under treatment with hCG never feel hungry in spite of their drastically reduced food intake.

### The Nature of Human Chorionic Gonadotropin

hCG is never found in the human body except during pregnancy and in those rare cases in which a residue of placental tissue continues to grow in the womb in what is known as a chorionic epithelioma. It is never found in the male. Gonadotrophin literally means a sex-gland directed substance or hormone, and this is quite misleading. It dates from the early days when it was first found that hCG is able to render infantile sex glands mature, whereby it was entirely overlooked that it has no stimulating effect whatsoever on normally developed and normally functioning sex-glands. No amount of hCG is ever able to increase a normal sex function. It can only improve an abnormal one and in the young hasten the onset of puberty. However, this is no direct effect. hCG acts exclusively at a diencephalic level and there brings about a considerable increase in the functional capacity of all those centers which are working at maximum capacity.. It would be far more appropriate, if hCG were called chorionic diencephalotrophin.

### hCG no Sex Hormone

It cannot be sufficiently emphasized that hCG is not sex-hormone, that its action is identical in men, women, children and in those cases in which the sex-glands no longer function owing to old age or their surgical removal. The only sexual change it can bring about after puberty is an improvement of a pre-existing deficiency. But never stimulation beyond the normal.. In an indirect way via the anterior pituitary, hCG regulates menstruation and facilitates conception, but it never virilizes a woman or feminizes a man. It neither makes men grow breasts nor does it interfere with their virility, though where this was deficient it may improve it. It never makes women grow a beard or develop a gruff voice.

### Importance and Potency of hCG

Though a pregnant woman can produce as much as one million units per day, we find that the injection of only 125 units per day is ample to reduce weight at the rate of roughly one pound per day, even in a colossus weighing 400 pounds, when associated with a 500-calorie diet.

### Complicating Disorders

Some complicating disorders are often associated with obesity and in which obesity seems to play a precipitating or at least an aggravating role: the stable type of diabetes, gout, rheumatism and arthritis, high blood pressure and hardening of the arteries, coronary disease and cerebral hemorrhage. In all of these conditions, it research is becoming more evident that diencephalic regulations play a dominant role in their causation. The other common factor is that they either improve or do not occur during pregnancy. In the latter respect they are joined by many other disorders not necessarily associated with obesity. Such disorders are, for instance, colitis, duodenal or gastric ulcers, certain allergies, psoriasis, loss of hair, brittle fingernails, migraine, etc.

If hCG + diet does in the obese bring about those diencephalic changes which are characteristic of pregnancy, one would expect to see an improvement in all these conditions comparable to that seen in real pregnancy. The administration of hCG does in fact do this in a remarkable way.

### Diabetes

In an obese patient suffering from a fairly advanced case of stable diabetes of many years duration in which the blood sugar may range from 300-400 mg, it is often possible to stop all anti-diabetes medication after the first few days of treatment. The blood sugar continues to drop from day to day and often reaches normal values in 2-3 weeks. This phenomenon is not observed in the brittle type of diabetes, which is primarily due to the inability of the pancreas to produce sufficient insulin. As some cases that are predominantly stable may have a small brittle factor in their clinical makeup, all obese diabetics have to be kept under a very careful and expert watch.

### Rheumatism

All rheumatic pains, even those associated with demonstrable bony lesions, improve subjectively within a few days of treatment, and often require neither cortisone nor other anti-inflammatories.

### Cholesterol

Blood cholesterol level is governed by diencephalic mechanisms. The behavior of circulating cholesterol is therefore of particular interest during the treatment of obesity with hCG. Cholesterol circulates in two forms, which we call free and esterified. Normally these fractions are present in a proportion of about 25% free to 75% esterified cholesterol, and it is the latter fraction which damages the walls of the arteries. In pregnancy this proportion is reversed and it may be taken for granted that arteriosclerosis never gets worse during pregnancy for this very reason.

To my knowledge, the only other condition in which the proportion of free to esterified cholesterol is reversed is during the treatment of obesity with hCG + diet, when exactly the same phenomenon takes place.

When the total amount of circulating cholesterol is normal before treatment, this absolute amount is neither significantly increased nor decreased. But when an obese patient with an abnormally high cholesterol and already showing signs of arteriosclerosis is treated with hCG, his blood pressure drops and his coronary circulation seems to improve, and yet his total blood cholesterol may soar to heights never before reached. When we saw that the patients came to no harm even if treatment was continued and we found the same in follow-up examinations undertaken some months after treatment was continued as we found in examinations undertaken some months before treatment. As the increase is mostly in the form of the not dangerous form of the free cholesterol, we believe that the rise is entirely due to the liberation of recent cholesterol deposits that have not yet undergone calcification in the arterial wall and is therefore highly beneficial.

### Gout

An identical behavior is found in the blood uric acid level of patients suffering from gout. Predictably such patients get an acute and often severe attack after the first few days of hCG treatment but then remain entirely free of pain, in spite of the fact that their blood uric acid often shows a marked increase which may persist for several months after treatment. Those patients who have regained their normal weight remain free of symptoms regardless of what they eat, while those that require a second course of treatment get another attack of gout as soon as the second course is initiated. We give allopurinol to all patients who give a history of gout and have a high blood uric acid level to completely avoid attacks during treatment.

### Blood Pressure

In cases of patients who have an abnormally low blood pressure, the blood pressure rises to normal values at the beginning of treatment and then very gradually drops, as it always does in patients with a normal blood pressure. Normal values are always regained a few days after the treatment is over. Of this lowering of the blood pressure during treatment the patients are not aware. When the blood pressure is abnormally high, and provided there are no detectable renal lesions, the pressure drops, as it usually does in pregnancy. The drop is often very rapid and thus it is sometimes advisable to slow down the process with pressure sustaining medication until the circulation has had a few days time to adjust itself to the new situation. On the other hand, among the thousands of cases treated, we have never seen any incident which could be attributed to the rather sudden drop in high blood pressure.

### Peptic Ulcers

In our cases of obesity with gastric or duodenal ulcers we have noticed a surprising subjective improvement in spite of a diet which would generally be considered most inappropriate for an ulcer patient. Here, too, there is a similarity with pregnancy, in which peptic ulcers hardly ever occur. However we have seen two cases with a previous history of several hemorrhages in which a bleeding occurred within 2 weeks of the end of treatment.

### Psoriasis, Fingernails, Hair Varicose Ulcers

As in pregnancy, psoriasis greatly improves during treatment but may relapse when the treatment is over. Most patients spontaneously report a marked improvement in the condition of brittle fingernails. The loss of hair not infrequently associated with obesity is temporarily arrested, though in very rare cases an increased loss of hair has been reported. Alopecia areata, which can occur was almost, if not quite, arrested with hCG administration; however, within a week of having finished the course of hCG, all the remaining hair fell out. The interesting point is that the treatment was able to postpone this result but not to prevent it. The patient has now grown a new shock of hair of which she is justly proud.

In obese patients with large varicose ulcers we were surprised to find that these ulcers heal rapidly under treatment with hCG. We have since treated non obese patients suffering from varicose ulcers with daily injections of hCG on normal diet with equally good results.



## Technique

## Warnings

Any patient who thinks he can reduce by taking a few doses and eating less is not only sure to be disappointed but may be heading for serious trouble. The benefit the patient can derive from reading this book is a fuller realization of how very important it is for him to follow the program to the letter. For instance, **if the diet is increased from 500 to 600 or 700 Calories, the loss of weight is quite unsatisfactory.** If the daily dose of hCG is raised to 200 or more units daily its action often appears to be reversed, possibly because larger doses evoke diencephalic counter-regulations. On the other hand, the diencephalon is an extremely robust organ in spite of its unbelievable intricacy. From an evolutionary point of view it is one of the oldest organs in our body and its evolutionary history dates back more than 500 million years. This has tendered it extraordinarily adaptable to all natural exigencies, and that is one of the main reasons why the human species was able to evolve. What its evolution did not prepare it for were the conditions to which human culture and civilization now expose it.

## History taking

When a patient first presents himself for treatment, we take a general history and note the time when the first signs of overweight were observed. We try to establish the highest weight the patient has ever had in his life (obviously excluding pregnancy), when this was, and what measures have hitherto been taken in an effort to reduce.

It has been our experience that those patients who have been taking thyroid preparations for long periods have a slightly lower average loss of weight under treatment with hCG than those who have never taken thyroid. This is even so in those patients who have been taking thyroid because they had an abnormally low basal metabolic rate. In many of these cases the low BMR is not due to any intrinsic deficiency of the thyroid gland, but rather to a lack of diencephalic stimulation of the thyroid gland via the anterior pituitary lobe. We never allow thyroid to be taken during treatment, and yet a BMR which was very low before treatment is usually found to be normal after a week or two of hCG + diet. Needless to say, this does not apply to those cases in which a thyroid deficiency has been produced by the surgical removal of a part of an overactive gland. It is also most important to ascertain whether the patient has taken diuretics (water eliminating pills) as this also decreases the weight loss under the hCG regimen.

Returning to our procedure, we next ask the patient a few questions to which he is held to reply simply with "yes" or "no". These questions are: Do you suffer from headaches? rheumatic pains? menstrual disorders? constipation? breathlessness or exertion? swollen ankles? Do you consider yourself greedy? Do you feel the need to eat snacks between meals?

The patient then strips and is weighed and measured. The normal weight for his height, age, skeletal and muscular build is established from tables of statistical averages, whereby in women it is often necessary to make an allowance for particularly large and heavy breasts. The degree of overweight is then calculated, and from this the duration of treatment can be roughly assessed on the basis of an average loss of weight of a little less than a pound, say 300-400 grams-per injection, per day. It is a particularly interesting feature of the hCG treatment that in reasonably cooperative patients this figure is remarkably constant, regardless of sex, age and degree of overweight.

## The Duration of Treatment

Patients who need to lose 15 pounds (7 kg.) or less require 26 days treatment with 23 daily injections. The extra three days are needed because all patients must continue the 500-calorie diet for three days after the last injection. This is a very essential part of the treatment, because if they start eating normally as long as there is even a trace of hCG in their body they put on weight alarmingly at the end of the treatment. After three days when all the hCG has been eliminated this does not happen, because the blood is then no longer saturated with food and can thus accommodate an extra influx from the intestines without increasing its volume by retaining water.

We never give a treatment lasting less than 26 days, even in patients needing to lose only 5 pounds. It seems that even in the mildest cases of obesity the diencephalon requires about three weeks rest from the maximal exertion to which it has been previously subjected in order to regain fully its normal fat-banking capacity. Clinically this expresses itself, in the fact that, when in these mild cases, treatment is stopped as soon as the weight is normal, which may be achieved in a week, it is much more easily regained than after a full course of 23 injections.

As soon as such patients have lost all their abnormal superfluous fat, they at once begin to feel ravenously hungry with continued injections. This is because hCG only puts abnormal fat into circulation and cannot, in the doses used, liberate normal fat deposits; indeed, it seems to prevent their consumption. As soon as their statistically

normal weight is reached, these patients are put on 800-1000 calories for the rest of the treatment. The diet is arranged in such a way that the weight remains perfectly stationary and is thus continued for three days after the 23rd injection. Only then are the patients free to eat anything they please except sugar and starches for the next three weeks.

Such early cases are common among actresses, models, and persons who are tired of obesity, having seen its ravages in other members of their family. Film actresses frequently explain that they must weigh less than normal. With this request we flatly refuse to comply, first, because we undertake to cure a disorder, not to create a new one, and second, because it is in the nature of the hCG method that it is self limiting. It becomes completely ineffective as soon as all abnormal fat is consumed. Actresses with a slight tendency to obesity, having tried all manner of reducing methods, invariably come to the conclusion that their figure is satisfactory only when they are underweight, simply because none of these methods remove their superfluous fat deposits. When they see that under hCG their figure improves out of all proportion to the amount of weight lost, they are nearly always content to remain within their normal weight-range.

When a patient has more than 15 pounds to lose the treatment takes longer but the maximum we give in a single course is 40 injections, nor do we as a rule allow patients to lose more than 34 lbs. (15 Kg.) at a time. The treatment is stopped when either 34 lbs. have been lost or 40 injections have been given. The only exception we make is in the case of grotesquely obese patients who may be allowed to lose an additional 5-6 lbs. if this occurs before the 40 injections are up.

### Immunity to hCG

The reason for limiting a course to 40 injections is that by then some patients may begin to show signs of hCG immunity. Though this phenomenon is well known, we cannot as yet define the underlying mechanism. Maybe after a certain length of time the body learns to break down and eliminate hCG very rapidly, or possibly prolonged treatment leads to some sort of counter-regulation which annuls the diencephalic effect. After 40 daily injections it takes about six weeks before this so called immunity is lost and hCG again becomes fully effective. Usually after about 40 injections patients may feel the onset of immunity as hunger which was previously absent. In those comparatively rare cases in which signs of immunity develop before the full course of 40 injections has been completed-say at the 35th injection- treatment must be stopped at once, because if it is continued the patients begin to look weary and drawn, feel weak and hungry and any further loss of weight achieved is then always at the expense of normal fat. This is not only undesirable, but normal fat is also instantly regained as soon as the patient is returned to a free diet.

Patients who need only 23 injections may be injected daily, including Sundays, as they never develop immunity. In those that take 40 injections the onset of immunity can be delayed if they are given only six injections a week, leaving out Sundays or any other day they choose, provided that it is always the same day. On the days on which they do not receive the injections they usually feel slight sensation of hunger. At first we thought that this might be purely psychological, but we found that when normal saline is injected without the patient's knowledge the same phenomenon occurs.

### Menstruation

During menstruation no injections are given, but the diet is continued and causes no hardship; yet as soon as the menstruation is over, the patients become extremely hungry unless the injections are resumed at once. It is very impressive to see the suffering of a woman who has continued her diet for a day or two beyond the end of the period without coming for her injection and then to hear the next day that all hunger ceased within a few hours after the injection and to see her once again content, florid and cheerful. While on the question of menstruation it must be added that in teenaged girls the period may in some rare cases be delayed and exceptionally stop altogether. If then later this is artificially induced some weight may be regained.

### Further Courses

Patients requiring the loss of more than 34 lbs. must have a second or even more courses. A second course can be started after an interval of not less than six weeks, though the pause can be more than six weeks. When a third, fourth or even fifth course is necessary, the interval between courses should be made progressively longer. Between a second and third course eight weeks should relapse, between a third and fourth course twelve weeks, between a fourth and fifth course twenty weeks and between a fifth and sixth course six months. In this way it is possible to bring about a weight reduction of 100 lbs. and more if required without the least hardship to the patient.

In general, men do slightly better than women and often reach a somewhat higher average daily loss. Very advanced cases do a little better than early ones, but it is a remarkable fact that this difference is only just statistically significant.

#### Conditions that must be accepted before treatment

On the basis of these data the probable duration of treatment can be calculated with considerable accuracy, and this is explained to the patient. It is made clear to him that during the course of treatment he must attend the clinic weekly to be weighed, injected and generally checked.

It is also made clear that between courses the patient gets no treatment and is free to eat anything he pleases except starches and sugar during the first 3 weeks. It is impressed upon him that he will have to follow the prescribed diet to the letter and that after the first three days this will cost him no effort, as he will feel no hunger and may indeed have difficulty in getting down the 500 Calories which he will be given. If these conditions are not acceptable the case is refused, as any compromise or half measure is bound to prove utterly disappointing to patient and physician alike and is a waste of time and energy.

Though a patient can only consider himself really cured when he has been reduced to his statically normal weight, we do not insist that he commit himself to that extent. Even a partial loss of overweight is highly beneficial, and it is our experience that once a patient has completed a first course he is so enthusiastic about the ease with which the - to him surprising - results are achieved that he almost invariably comes back for more. There certainly can be no doubt that in my clinic more time is spent on damping over-enthusiasm than on insisting that the rules of the treatment be observed.

#### Examining the patient

Only when agreement is reached on the points so far discussed do we proceed with the examination of the patient. A note is made of the size of the first upper incisor, of a pad of fat on the nape of the neck, at the axilla and on the inside of the knees. The presence of striation, a suprapubic fold, a thoracic fold, angulation of elbow and knee joint, breast-development in men and women, edema of the ankles and the state of genital development in the male are noted.

Wherever this seems indicated we X-ray the sella turcica, as the bony capsule which contains the pituitary gland is called, measure the basal metabolic rate, X-ray the chest and take an electrocardiogram. We do a blood-count and a sedimentation rate and estimate uric acid, cholesterol, iodine and sugar in the fasting blood.

#### Gain before Loss

Patients whose general condition is low, owing to excessive previous dieting, must eat to capacity for about one week before starting treatment, regardless of how much weight they may gain in the process. One cannot keep a patient comfortably on 500 Calories unless his normal fat reserves are reasonably well stocked. It is for this reason also that every case, even those that are actually gaining must eat to capacity of the most fattening food they can get down until they have had the third injection. It is a fundamental mistake to put a patient on 500 Calories as soon as the injections are started, as it seems to take about three injections before abnormally deposited fat begins to circulate and thus become available.

We distinguish between the first three injections, which we call "non-effective" as far as the loss of weight is concerned, and the subsequent injections given while the patient is dieting, which we call "effective". The average loss of weight is calculated on the number of effective injections and from the weight reached on the day of the third injection which may be well above what it was two days earlier when the first injection was given.

Most patients who have been struggling with diets for years and know how rapidly they gain if they let themselves go are very hard to convince of the absolute necessity of gorging for at least two days, and yet this must be insisted upon categorically if the further course of treatment is to run smoothly. Those patients who have to be put on forced feeding for a week before starting the injections usually gain weight rapidly -four to six pounds in 24 hours is not unusual -but after a day or two this rapid gain generally levels off. In any case, the whole gain is usually lost in the first 48 hours of dieting. It is necessary to proceed in this manner because the gain re-stocks the depleted normal reserves, whereas the subsequent loss is from the abnormal deposits only.

Patients in a satisfactory general condition and those who have not just previously restricted their diet start forced feeding on the day of the first injection. Some patients say that they can no longer overeat because their stomach has shrunk after years of restrictions. While we know that no stomach ever shrinks, we compromise by insisting that

they eat frequently of highly concentrated foods such as milk chocolate, pastries with whipped cream sugar, fried meats (particularly pork), eggs and bacon, mayonnaise, bread with thick butter and jam, etc. The time and trouble spent on pressing this point upon incredulous or reluctant patients is always amply rewarded afterwards by the complete absence of those difficulties which patients who have disregarded these instructions are liable to experience.

During the two days of forced feeding from the first to the third injection -many patients are surprised that contrary to their previous experience they do not gain weight and some even lose. The explanation is that in these cases there is a compensatory flow of urine, which drains excessive water from the body. To some extent this seems to be a direct action of hCG, but it may also be due to a higher protein intake, as we know that a protein-deficient diet makes the body retain water.

### Starting treatment

In menstruating women, the best time to start treatment is immediately after a period. Treatment may also be started later, but it is advisable to have at least ten days in hand before the onset of the next period. Similarly, the end of a course should never be made to coincide with onset of menstruation. If things should happen to work out that way, it is better to give the last injection three days before the expected date of the menses so that a normal diet can be resumed at onset. Alternatively, at least three injections should be given after the period, followed by the usual three days of dieting. This rule need not be observed in such patients who have reached their normal weight before the end of treatment and are already on a higher caloric diet.

Patients who require more than the minimum of 23 injections and who therefore skip one day a week in order to postpone immunity to hCG cannot have their third injections on the day before the interval. Thus if it is decided to skip Sundays, the treatment can be started on any day of the week except Thursdays. Supposing they start on Thursday, they will have their third injection on Saturday, which is also the day on which they start their 500 Calorie diet. They would then base no injection on the second day of dieting, this exposes them to an unnecessary hardship, as without the injection they will feel particularly hungry. Of course, the difficulty can be overcome by exceptionally injecting them on the first Sunday. If this day falls between the first and second or between the second and third injection, we usually prefer to give the patient the extra day of forced feeding, which the majority rapturously enjoy.

### The Diet

The 500 calorie diet is explained on the day of the second injection to those patients who will be preparing their own food. Patients are given the following diet sheet.

Breakfast: Tea or coffee in any quantity without sugar. Only one tablespoonful of milk allowed in 24 hours. Saccharin or Stevia may be used.

#### Lunch:

1. 100 grams of veal, beef, chicken breast, fresh white fish, lobster, crab, or shrimp. All visible fat must be carefully removed before cooking, and the meat must be weighed raw. It must be boiled or grilled without additional fat. Salmon, eel, tuna, herring, dried or pickled fish are not allowed. The chicken breast must be removed from the bird.
2. One type of vegetable only to be chosen from the following: spinach, chard, chicory, beet-greens, green salad, tomatoes, celery, fennel, onions, red radishes, cucumbers, asparagus, cabbage.
3. One breadstick (grissino) or one Melba toast.
4. An apple, orange, or a handful of strawberries or one-half grapefruit.

Dinner : The same four choices as lunch.

The juice of one lemon daily is allowed for all purposes. Salt, pepper, vinegar, mustard powder, garlic, sweet basil, parsley, thyme, majoram, etc., may be used for seasoning, but no oil, butter or dressing.

Tea, coffee, plain water, or mineral water are the only drinks allowed, but they may be taken in any quantity and at all times.

In fact, the patient should drink about 2 liters of these fluids per day. Many patients are afraid to drink so much because they fear that this may make them retain more water. This is a wrong notion as the body is more inclined to store water when the intake falls below its normal requirements.

The fruit or the breadstick may be eaten between meals instead of with lunch or dinner, but not more than than four items listed for lunch and dinner may be eaten at one meal.

No medicines or cosmetics other than lipstick, eyebrow pencil and powder may he used without special permission

Every item in the list is gone over carefully, continually stressing the point that no variations other than those listed may be introduced. All things not listed are forbidden, and the patient is assured that nothing permissible has been left out. The 100 grams of meat must be scrupulously weighed raw after all visible fat has been removed. To do this accurately the patient must have a letter-scale, as kitchen scales are not sufficiently accurate and the butcher should certainly not be relied upon.

Those not uncommon patients who feel that even so little food is too much for them, can omit anything they wish.

There is no objection to breaking up the two meals. For instance having a breadstick and an apple for breakfast or before going to bed, provided they are deducted from the regular meals. The whole daily ration of two breadsticks or two fruits may not be eaten at the same time, nor can any item saved from the previous day be added on the following day. In the beginning patients are advised to check every meal against their diet sheet before starting to eat and not to rely on their memory. It is also worth pointing out that any attempt to observe this diet without hCG will lead to trouble in two to three days.

It should also be mentioned that two small apples weighing as much as one large one never the less have a higher caloric value and are therefore not allowed though there is no restriction on the size of one apple. Some people do not realize that chicken breast does not mean the breast of any other fowl, nor does it mean a wing or drumstick.

The most tiresome patients are those who start counting calories and then come up with all manner of ingenious variations which they compile from their little books. When one has spent years of weary research trying to make a diet as attractive as possible without jeopardizing the loss of weight, culinary geniuses who are out to improve their unhappy lot are hard to take.

#### Making up the Calories

The diet used in conjunction with hCG must not exceed 500 calories per day, and the way these calories are made up is of utmost importance. For instance, if a patient drops the apple and eats an extra breadstick instead, he will not be getting more calories but he will not lose weight. There are a number of foods, particularly fruits and vegetables, which have the same or even lower caloric values than those listed as permissible, and yet we find that they interfere with the regular loss of weight under hCG, presumably owing to the nature of their composition. Pimiento peppers, okra, artichokes and pears are examples of this.

While this diet works satisfactorily in Italy, certain modifications have to be made in other countries. For instance, American beef has almost double the caloric value of South Italian beef, which is not marbled with fat. This marbling is impossible to remove. In America, therefore, low-grade veal should be used for one meal and fish (excluding all those species such as herring, mackerel, tuna, salmon, eel, etc., which have a high fat content, and all dried, smoked or pickled fish), chicken breast, lobster, crawfish, prawns or shrimp, crabmeat or kidneys for the other meal. Where the Italian breadsticks, the so-called grissini, are not available, one Melba toast may be used instead, though they are psychologically less satisfying. A Melba toast has about the same weight as the very porous grissini which is much more to look at and to chew.

It must be borne in mind that the total daily intake must not exceed 500 calories if the best possible results are to be obtained, that the daily ration should contain 200 grams of fat-free protein and a very small amount of starch.

Just as the daily dose of hCG is the same in all cases, so the same diet proves to be satisfactory for a small elderly lady of leisure or a hard working muscular giant. Under the effect of hCG the obese body is always able to obtain all the calories it needs from the abnormal fat deposits, regardless of whether it uses up 1500 or 4000 per day. It must be made very clear to the patient that he is living to a far greater extent on the fat which he is losing than on what he eats.

Many patients ask why eggs are not allowed. The contents of two good sized eggs are roughly equivalent to 100 grams of meat, but fortunately the yolk contains a large amount of fat, which is undesirable. Very occasionally we

allow egg -boiled, poached or raw -to patients who develop an aversion to meat, but in this case they must add the white of three eggs to the one they eat whole. In countries where cottage cheese made from skimmed milk is available 100 grams may occasionally be used instead of the meat, but no other cheeses are allowed.

## Vegetarians

Strict vegetarians such as orthodox Hindus present a special problem, because milk and curds are the only animal protein they will eat. To supply them with sufficient protein of animal origin they must drink 500 cc. of skimmed milk per day, though part of this ration can be taken as curds. As far as fruit, vegetables and starch are concerned, their diet is the same as that of non-vegetarians; they cannot be allowed their usual intake of vegetable proteins from leguminous plants such as beans or from wheat or nuts, nor can they have their customary rice. In spite of these severe restrictions, their average loss is about half that of non-vegetarians, presumably owing to the sugar content of the milk.

## Faulty Dieting

Few patients will take one's word for it that the slightest deviation from the diet has under hCG disastrous results as far as the weight is concerned. This extreme sensitivity has the advantage that the smallest error is immediately detectable at the daily weighing but most patients have to make the experience before they will believe it.

Persons who are obliged to attend social functions to which they cannot bring their meager meal must be told beforehand that an official dinner will cost them the loss of about three days treatment, however careful they are and in spite of a friendly and would-be cooperative host. They should take dainty servings of everything, hide what they can under the cutlery and book the gain which may take three days to get rid of as one of the sacrifices which their profession entails. Allowing three days for their correction, such incidents do not jeopardize the treatment, provided they do not occur all too frequently in which case treatment should be postponed to a socially more peaceful season.

## Vitamins and anemia

Sooner or later most patients express a fear that they may be running out of vitamins or that the restricted diet may make them anemic. On this score the physician can confidently relieve their apprehension by explaining that every time they lose a pound of fatty tissue, which they do almost daily, only the actual fat is burned up; all the vitamins, the proteins, the blood, and the minerals which this tissue contains in abundance are fed back into the body. Actually, a low blood count not due to any serious disorder of the blood forming tissues improves during treatment, and we have never encountered a significant protein deficiency nor signs of a lack of vitamins in patients who are dieting regularly.

## The First Days of Treatment

On the day of the third injection it is almost routine to hear two remarks. One is: "You know, Doctor, I'm sure it's only psychological, but I already feel quite different". So common is this remark, even from very skeptical patients that we hesitate to accept the psychological interpretation. The other typical remark is: "Now that I have been allowed to eat anything I want, I can't get it down. Since yesterday I feel like a stuffed pig. Food just doesn't seem to interest me any more, and I am longing to get on with your diet". Many patients notice that they are passing more urine and that the swelling in their ankles is less even before they start dieting.

On the day of the fourth injection most patients declare that they are feeling fine. They have usually lost two pounds or more, some say they feel a bit empty but hasten to explain that this does not amount to hunger. Some complain of a mild headache of which they have been forewarned and for which they have been given permission to take aspirin.

During the second and third day of dieting -that is, the fifth and sixth injection-these minor complaints improve while the weight continues to drop at about double the usually overall average of almost one pound per day, so that a moderately severe case may by the fourth day of dieting have lost as much as 8- 10 lbs.

It is usually at this point that a difference appears between those patients who have literally eaten to capacity during the first two days of treatment and those who have not. The former feel remarkably well; they have no hunger, nor do they feel tempted when others eat normally at the same table. They feel lighter, more clear-headed and notice a desire to move quite contrary to their previous lethargy. Those who have disregarded the advice to eat to capacity continue to have minor discomforts and do not have the same euphoric sense of self-being until about a week later. It seems that their normal fat reserves require that much more time before they are fully stocked.

## Fluctuations in weight loss

After the fourth or fifth day of dieting the daily loss of weight begins to decrease to one pound or somewhat less per day, and there is a smaller urinary output. Men often continue to lose regularly at that rate, but women are more irregular in spite of faultless dieting. There may be no drop at all for two or three days and then a sudden loss which reestablishes the normal average. These fluctuations are entirely due to variations in the retention and elimination of water, which are more marked in women than in men.

The weight registered by the scale is determined by two processes not necessarily synchronized under the influence of hCG. Fat is being extracted from the cells, in which it is stored in the fatty tissue. When these cells are empty and therefore serve no purpose, the body breaks down the cellular structure and absorbs it, but breaking up of useless cells, connective tissue, blood vessels, etc., may lag behind the process of fat-extraction. When this happens the body appears to replace some of the extracted fat with water which is retained for this purpose. As water is heavier than fat the scales may show no loss of weight, although sufficient fat has actually been consumed to make up for the deficit in the 500-Calorie diet. When such tissue is finally broken down, the water is liberated and there is a sudden flood of urine and a marked loss of weight. This simple interpretation of what is really an extremely complex mechanism is the one we give those patients who want to know why it is that on certain days they do not lose, though they have committed no dietary error.

Patients who have previously regularly used diuretics as a method of reducing, lose fat during the first two or three weeks of treatment which shows in their measurements, but the scale may show little or no loss because they are replacing the normal water content of their body which has been dehydrated. Diuretics should never be used for reducing.

## Interruptions of Weight Loss

We distinguish four types of interruption in the regular daily loss. The first is the one that has already been mentioned in which the weight stays stationary for a day or two, and this occurs, particularly towards the end of a course, in almost every case.

### The Plateau

The second type of interruption we call a "plateau". A plateau lasts 4-6 days and frequently occurs during the second half of a full course, particularly in patients that have been doing well and whose overall average of nearly a pound per effective injection has been maintained. Those who are losing more than the average all have a plateau sooner or later. A plateau always corrects, itself, but many patients who have become accustomed to a regular daily loss get unnecessarily worried. No amount of explanation convinces them that a plateau does not mean that they are no longer responding normally to treatment.

In such cases we consider it permissible, for purely psychological reasons, to break up the plateau. This can be done in two ways. One is a so-called "apple day". An apple-day begins at lunch and continues until just before lunch of the following day. The patients are given six large apples and are told to eat one whenever they feel the desire though six apples is the maximum allowed. During an apple-day no other food or liquids except plain water are allowed and of water they may only drink just enough to quench an uncomfortable thirst if eating an apple still leaves them thirsty. Most patients feel no need for water and are quite happy with their six apples. Needless to say, an apple-day may never be given on the day on which there is no injection. The apple-day produces a gratifying loss of weight on the following day, chiefly due to the elimination of water. This water is not regained when the patients resume their normal 500-calorie diet at lunch, and on the following days they continue to lose weight satisfactorily.

The other way to break up a plateau is by giving a diuretic for one day. This is simpler for the patient but we prefer the apple-day as we sometimes find that though the diuretic is very effective on the following day it may take two to three days before the normal daily reduction is resumed, throwing the patient into a new fit of despair. It is useless to give either an apple-day or a diuretic unless the weight has been stationary for at least four days without any dietary error having been committed.

## Reaching a Former Level

The third type of interruption in the regular loss of weight may last much longer -ten days to two weeks. Fortunately, it is rare and only occurs in very advanced cases, and then hardly ever during the first course of treatment. It is seen only in those patients who during some period of their lives have maintained a certain fixed degree of obesity for ten years or more and have then at some time rapidly increased beyond that weight. When

then in the course of treatment the former level is reached, it may take two weeks of no loss, in spite of hCG and diet, before further reduction is normally resumed.

### Menstrual Interruption

The fourth type of interruption is the one which often occurs a few days before and during the menstrual period and in some women at the time of ovulation. It must also be mentioned that when a woman becomes pregnant during treatment -and this is by no means uncommon -she at once ceases to lose weight. An unexplained arrest of reduction has on several occasions raised our suspicion before the first period was missed. If in such cases, menstruation is delayed, we stop injecting and do a precipitation test five days later. No pregnancy test should be carried out earlier than five days after the last injection, as otherwise the hCG may give a false positive result.

Oral contraceptives may be used during treatment.

### Dietary Errors

Any interruption of the normal loss of weight which does not fit perfectly into one of those categories is always due to some possibly very minor dietary error. Similarly, any gain of more than 100 grams is invariably the result of some transgression or mistake, unless it happens on or about the day of ovulation or during the three days preceding the onset of menstruation, in which case it is ignored. In all other cases the reason for the gain must be established at once.

The patient who frankly admits that he has stepped out of his regimen when told that something has gone wrong is no problem. He is always surprised at being found out, because unless he has seen this himself he will not believe that a salted almond, a couple of potato chips, a glass of tomato juice or an extra orange will bring about a definite increase in his weight on the following day.

Very often he wants to know why extra food weighing one ounce should increase his weight by six ounces. We explain this in the following way: Under the influence of hCG the blood is saturated with food and the blood volume has adapted itself so that it can only just accommodate the 500 calories which come in from the intestinal tract in the course of the day. Any additional income, however little this may be, cannot be accommodated and the blood is therefore forced to increase its volume sufficiently to hold the extra food, which it can only do in a very diluted form. Thus it is not the weight of what is eaten that plays the determining role but rather the amount of water which the body must retain to accommodate this food.

This can be illustrated by mentioning the case of salt. In order to hold one teaspoonful of salt the body requires one liter of water, as it cannot accommodate salt in any higher concentration. Thus, if a person eats one teaspoonful of salt his weight will go up by more than two pounds as soon as this salt is absorbed from his intestine. Many patients question "if I put on that much every time I eat a little extra, how can I hold my weight after the treatment?" It must therefore be made clear that this only happens as long as they are under hCG.

### Salt and Reducing

While we are on the subject of salt, I can take this opportunity to explain that we make no restriction in the use of salt and insist that the patients drink large quantities of water throughout the treatment. We are out to reduce abnormal fat and are not in the least interested in such illusory weight losses as can be achieved by depriving the body of salt and by desiccating it. Though we allow the free use of salt, the daily amount taken should be roughly the same, as a sudden increase will of course be followed by a corresponding increase in weight as shown by the scale. An increase in the intake of salt is one of the most common causes for an increase in weight from one day to the next. Such an increase can be ignored, provided it is accounted for, it in no way influences the regular loss of fat.

### Water

Patients are usually hard to convince that the amount of water they retain has nothing to do with the amount of water they drink. When the body is forced to retain water, it will do this at all costs. If the fluid intake is insufficient to provide all the water required, the body withholds water from the kidneys and the urine becomes scanty and highly concentrated, imposing a certain strain on the kidneys. If that is insufficient, excessive water will be withdrawn from the intestinal tract, with the result that the feces become hard and dry. On the other hand if a patient drinks more than his body requires, the surplus is promptly and easily eliminated. Trying to prevent the body from retaining water by drinking less is therefore not only futile but even harmful.

### Constipation



An excess of water keeps the feces soft, and that is very important in the obese, who commonly suffer from constipation and a spastic colon. While a patient is under treatment we never permit the use of any kind of laxative taken by mouth. We explain that owing to the restricted diet it is perfectly satisfactory and normal to have an evacuation of the bowel only once every three to four days and that, provided plenty of fluids are taken, this never leads to any disturbance. Only in those patients who begin to fret after four days do we allow the use of a suppository. Patients who observe this rule find that after treatment they have a perfectly normal bowel action and this delights many of them almost as much as their loss of weight.

### Investigating Dietary Errors

When the reason for a slight gain in weight is not immediately evident, it is necessary to investigate further. A patient who is unaware of having committed an error or is unwilling to admit a mistake protests indignantly when told he has done something he ought not to have done. In that atmosphere no fruitful investigation can be conducted; so we calmly explain that we are not accusing him of anything but that we know for certain from our not inconsiderable experience that something has gone wrong and that we must now sit down quietly together and try and find out what it was. Once the patient realizes that it is in his own interest that he play an active and not merely a passive role in this search, the reason for the setback is almost invariably discovered. Having been through hundreds of such sessions, we are nearly always able to distinguish the deliberate liar from the patient who is merely fooling himself or is really unaware of having erred.

### Liars and Fools

When we see obese patients there are generally two of us present in order to speed up routine handling. Thus when we have to investigate a rise in weight, a glance is sufficient to make sure that we agree or disagree. If after a few questions we both feel reasonably sure that the patient is deliberately lying, we tell him that this is our opinion and warn him that unless he comes clean we may refuse further treatment. The way he reacts to this furnishes additional proof whether we are on the right track or not we now very rarely make a mistake.

If the patient breaks down and confesses, we melt and are all forgiveness and treatment proceeds. Yet if such performances have to be repeated more than two or three times, we refuse further treatment. This happens in less than 1% of our cases. If the patient is stubborn and will not admit what he has been up to, we usually give him one more chance and continue even though we have been unable to find the reason for his gain. In many such cases there is no repetition, and frequently the patient does then confess a few days later after he has thought things over.

The patient who is fooling himself is the one who has committed some trifling, offense against the rules but who has been able to convince himself that this is of no importance and cannot possibly account for the gain in weight. Women seem particularly prone to getting themselves entangled in such delusions. On the other hand, it does frequently happen that a patient will in the midst of a conversation unthinkingly spear an olive or forget that he has already eaten his breadstick.

A mother preparing food for the family may out of sheer habit forget that she must not taste the sauce to see whether it needs more salt. Sometimes a rich maiden aunt cannot be offended by refusing a cup of tea into which she has put two teaspoons of sugar, thoughtfully remembering the patient's taste from previous occasions. Such incidents are legion and are usually confessed without hesitation, but some patients seem genuinely able to forget these lapses and remember them with a visible shock only after insistent questioning.

In these cases we go carefully over the day. Sometimes the patient has been invited to a meal or gone to a restaurant, naively believing that the food has actually been prepared exactly according to instructions. They will say: "Yes, now that I come to think of it the steak did seem a bit bigger than the one I have at home, and it did taste better; maybe there was a little fat on it, though I specially told them to cut it all away". Sometimes the breadsticks were broken and a few fragments eaten, and "Maybe they were a little more than one". It is not uncommon for patients to place too much reliance on their memory of the diet-sheet and start eating carrots, beans or peas and then to seem genuinely surprised when their attention is called to the fact that these are forbidden, as they have not been listed.

### Cosmetics

When no dietary error is elicited we turn to cosmetics. Most women find it hard to believe that fats, oils, creams and ointments applied to the skin are absorbed and interfere with weight reduction by hCG just as if they had been eaten. This almost incredible sensitivity to even such very minor increases in nutritional intake is a peculiar feature of the hCG method. For instance, we find that persons who habitually handle organic fats, such as workers in beauty

parlors, masseurs, butchers, etc. never show what we consider a satisfactory loss of weight unless they can avoid fat coming into contact with their skin.

The point is so important that I will illustrate it with two cases. A lady who was cooperating perfectly suddenly increased half a pound. Careful questioning brought nothing to light. She had certainly made no dietary error nor had she used any kind of face cream, and she was already in the menopause. As we felt that we could trust her implicitly, we left the question suspended. Yet just as she was about to leave the consulting room she suddenly stopped, turned and snapped her fingers. "I've got it," she said. This is what had happened: She had bought herself a new set of make-up pots and bottles and, using her fingers, had transferred her large assortment of cosmetics to the new containers in anticipation of the day she would be able to use them again after her treatment.

The other case concerns a man who impressed us as being very conscientious. He was about 20 lbs. overweight but did not lose satisfactorily from the onset of treatment. Again and again we tried to find the reason but with no success, until one day he said: "I never told you this, but I have a glass eye. In fact, I have a whole set of them. I frequently change them, and every time I do that I put a special ointment in my eyesocket. Do you think that could have anything to do with it?" As we thought just that, we asked him to stop using this ointment, and from that day on his weight-loss was regular.

We are particularly averse to those modern cosmetics which contain hormones, as any interference with endocrine regulations during treatment must be absolutely avoided. Many women whose skin has in the course of years become adjusted to the use of fat containing cosmetics find that their skin gets dry as soon as they stop using them. In such cases we permit the use of plain mineral oil, which has no nutritional value. On the other hand, mineral oil should not be used in preparing the food, first because of its undesirable laxative quality, and second because it absorbs some fat-soluble vitamins, which are then lost in the stool. We do permit the use of lipstick, powder and such lotions as are entirely free of fatty substances. We also allow brilliantine to be used on the hair but it must not be rubbed into the scalp. Obviously sun-tan oil is prohibited.

Many women are horrified when told that for the duration of treatment they cannot use face creams or have facial massages. They fear that this and the loss of weight will ruin their complexion. They can be fully reassured. Under treatment normal fat is restored to the skin, which rapidly becomes fresh and turgid, making the expression much more youthful. This is a characteristic of the hCG method which is a constant source of wonder to patients who have experienced or seen in others the facial ravages produced by the usual methods of reducing. An obese woman of 70 obviously cannot expect to have her puffed face reduced to normal without a wrinkle, but it is remarkable how youthful her face remains in spite of her age.

### The Voice

Incidentally, another interesting feature of the hCG method is that it does not ruin a singing voice. The typically obese prima donna usually finds that when she tries to reduce, the timbre of her voice is liable to change, and understandably this terrifies her. Under hCG this does not happen; indeed, in many cases the voice improves and the breathing invariably does. We have had many cases of professional singers very carefully controlled by expert voice teachers, and they have been so enthusiastic that they now frequently send us patients.

### Other Reasons for a Gain

Apart from diet and cosmetics there can be a few other reasons for a small rise in weight. Some patients unwittingly take chewing gum, throat pastilles, vitamin pills, cough syrups etc., without realizing that the sugar or fats they contain may interfere with a regular loss of weight. Sex hormones or cortisone in its various modern forms must be avoided, though oral contraceptives are permitted. In fact the only self-medication we allow is aspirin for a headache, though headaches almost invariably disappear after a week of treatment, particularly if of the migraine type.

Occasionally we allow a sleeping tablet or a tranquilizer, but patients should be told that while under treatment they need and may get less sleep. For instance, here in Italy where it is customary to sleep during the siesta which lasts from one to four in the afternoon most patients find that though they lie down they are unable to sleep.

We encourage swimming and sun bathing during treatment, but it should be remembered that a severe sunburn always produces a temporary rise in weight, evidently due to water retention. The same may be seen when a patient gets a common cold during treatment. Finally, the weight can temporarily increase -paradoxical though this may sound -after an exceptional physical exertion of long duration leading to a feeling of exhaustion. A game of tennis, a vigorous swim, a run, a ride on horseback or a round of golf do not have this effect; but a long trek, a day of skiing, rowing or cycling

or dancing into the small hours usually result in a gain of weight on the following day, unless the patient is in perfect training. In patients coming from abroad, where they always use their cars, we often see this effect after a strenuous day of shopping on foot, sightseeing and visits to galleries and museums. Though the extra muscular effort involved does consume some additional calories, this appears to be offset by the retention of water which the tired circulation cannot at once eliminate.

#### Unforeseen Interruptions of Treatment

If an interruption of treatment lasting more than four days is necessary, the patient must increase his diet to at least 800 calories by adding meat, eggs, cheese, and milk to his diet after the third day, as otherwise he will find himself so hungry and weak that he is unable to go about his usual occupation. If the interval lasts less than two weeks the patient can directly resume injections and the 500-calorie diet, but if the interruption lasts longer he must again eat normally until he has had his third injection.

When a patient knows beforehand that he will have to travel and be absent for more than four days, it is always better to stop injections three days before he is due to leave so that he can have the three days of strict dieting which are necessary after the last injection at home. This saves him from the almost impossible task of having to arrange the 500-calorie diet while en route, and he can thus enjoy a much greater dietary freedom from the day of his departure. Interruptions occurring before 20 effective injections have been given are most undesirable, because with less than that number of injections some weight is liable to be regained. After the 20th injection an unavoidable interruption is merely a loss of time.

#### Muscular Fatigue

Towards the end of a full course, when a good deal of fat has been rapidly lost, some patients complain that lifting a weight or climbing stairs requires a greater muscular effort than before. They feel neither breathlessness nor exhaustion but simply that their muscles have to work harder. This phenomenon, which disappears soon after the end of the treatment, is caused by the removal of abnormal fat deposited between, in, and around the muscles. The removal of this fat makes the muscles too long, and so in order to achieve a certain skeletal movement -say the bending of an arm -the muscles have to perform greater contraction than before. Within a short while the muscle adjusts itself perfectly to the new situation, but under hCG the loss of fat is so rapid that this adjustment cannot keep up with it. Patients often have to be reassured that this does not mean that they are "getting weak". This phenomenon does not occur in patients who regularly take vigorous exercise and continue to do so during treatment.

#### Massage

I never allow any kind of massage during treatment. It is entirely unnecessary and merely disturbs a very delicate process which is going on in the tissues. Few indeed are the masseurs and masseuses who can resist the temptation to knead and hammer abnormal fat deposits. In the course of rapid reduction it is sometimes possible to pick up a fold of skin which has not yet had time to adjust itself, as it always does under hCG, to the changed figure. This fold contains its normal subcutaneous fat and may be almost an inch thick. It is one of the main objects of the hCG treatment to keep that fat there. Patients and their masseurs do not always understand this and give this fat a working-over. I have seen such patients who were as black and blue as if they had received a sound thrashing.

In my opinion, massage, thumping, rolling, kneading, and shivering undertaken for the purpose of reducing abnormal fat can do nothing but harm. We once had the honor of treating the proprietress of a high class institution that specialized in such antics. She had the audacity to confess that she was taking our treatment to convince her clients of the efficacy of her methods, which she had found useless in her own case.

How anyone in his right mind is able to believe that fatty tissue can be shifted mechanically or be made to vanish by squeezing is beyond my comprehension. The only effect obtained is severe bruising. The torn tissue then forms scars, and these slowly contract making the fatty tissue even harder and more unyielding.

A lady once consulted us for her most ungainly legs. Large masses of fat bulged over the ankles of

her tiny feet, and there were about 40 lbs. too much on her hips and thighs. We assured her that this overweight could be lost and that her ankles would markedly improve in the process. Her treatment progressed most satisfactorily but to our surprise there was no improvement in her ankles. We then discovered that she had for years been taking every kind of mechanical, electric and heat treatment for her legs and that she had made up her mind to resort to plastic surgery if we failed.

Re-examining the fat above her ankles, we found that it was unusually hard. We attributed this to the countless minor injuries inflicted by kneading. These injuries had healed but had left a tough network of connective scar-tissue in which the fat was imprisoned. Ready to try anything, she was put to bed for the remaining three weeks of her first course with her lower legs tightly strapped in unyielding bandages. Every day the pressure was increased. The combination of hCG, diet and strapping brought about a marked improvement in the shape of her ankles. At the end of her first course she returned to her home abroad. Three months later she came back for her second course. She had maintained both her weight and the improvement of her ankles. The same procedure was repeated, and after five weeks she left the hospital with a normal weight and legs that, if not exactly shapely, were at least unobtrusive. Where no such injuries of the tissues have been inflicted by inappropriate methods of treatment, these drastic measures are never necessary.

### Blood Sugar

Towards the end of a course or when a patient has nearly reached his normal weight it occasionally happens that the blood sugar drops below normal, and we have even seen this in patients who had an abnormally high blood sugar before treatment. Such an attack of hypoglycemia is almost identical with the one seen in diabetics who have taken too much insulin. The attack comes on suddenly; there is the same feeling of light-headedness, weakness in the knees, trembling, and unmotivated sweating. But under hCG, hypoglycemia does not produce any feeling of hunger. All these symptoms are almost instantly relieved by taking two heaped teaspoons of sugar.

In the course of treatment the possibility of such an attack is explained to those patients who are in a phase in which a drop in blood sugar may occur. They are instructed to keep sugar or glucose sweets handy, particularly when driving a car. They are also told to watch the effect of taking sugar very carefully and report the following day. This is important, because anxious patients to whom such an attack has been explained are apt to take sugar unnecessarily, in which case it inevitably produces a gain in weight and does not dramatically relieve the symptoms for which it was taken, proving that these were not due to hypoglycemia. Some patients mistake the effects of emotional stress for hypoglycemia. When the symptoms are quickly relieved by sugar this is proof that they were indeed due to an abnormal lowering of the blood sugar, and in that case there is no increase in the weight on the following day. We always suggest that sugar be taken if the patient is in doubt.

Once such an attack has been relieved with sugar we have never seen it recur on the immediately subsequent days, and only very rarely does a patient have two such attacks separated by several days during a course of treatment. In patients who have not eaten sufficiently during the first two days of treatment we sometimes give sugar when the minor symptoms usually felt during the first three days of treatment continue beyond that time, and in some cases this has seemed to speed up the euphoria ordinarily associated with the hCG method.

### The Ratio of Pounds to Inches

An interesting feature of the hCG method is that, regardless of how fat a patient is, the greatest circumference -- abdomen or hips as the case may be is reduced at a constant rate which is extraordinarily close to 1 cm. per kilogram of weight lost. At the beginning of treatment the change in measurements is somewhat greater than this, but at the end of a course it is almost invariably found that the girth is as many centimeters less as the number of kilograms by which the weight has been reduced. I have never seen this clear cut relationship in patients that try to reduce by dieting only.

### Preparing the Solution

Human chorionic gonadotrophin comes on the market as a highly soluble powder which is the pure substance. Once hCG is put into solution it is far less stable. It should always be refrigerated.

There are hardly any contraindications to the hCG method. Treatment can be continued in the presence of abscesses, suppuration, large infected wounds and major fractures. Surgery and general anesthesia are no reason to

stop and we have given treatment during a severe attack of malaria. Acne or boils are no contraindication, the former usually clears up, and furunculosis comes to an end. Thrombophlebitis is no contraindication, and we have treated several obese patients with hCG and the 500-calorie diet while suffering from this condition. Our impression has been that in obese patients the phlebitis does rather better and certainly no worse than under the usual treatment alone. This also applies to patients suffering from varicose ulcers which tend to heal rapidly.

### Fibroids

While uterine fibroids seem to be in no way affected by hCG in the doses we use, we have found that very large, externally palpable uterine myomas are apt to give trouble. We are convinced that this is entirely due to the rather sudden disappearance of fat from the pelvic bed upon which they rest and that it is the weight of the tumor pressing on the underlying tissues which accounts for the discomfort or pain which may arise during treatment. While we disregard even fair-sized or multiple myomas, we insist that very large ones be operated before treatment. We have had patients present themselves for reducing fat from their abdomen who showed no signs of obesity, but had a large abdominal tumor.

### Gallstones

Small stones in the gall bladder may in patients who have recently had typical colics cause more frequent colics under treatment with hCG. This may be due to the almost complete absence of fat from the diet, which prevents the normal emptying of the gall bladder. Before undertaking treatment we explain to such patients that there is a risk of more frequent and possibly severe symptoms and that it may become necessary to operate. If they are prepared to take this risk and provided they agree to undergo an operation if we consider this imperative, we proceed with treatment, as after weight reduction with hCG the operative risk is considerably reduced in an obese patient. In such cases we always give a drug which stimulates the flow of bile, and in the majority of cases nothing untoward happens. On the other hand, we have looked for and not found any evidence to suggest that the hCG treatment leads to the formation of gallstones as pregnancy sometimes does.

### The Heart

Disorders of the heart are not as a rule contraindications. In fact, the removal of abnormal fat -particularly from the heart-muscle and from the surrounding of the coronary arteries -can only be beneficial in cases of myocardial weakness, and many such patients are referred to us by cardiologists. Within the first week of treatment all patients -not only heart cases -remark that they have lost much of their breathlessness

In the thousands of cases we have treated we have not once seen any sort of coronary incident occur during or shortly after treatment. The same applies to cerebral vascular accidents. Nor have we ever seen a case of thrombosis of any sort develop during treatment, even though a high blood pressure is rapidly lowered. In this respect, too, the hCG treatment resembles pregnancy.

### Teeth and Vitamins

Patients whose teeth are in poor repair sometimes get more trouble under prolonged treatment, just as may occur in pregnancy. In such cases we do allow calcium and vitamin D, though not in an oily solution. The only other vitamin we permit is vitamin C, which we use in large doses combined with an antihistamine at the onset of a common cold. There is no objection to the use of an antibiotic if this is required, for instance by the dentist. In cases of bronchial asthma and hay fever we have occasionally resorted to cortisone during treatment and find that triamcinolone is the least likely to interfere with the loss of weight, but many asthmatics improve with hCG alone.

### Alcohol

Obese heavy drinkers, even those bordering on alcoholism, often do surprisingly well under hCG and it is exceptional for them to take a drink while under treatment. When they do, they find that a relatively small quantity of alcohol produces intoxication. Such patients say that they do not feel the need to drink. This may in part be due to the euphoria which the treatment produces and in part to the complete absence of the need for quick sustenance from which most obese patients suffer.

Though we have had a few cases that have continued abstinence long after treatment, others relapse as soon as they are back on a normal diet. We have a few "regular customers" who, having once been reduced to their normal weight, start to drink again though watching their weight. Then after some months they purposely overeat in order to gain sufficient weight for another course of hCG which temporarily gets them out of their drinking routine. We do not particularly welcome such cases, but we see no reason for refusing their request.

## The Painful Heel

In obese patients who have been trying desperately to keep their weight down by severe dieting, a curious symptom sometimes occurs. They complain of an unbearable pain in their heels which they feel only while standing or walking. As soon as they take the weight off their heels the pain ceases. These cases are the bane of the rheumatologists and orthopedic surgeons who have treated them before they come to us. All the usual investigations are entirely negative, and there is not the slightest response to anti-rheumatic medication or physiotherapy. The pain may be so severe that the patients are obliged to give up their occupation, and they are not infrequently labeled as a case of hysteria. When their heels are carefully examined one finds that the sole is softer than normal and that the heel bone - the calcaneus - can be distinctly felt, which is not the case in a normal foot.

We interpret the condition as a lack of the hard fatty pad on which the calcaneus rests and which protects both the bone and the skin of the sole from pressure. This fat is like a springy cushion which carries the weight of the body. Standing on a heel in which this fat is missing or reduced must obviously be very painful. In their efforts to keep their weight down these patients have consumed this normal structural fat.

Those patients who have a normal or subnormal weight while showing the typically obese fat deposits are made to eat to capacity, often much against their will, for one week. They gain weight rapidly but there is no improvement in the painful heels. They are then started on the routine hCG treatment. Overweight patients are treated immediately. In both cases the pain completely disappears in 10-20 days of dieting, usually around the 15th day of treatment, and so far no case has had a relapse. We have been able to follow up such patients for years.

We are particularly interested in these cases, as they furnish further proof of the contention that hCG + 500 calories not only removes abnormal fat but actually permits normal fat to be replaced, in spite of the deficient food intake. It is certainly not so that the mere loss of weight reduces the pain, because it frequently disappears before the weight the patient had prior to the period of forced feeding is reached.

## Concluding a Course

When the three days of dieting after the last injection are over, the patients are told that they may now eat anything they please, except sugar and starch provided they faithfully observe one simple rule. This rule is that they must have their own portable bathroom-scale always at hand, particularly while traveling. They must without fail weigh themselves every morning as they get out of bed, having first emptied their bladder. If they are in the habit of having breakfast in bed, they must weigh before breakfast.

It takes about 3 weeks before the weight reached at the end of the treatment becomes stable, i.e. does not show violent fluctuations after an occasional excess. During this period patients must realize that the so-called carbohydrates, that is sugar, rice, bread, potatoes, pastries etc, are by far the most dangerous. If no carbohydrates whatsoever are eaten, fats can be indulged in somewhat more liberally and even small quantities of alcohol, such as a glass of wine with meals, does no harm, but as soon as fats and starch are combined things are very liable to get out of hand. This has to be observed very carefully during the first 3 weeks after the treatment is ended otherwise disappointments are almost sure to occur.

## Skipping a Meal

As long as their weight stays within two pounds of the weight reached on the day of the last injection, patients should take no notice of any increase but the moment the scale goes beyond two pounds, even if this is only a few ounces, they must on that same day entirely skip breakfast and lunch but take plenty to drink. In the evening they must eat a huge steak with only an apple or a raw tomato. Of course this rule applies only to the morning weight. Ex-obese patients should never check their weight during the day, as there may be wide fluctuations and these are merely alarming and confusing.

It is of utmost importance that the meal is skipped on the same day as the scale registers an increase of more than two pounds and that missing the meals is not postponed until the following day. If a meal is skipped on the day in which a gain is registered in the morning this brings about an immediate drop of often over a pound. But if the skipping of the meal -and skipping means literally skipping, not just having a light meal -is postponed the phenomenon does not occur and several days of strict dieting may be necessary to correct the situation.

Most patients hardly ever need to skip a meal. If they have eaten a heavy lunch they feel no desire to eat their dinner, and in this case no increase takes place. If they keep their weight at the point reached at the end of the treatment, even a heavy dinner does not bring about an increase of two pounds on the next morning and does not

therefore call for any special measures. Most patients are surprised how small their appetite has become and yet how much they can eat without gaining weight. They no longer suffer from an abnormal appetite and feel satisfied with much less food than before. In fact, they are usually disappointed that they cannot manage their first normal meal, which they have been planning for weeks.

An ex-patient should never gain more than two pounds without immediately correcting this, but it is equally undesirable that more than two lbs. be lost after treatment, because a greater loss is always achieved at the expense of normal fat. Any normal fat that is lost is invariably regained as soon as more food is taken, and it often happens that this rebound overshoots the upper two lbs. limit.

### Trouble After Treatment

Two difficulties may be encountered in the immediate post-treatment period. When a patient has consumed all his abnormal fat or, when after a full course, the injection has temporarily lost its efficacy owing to the body having gradually evolved a counter regulation, the patient at once begins to feel much more hungry and even weak. In spite of repeated warnings, some over-enthusiastic patients do not report this. However, in about two days the fact that they are being undernourished becomes visible in their faces, and treatment is then stopped at once. In such cases - and only in such cases - we allow a very slight increase in the diet, such as an extra apple, 150 grams of meat or two or three extra breadsticks during the three days of dieting after the last injection.

When abnormal fat is no longer being put into circulation either because it has been consumed or because immunity has set in, this is always felt by the patient as sudden, intolerable and constant hunger. In this sense, the hCG method is completely self-limiting. With hCG it is impossible to reduce a patient, however enthusiastic, beyond his normal weight. As soon as no more abnormal fat is being issued, the body starts consuming normal fat, and this is always regained as soon as ordinary feeding is resumed. The patient then finds that the 2-3 lbs. he has lost during the last days of treatment are immediately regained. A meal is skipped and maybe a pound is lost. The next day this pound is regained, in spite of a careful watch over the food intake. In a few days a tearful patient is back in the consulting room, convinced that her case is a failure.

All that is happening is that the essential fat lost at the end of the treatment, owing to the patient's reluctance to report a much greater hunger, is being replaced. The weight at which such a patient must stabilize thus lies 2-3 lbs. higher than the weight reached at the end of the treatment. Once this higher basic level is established, further difficulties in controlling the weight at the new point of stabilization hardly arise.

### Beware of Over-enthusiasm

The other trouble which is frequently encountered immediately after treatment is again due to over-enthusiasm. Some patients cannot believe that they can eat fairly normally without regaining weight. They disregard the advice to eat anything they please except sugar and starch and want to play safe. They try more or less to continue the 500-calorie diet on which they felt so well during treatment and make only minor variations, such as replacing the meat with an egg, cheese, or a glass of milk. To their horror they find that in spite of this bravura, their weight goes up. So, following instructions, they skip one meager lunch and at night eat only a little salad and drink a pot of unsweetened tea, becoming increasingly hungry and weak. The next morning they find that they have increased yet another pound. They feel terrible, and even the dreaded swelling of their ankles is back. Normally we check our patients one week after they have been eating freely, but these cases return in a few days. Either their eyes are filled with tears or they angrily imply that when we told them to eat normally we were just fooling them.

### Protein deficiency

Here too, the explanation is quite simple. During treatment the patient has been only just above the verge of protein deficiency and has had the advantage of protein being fed back into his system from the breakdown of fatty tissue. Once the treatment is over there is no more hCG in the body and this process no longer takes place. Unless an adequate amount of protein is eaten as soon as the treatment is over, protein deficiency is bound to develop, and this inevitably causes the marked retention of water known as hunger-edema.

The treatment is very simple. The patient is told to eat two eggs for breakfast and a huge steak for lunch and dinner followed by a large helping of cheese and to phone through the weight the next morning. When these instructions are followed a stunned voice is heard to report that two lbs. have vanished overnight, that the ankles are normal but that sleep was disturbed, owing to an extraordinary need to pass large quantities of water. The patient having learned this lesson usually has no further trouble.

### Relapses

As a general rule one can say that 60%-70% of our cases experience little or no difficulty in holding their weight permanently. Relapses may be due to negligence in the basic rule of daily weighing. Many patients think that this is unnecessary and that they can judge any increase from the fit of their clothes. Some do not carry their scale with them on a journey as it is cumbersome and takes a big bite out of their luggage-allowance when flying. This is a disastrous mistake, because after a course of hCG as much as 10 lbs. can be regained without any noticeable change in the fit of the clothes. The reason for this is that after treatment newly acquired fat is at first evenly distributed and does not show the former preference for certain parts of the body.

Pregnancy or the menopause may annul the effect of a previous treatment. Women who take treatment during the one year after the last menstruation -that is at the onset of the menopause -do just as well as others, but among them the relapse rate is higher until the menopause is fully established. The period of one year after the last menstruation applies only to women who are not being treated with ovarian hormones. If these are taken, the premenopausal period may be indefinitely prolonged.

Late teenage girls who suffer from attacks of compulsive eating have by far the worst record of all as far as relapses are concerned.

Patients who have once taken the treatment never seem to hesitate to come back for another short course as soon as they notice that their weight is once again getting out of hand. They come quite cheerfully and hopefully, assured that they can be helped again. Repeat courses are often even more satisfactory than the first treatment and have the advantage, as do second courses, that the patient already, knows that he will feel comfortable throughout.

#### Plan of a Normal Course

125 I.U. of hCG daily (except during menstruation) ui injections have been given.

Until 3rd injection forced feeding.

After 3rd injection, 500 calorie diet to be continued until 72 hours after the last injection.

For the following 3 weeks, all foods allowed except starch and sugar in any form (careful with very sweet fruit).

After 3 weeks, very gradually add starch in small quantities, always controlled by morning weighing.

#### CONCLUSION

The hCG + diet method can bring relief to every case of obesity, but the method is not simple. It is very time consuming and requires perfect cooperation between physician and patient. Each case must be handled individually, and the physician must have time to answer questions, allay fears and remove misunderstandings. He must also check the patient daily. When something goes wrong he must at once investigate until he finds the reason for any gain that may have occurred. In most cases it is useless to hand the patient a diet-sheet and let the nurse give him a "shot."

The method involves a highly complex bodily mechanism, and the physician must make himself some sort of picture of what is actually happening; otherwise he will not be able to deal with such difficulties as may arise during treatment.

I must beg those trying the method for the first time to adhere very strictly to the technique and the interpretations here outlined and thus treat a few hundred cases before embarking on experiments of their own, and until then refrain from introducing innovations, however thrilling they may seem. In a new method, innovations or departures from the original technique can only be usefully evaluated against a substantial background of experience with what is at the moment the orthodox procedure.