Eat Fat And Grow Slim

by Richard Mackarness, M.B.,B.S. (1960)

A simple explanation of how most people get fat and how they can easily become slim again without starving or enduring unpleasant diets.

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Foreword

by Sir Heneage Ogilvie, KBE, DM, M CH, FRCS
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THE STATISTICIAN looks on nutrition as a mater of calories, and on obesity as a question of upset caloric equilibrium. A calorie is a unit of heat, a unit of potential energy, but not a unit of nutrition. Prison governors, school superintendents, dictators whether of a nation or of a small community, talk in calories to prove that they are feeding their charges or their victims adequately. Fellows of the Royal Society, and doctors with political leanings, talk in calories as if the human body were a machine requiring a certain amount of fuel to enable it to do a certain amount of work.

A motor-car needs calories, and we give it calories in the form of petrol. If we give it good petrol it will do good work for quite a long time. But even a Rolls-Royce cannot find its own fuel. It cannot separate motor spirit and lubricating oil from the crude mixture brought by a tanker from the wells of Kuwait. It cannot clean its own pipes, clear its own choked jets, grind its own valves, re-line its own bearings when they are worn, and replace defective parts, as they need renewal. The body can do all these things, but the body is not a machine, and to do them it needs food not fuel.

There are three kinds of food: fats, proteins and carbohydrates. All of these provide calories; the fats 9.3 calories per gramme, the proteins and the carbohydrates 4.1 each. But the carbohydrates provide calories and nothing else.

They have none of the essential elements to build up or to repair the tissues of the body. A man given carbohydrates alone, however liberally, would starve to death on calories; while he was dying he would break down his own proteins to provide materials for the repair of his key organs. He would use what calories were needed to provide energy, and he would lay down the carbohydrate surplus to his caloric requirements as fat.

Proteins are the essential food of the body. They provide not merely carbon, nitrogen, sulphur, phosphorus, sodium, potassium, calcium and iron, chlorine and iodine, but those trace elements such as boron, manganese, zinc, copper, and cobalt that are essential to life. They provide many prefabricated molecules that the body is unable to build up from simple elements.

Fat is the caloric reserve material of nature. The whale stores fat in his subcutaneous layers against the rigours of life at the Pole, the camel stores it in his hump against hard times in the desert, the African sheep stores it in his tail and his buttocks against the day when even the parched grass shall have withered away. But fats are more than stores of reserve caloric material. They are heat insulators, they are fillers of dead spaces, and they are facilitators of movement in rigid compartments such as the orbit, the pelvis, and the capsules of joints. They are also essential building materials. Animal fats contain three groups of substances: the neutral fats which are chiefly energy providers, the lipids containing phosphorus that enter into most tissues and bulk largely in the brain and the central nervous system, and the sterols that are the basis of most hormones.

The body must have proteins and animal fats. It has no need for carbohydrates, and, given the two essential foodstuffs, it can get all the calories it needs from them.

The expert on nutrition is not the nutrition expert, but the man who has studied nutrition by the ultimate method of research, the struggle for survival. The Eskimo, living on the ice floes of the North Pole, the Red Indian travelling hard and far over wild lands in hunting or war, the trapper in the Canadian forests, the game hunters in Africa - these men must find food that gives the greatest nutritive value in the smallest bulk. If they cannot find such a diet, their journeys will be limited both in time and in distance, and they will fail in their task All these men have found that a diet of

meat and animal fat alone, with no carbohydrates, with no fruit or vegetables, with no vitamins other than those they get in meat, not merely provides them with all the energy they need, but keeps them in perfect health for months at a time. Seal meat and blubber for the Eskimo, pemmican for the Indian and the trapper, biltong for the hunter, have proved to be the perfect diet both in quality and in bulk.

Dr. Mackarness's book is timely. It brings the important research work of Kekwick and Pawan into the sphere of everyday medicine, and it shines the torch of common sense into a corner that was becoming obscured with the dust of statistics and the cobwebs of scientific dogma. It bears a message of hope and good cheer to the plump.

Introduction

by Franklin Bicknell, DM
Vice-President and Late Chairman of *The Food Education Society*
and author, with Dr. Prescott, of *The Vitamins In Medicine*

OBESITY IS always fatiguing and always a great strain on the body. It is not due to greed but, as Dr. Mackarness so clearly explains in this book, to a little-understood difficulty in the economy of the body which makes it turn sugars and starches into fat instead of promptly using them to give energy, as do the people who remain normal in weight.

Realising that obesity has nothing to do with greed makes the lot of those who are too fat much happier, since not only do their friends cease to blame them for their condition, but also they themselves no longer feel guilty.

People insidiously grow too fat and so do not comprehend what a strain is an extra stone in weight. Yet to the heart or the lungs or the feet it makes no difference if the burden of an extra stone in weight is due to slowly acquired fat or to carrying something heavy like a shopping basket with a stone of potatoes in it. So it is odd that, while everyone expects to be tired if they carry a heavy basket for an hour, few expect obesity to cause chronic fatigue though they are chronically carrying or lifting a stone, or more, whenever they move, be it shopping or housework or going upstairs or just getting up out of a chair.

The injurious effects of this strain of always, everywhere carrying about too much weight are very harassing and can be serious. The most obvious is breathlessness. This has several reasons. The first is that while the heart is always made so strong that it can cope with the needs of the body for which it was designed, it is not made to cope with a much heavier body. In fact, an obese person is like a giant with the heart of a dwarf.

Breathlessness is also caused because each time fat persons lift up their chest as they breathe in, they have also to lift up an undue amount of fat. Since everyone breathes about seventeen times a minute, even when lying in bed, this perpetual lifting of extra weight with every breath is a continuous effort, which may not be noticed while sitting in a chair but is very evident when exercise demands deeper and more rapid breathing.

The tight clothing which the fat so often wear also causes a lack of breath because it prevents full expansion of the chest and also, by compressing the abdomen, prevents the descent of the diaphragm In passing, it is interesting to note how the fat try to reduce the obviousness of their condition by tight clothes when the right way of giving a spurious impression of being thin is to wear clothes which are too large.

The feet of fat people are often extremely painful because they are crushed by the weight they have to bear. Obviously, no treatment of the feet themselves by special shoes, however costly, can help to any extent. But once the obesity is gone, the feet recover and, indeed, it is one of the most pleasant rewards for the small trouble which becoming and staying slim involves.

Other joints like those of the knees, hips and those at the bottom of the spine in the small of the back also are strained by the excessive weight they are supporting, and, like the feet, will cease to ache once they cease to have to do more than they were constructed to do.

Sweating is one of the most socially distressing results of being too fat, due in part to the fact that fat people have to make a greater physical effort than thin people whenever they move, or even breathe, due in the main to the fat covering the body like very thick, tight woollen clothes, so that every movement is hindered and at the same time the body coated, as it were, in a thick layer of fat gets too warm and must sweat to get cool.

The cure of obesity and so of all these symptoms can be, of course, achieved by frank starvation but, as Dr. Mackarness explains, this is both an illogical and an injurious treatment while that based on eating as much of everything as one likes, except starches and sugars and foods rich in these, is both logical and actively good for one's health, quite apart from the effect on one's weight.

The sugars and starches of our diet form its least valuable part and indeed contribute nothing which cannot better be gained from fat and protein foods like meat and fish, eggs and cheese, supplemented by green vegetables and some fruit. Such a diet provides an abundance not only of energy, an ounce of fat containing twice the energy of an ounce of sugar or five ounces of potatoes, but also such a diet provides an abundance of vitamins, trace elements and essential animo acids in fact, an abundance of all those subtle, yet essential, nutrients which are so often lacking in diets based largely on the fat-forming carbohydrates. So, to the benefit of losing weight, the obese, in following Dr. Mackarness's diet, will add the benefit of eating, probably for the first time in their lives, a wholly satisfactory diet.

This is benefit of a perfect diet will spread to the whole family since, it is to be hoped, the slight extra expense of feeding the whole family on "oven-buster " and turnip tops, rather than sausages and potatoes, will be out weighed by the preference of the family for the former and the saving of trouble which follows from cooking the same meal for everyone.

In contrast to this way of regaining one's proper weight, consider the diets still commonly advocated by the ignorant, which are based on starvation. Such starvation diets are too unpleasant to be followed by most people; the body is forced to eat itself, not only useless fat, but essential protein thus being destroyed; such starvation causes hunger, fatigue, insomnia, nightmares, had temper; there tends to be a deficiency of various essential nutrients such as vitamin A; neither the dieter nor her family become educated to prefer a good diet to the faulty starch diet generally eaten; socially, a starvation diet is far more difficult to follow than an unrestricted fat and protein diet. Lastly, two of the greatest advantages of the diet described in this book:

One cannot lose weight beyond the weight, which is right for oneself; and

One’s meals have lasting power so that one neither needs nor wants snacks.

1. What Makes A Fat Man Fat?

PEOPLE CAN be divided into two groups according to the way they deal with the excess food when they eat more than they require for their daily expenditure of energy.

In 1950 at the Royal Society of Medicine in London, Professor Sir Charles Dodds, who is in charge of the Courtauld Institute of Biochemistry at the Middlesex Hospital, described an experiment he had carried out.

He took people whose weights had been constant for many years and persuaded them to eat double or treble their normal amount of food. They did not put on weight.

He showed that this was not due to a failure to digest or assimilate the extra food and suggested that they responded to overeating by increasing their metabolic rate (rate of food using) and thus burned up the extra calories.

He then over-fed people whose weights had not remained constant in the past and found that they showed no increase in metabolism but became fat.

So two people of the same size, doing the same work and eating the same food will react quite differently when they overeat. One will stay the same weight and the other will gain.

We all know that this is true even without scientific proof and yet the fact has not been taken into account or explained by any of the experts who write popular books and articles about slimming.

They write as though fat people and thin people deal with food in the same way. Here is the medical correspondent of The Times (11th March, 1957) on the subject:

"It is no use saying as so many women do 'But I eat practically nothing.' The only answer to this is: No matter how little you imagine you eat, if you wish to lose weight you must eat less. Your reserves of fat are then called on to provide the necessary energy, and you lose weight."

The doctor who wrote these rather heartless words may fairly he taken as representative of medical opinion today. He is applying the teachings of William Wadd, Surgeon Extraordinary to the Prince Regent, who in 1829 attributed obesity to "an over-indulgence at the table" and gave, as the first principle of treatment, "taking food that has little nutrition in it."

Fat people can certainly lose weight by this method but what do they feel like while they are doing it? Terrible!

Ask any fat person who has tried it. Many of these unfortunate people really do eat less than people of normal proportions and still they put on weight, and when they go on a strict low-calorie diet which does get weight off, they feel tired and irritable because they are subjecting themselves to starvation. Worse still, when they have reduced and feel they can eat a little more, up shoots their weight again in no time, on quite a moderate food intake.

It is all most discouraging. "Surely there must be some better way of going about it," they say. This book explains that there is. Today a lot more is known about how fat people get fat and why. Many of the facts have been known for years, but because they have not fitted in with current theories on obesity, they have been ignored.

In the last ten years, however, atomic research has given the physiologist enormous help in unravelling the biochemical reactions which go on in the body.

Radioactive isotopes have been used to "tag" chemical substances so that their progress through the body could be followed, in the same way as birds are tagged in order to establish the paths of their migration.

By this means, details of the metabolism of fats and carbohydrates, previously shrouded in mystery, have been clarified and with the new information so gained old experimental findings have been given new interpretations and the jigsaw of seemingly contradictory facts about obesity has clicked into a recognisable picture.

The first thing to realise is that it is carbohydrate (starch and sugar) and carbohydrate only which fattens fat people.

Here is what happens when Mr. Constant-Weight has too much carbohydrate to eat: The extra food causes an increase in metabolism that burns the excess calories consumed. Nothing is left over for laying down as fat.

When Mr Fatten-Easily eats too much bread, cake and potatoes, the picture is entirely different: his metabolic rate does not increase. Why does he fail to burn up the excess? The answer is the real reason for his obesity: BECAUSE HE HAS A DEFECTIVE CAPACITY FOR DEALING WITH CARBOHYDRATES.

William Banting found this out a hundred years ago and by applying the knowledge, he knocked off nearly 3½ stones in a year, painlessly and without starvation, enjoying good food and good wine while he did it.

He learnt from his doctor that carbohydrate is the fat man's poison. Here is what he wrote:

"For the sake of argument and illustration I will presume that certain articles of ordinary diet, however beneficial in youth, are prejudicial in advanced life, like beans to a horse, whose common ordinary food is hay and corn. It may be useful food occasionally, under peculiar circumstances, but detrimental as a constancy. I will, therefore, adopt the analogy, and call such food human beans. The items from which I was advised to abstain as much as possible were: Bread . . .(1) sugar, beer, and potatoes, which had been the main (and, I thought, innocent) elements of my existence, or at all events they had for many years been adopted freely. These, said my excellent adviser, contain starch and saccharine matter, tending to create fat, and should be avoided altogether."

William Banting (1797-1878) was the fashionable London undertaker who made the Duke of Wellington's coffin.

He was a prosperous, intelligent man, but terribly fat. In August, 1862, he was 66 years old and weighed 202 lb, he stood only 5 feet 5 inches in his socks. No pictures of him are available today, but he must have been nearly spherical.

He was so overweight that he had to walk downstairs backwards to avoid jarring his knees and he was quite unable to do up his own shoelaces. His obesity made him acutely miserable.

For many years he passed from one doctor to another in a vain attempt to get his weight off. Many of the doctors he saw were both eminent and sincere. They took his money but they failed to make him thinner.

He tried every kind of remedy for obesity: Turkish baths, violent exercise, spa treatment, drastic dieting, purgation - all to no purpose. Not only did he not lose weight, many of the treatments made him gain.

At length, because he thought he was going deaf, he went to an ear, nose and throat surgeon called William Harvey (no relation to the Harvey who discovered the circulation of the blood). This remarkable man saw at once that Banting's real trouble was obesity, not deafness, and put him on an entirely new kind of diet.

By Christmas, 1862, he was down to 184 lb, by the following August he weighed a mere 156 lb - nearly right for his height and age.

In less than a year he had lost nearly 50 lb and 12¼ inches off his waistline. He could put his old suits on over the new ones he had to order from his tailor!

Naturally, Banting was delighted. He would gladly have gone through purgatory to reach his normal weight but, in fact, Mr. Harvey's diet was so liberal and pleasant that Banting fed as well while he was reducing as he had ever done before.

What was the diet which performed this miraculous reduction? We have Banting's own word for it, in his little book Letter on Corpulence addressed to the public, published in 1864.

Here is what he ate and drank:

William Banting's Diet

Breakfast: Four or five ounces of beef, mutton, kidneys, broiled fish, bacon or cold meat of any kind except pork. One small biscuit or one ounce of dry toast. A large cup of tea without milk or Sugar

Lunch: Five or six ounces of any fish except salmon, any meat except pork, any vegetable except potato. Any kind of poultry or game. One ounce of dry toast. Fruit. Two or three glasses of good claret, sherry or Madeira. (Champagne, port and beer were forbidden.)

Tea: Two or three ounces of fruit. A rusk or two. A cup of tea without milk or sugar.

Supper: Three or four ounces of meat or fish as for lunch. A glass of claret, or two.

Nightcap: A tumbler of grog (gin, whisky or brandy with water but without sugar) or a glass or two of claret or sherry (if required).

In terms of calories this diet adds up to the astonishing figure of 2,800. An average modern low-calorie reducing diet allows a meagre 1,000 calories a day.

There must therefore have been something other than calorie reduction responsible for Banting's weight loss. What was the secret? In his own words:

"I can now confidently say that QUANTITY of diet may be safely left to the natural appetite; and that it is the QUALITY only which is essential to abate and cure corpulence."

The diet was made up almost entirely of protein, fat, alcohol and roughage, with, of course, the vitamins and mineral salts contained in these foods. Mr. Harvey, who designed it, had realised that it is carbohydrate (starch and sugar) which fattens fat people.

This is the simple fact which explains Banting's highly satisfactory weight reduction on a high-calorie low-carbohydrate diet. Perhaps it was too simple, for in spite of the excellent book which he published at his own expense and in which he gave all the credit to his doctor, William Harvey, the medical profession refused to believe it.

Banting's name passed into the language as a synonym for slimming but he himself was ridiculed and denounced as a charlatan. His method was never properly understood and was soon forgotten.

To appreciate just how remarkable it was for Mr. Harvey to have designed this revolutionary and successful treatment for Banting's obesity, it is necessary to know something of the medical opinions current at the time.

In 1850 the medical profession in Europe had accepted the theory of a German chemist, Baron Justus von Liebig (1803 - 1873), that carbohydrate and fat supplied the carbon which combined with oxygen in the lungs to produce body heat. In terms of this theory, carbohydrate and fat were "respiratory foods " and the cause of obesity was believed to be an over-indulgence in these: or as contemporary phraseology had it: "For the formation of body fat it is necessary that the materials be digested in greater quantity than is necessary to supply carbon to the respiration...."

The principle of the treatment of obesity based on this theory was to cut off as far as possible the supply of food, especially dietary fat, and to accomplish this the patient was exhorted to establish "an hourly watch over the instinctive desires", i.e. was subjected to starvation.

William Wadd had already advocated such methods and right down to The Times medical correspondent today, doctors have gone on slavishly copying them in spite of the mounting evidence that they were unsatisfactory, at least from the patient's point of view, if not from the physician's.

It is easy to say that there were no fat people in Belsen so long as you do not have to experience Belsen yourself.

With this background of medical indoctrination on the subject of obesity to which many doctors have succumbed since, with far less excuse, William Harvey went to Paris in 1856 and attended the lectures of Claude Bernard (1813 - 1878), the great French physiologist.

He heard Bernard expound his new theory that the liver made not only bile but also a peculiar substance related to starches and sugars, to which the name glucose had been given.

Relating this new idea to the already well known ones:

"that a saccharine and farinaceous diet is used to fatten certain farm animals; and

"that a purely animal diet greatly assists in checking the secretion of a diabetic urine."

Harvey did some original and constructive thinking. This is how he put it:

"That excessive obesity might be allied to diabetes as to its cause, although widely diverse in its development; and that if a purely animal diet were useful in the latter disease, a combination of animal food with such vegetable diet as contained neither sugar nor starch, might serve to arrest the undue formation of fat."

Now in Harvey's time, biochemistry was in its infancy and physiology was only just emerging from the shadow of the Middle Ages, so he could not explain his theory of altered carbohydrate metabolism in exact chemical terms. But he could test it out in practice and it was at this point, in 1862, that William Banting consulted him. We have Banting's own description of the happy results of that meeting.

The subsequent history of William Harvey and his patient is interesting. It shows how social and economic influences and the desire to run with the herd, which is in all of us, can cloud scientific discoveries with compromise and in bringing them into line with orthodoxy can rob them of all practical value.

Banting published his Letter on Corpulence in 1864, privately, because he feared, not without reason as it turned out, that the Editor of the Lancet, to whom he first thought of submitting it, would refuse to publish anything "from an insignificant individual without some special introduction".

The same sort of objection deterred him from sending it to the Cornhill Magazine, which had recently carried an article, "What is the cause of obesity?", which in Banting's view was not altogether satisfactory.

Banting's pamphlet attracted immediate attention and was widely circulated. The treatment he described was phenomenally successful. The "Banting diet" then became the centre of bitter controversy. No one could deny that the treatment was effective but having first appeared in a publication by a layman, the medical profession, which was just beginning to climb the social ladder and was very much on its frock-coated dignity, felt bound to attack it.

The diet was criticised as being freakish and unscientific. Harvey came in for much ridicule and vituperation and his practice as a surgeon began to suffer.

But the obvious practical success of the "non-farinaceous, non-saccharine" (high-fat, high-protein, low carbohydrate) diet called for some explanation from the doctors, and this was supplied by Dr. Felix von Niemeyer of Stuttgart, whose name was associated with a pill containing quinine, digitalis and opium. German physicians were then very fashionable.

Basing his argument on the teachings of Liebig, Niemeyer explained Banting's diet as follows: Protein foods are not converted to body fat, but the "respiratory foods", fat and carbohydrate, are. He interpreted meat as lean meat and described the diet in terms which today would mean that it was a high-protein, low-calorie diet with fat and carbohydrate both restricted.

Of course the diet which actually slimmed Banting was not like that at all. It was a high-fat, high-protein, unrestricted calorie diet with only carbohydrate restricted.

The confusion about what Banting actually ate still exists today. It arises because few people have read his book in the original and fewer still have read Harvey's papers. I have quoted the relevant passages from both sources earlier in this chapter, and from these quotations two things are clear:

That Harvey believed starch and sugar to be the culprits in obesity.

That within the limits of his imperfect knowledge of the chemical composition of foods, Harvey tried to exclude these items from Banting's diet, allowing him to eat as much as he liked of everything else.

Harvey had allowed Banting to take meat, including venison, poultry and fish, with no mention of trimming off the fat, in quantities up to 24 ounces a day which gives a calorie intake of about 2,800 when the alcohol and other things he ate and drank are included.

By deliberately lumping fat and carbohydrate together where Harvey had tried to separate them, Dr. Niemeyer had effectively turned Banting's diet upside down, and the day was saved for the pundits. Niemeyer's explanation was eagerly accepted and "modified Banting" diets, based upon this phoney explanation, found their way into the textbooks for the rest of the nineteenth century.

While all this "rationalisation" of his diet was going on, William Harvey was feeling the cold draught of unpopularity with his colleagues and nine years after the publication of Banting's pamphlet he publicly recanted. He came into line with Dr. Niemeyer and explained apologetically:

"Had Mr. Banting not suffered from deafness the probability is that his pamphlet would not have appeared."

Thus Harvey was able to continue his peaceful career as a respected ear, nose and throat surgeon. But Banting stuck to his guns and in 1875 published letters showing that obese people lost weight effectively and painlessly through eating large quantities of fat meat.

In spite of an almost total lack of scientific knowledge of the chemical composition of different foods, Banting remained true to the principle William Harvey had taught him: avoidance of starchy and sugary foods as he knew them.

He kept his weight down without difficulty and lived in physical comfort to the age of 81.

This distortion of a genuine discovery, based on original observation, to make it fit in with current theories has happened again and again in our history.

Ever since Procrustes cut off the feet of people who did not fit his bed, established authorities with narrow minds have employed the cruel weapons of ridicule and economic sanctions against people who challenged their doctrines.

To the student of psychology this is a commonplace, but it is a great brake on scientific progress. The howl that went up against Harvey and Banting was nearly as loud as the one which greeted Freud's Interpretation of Dreams in which he pointed out the facts of infantile sexuality. This is hardly surprising when one considers how sensitive most of us are to criticism of our views on our pet subjects. Among the many diets which followed the publication of Banting's pamphlet, every variation of the three main foods was tried but always with restriction of the total intake.

It seemed that in spite of the real value of Harvey's observations and Banting's application of them, nutritionists could not bring themselves to abandon the idea that to lose weight one must eat less. This principle derived from the law of conservation of energy (what comes out must go in) on the

basis of which it was deduced that the energy intake (consumption of food) must exceed the energy expenditure when obesity is developing.

Of course this is perfectly obvious. A man can't get fat unless he eats more food than he uses up for energy. But it is beside the point.

The real question that needs answering about obesity is:

What is the cause of the fat man's failure to use up as much as he takes in as food? It could be that he is just greedy and eats more than he requires. It could also be that although he only eats a normal amount, some defect in the way his body deals with food deflects some of what he eats to his fat stores and keeps it there instead of letting him use it up for energy.

In other words, Mr. Fatten-Easily may have a defect in his metabolism which Mr. Constant-Weight has not.

Too much attention has been paid to the input side of the energy equation and not enough to possible causes of defective output. Even with a low food intake a man may get fat because his output is small. And this need not be because he is taking insufficient exercise but because something is interfering with the smooth conversion of fuel to energy in his body and encouraging its storage as fat.

It is curious that up to 1900, apart from Harvey and Banting, only one person had ever considered this alternative explanation for obesity. This was an eighteenth-century physician, Dr. Thomas Beddoes. In 1793, Beddoes applied the new theory of "pneumatic chemistry" which had originated with M. Lavoisier's experiments in France and held that during respiration the lungs took in oxygen, combined it with carbon derived from the food and expelled it in the form of carbon dioxide.

Beddoes thought that the oxygen might go deeper into the body than the lungs and that obesity might be caused by its combining insufficiently with body fat. This would lead to fat accumulating instead of being burnt up for energy.

He attempted to remedy this supposed defect of fat metabolism by introducing more oxygen into the system- but with no good result.

His theory was easily disposed of by the redoubtable William Wadd, who remarked:

"Dr. Beddoes remained so inconveniently fat during his life that a lady of Clifton used to denominate him the walking feather bed."

So the views of William Wadd prevailed and, apart from the Banting interlude, starvation has been the basis of the treatment of obesity in this country right up to the present day. Only the words have changed.

"Calorie restriction" has now replaced Wadd's "taking food that has little nutrition in it."

Within the principle of total food restriction, most reducing diets gave a high proportion of protein up to the year 1900. Then the American physiologist, Russell Henry Chittenden, published an indictment of protein, purporting to show that it was the cause of many diseases and from that time obese patients were generally kept short of this most vital food in their already short rations. (Lately, protein has been coming back into favour, and most of the current, popular, "Women's Page" slimming diets follow Niemeyer's modification of Banting. That is to say, they are high-protein and low-calorie, with fat and carbohydrate both restricted.)

There was the start of a break away towards more rational thinking on obesity with von Bergmann and the "lipophilia" school. He, like Beddoes, suggested a diminished oxidation of fat and explored the metabolism of the obese for evidence of abnormality which could account for a special affinity for fat and an excess of storage over use.

The snag again, as with Beddoes, the lack of any effective treatment to fit in with the theory.

Harvey had had an effective treatment with no convincing theory. Beddoes and von Bergmann had good theories but no treatment.

So as the twentieth century ran on into the thirties the view became more and more widely accepted that obesity was caused by an inflow of energy greater than the outflow, caused simply by careless overeating and gluttony.

Popular books on slimming became mainly concerned with tricks for persuading people to eat less while seeming to allow them to eat more.

In 1930, Newburgh and Johnson summed the matter up thus in the Journal of Clinical Investigation:

"Obesity is never directly caused by abnormal metabolism but is always due to food habits not adjusted to the metabolic requirements"; i.e. overweight never comes from a defective ability to mobilise fat from the fat stores but always from overeating.

This appeared to be the last word and doctors and slimming "experts" all over the world settled down to trying to persuade their obese patients to eat less.

With the "obesity comes from overeating" dogma enshrined in history and hallowed by the blessing of the high priests of modern physiological research, imagine the impact on the medical world of the news in 1944, that cases of obesity were being treated effectively at the New York City Hospital with diets in which more than 24 ounces of fat meat was allowed a day. Patients were encouraged to eat to the limit of their appetites and some who were sceptical of the diet ate very copiously indeed. But they still lost weight.

The man in charge of this treatment was Dr. Blake F. Donaldson.

At that time, Great Britain was still in the grip of severe wartime rationing and minimal amounts of fat and protein foods were obtainable. So this American revival of Bantingism was for the time being of academic interest only over here.

But from that time onwards, unrestricted-calorie high-fat, high-protein, low-carbohydrate diets for obesity were on the map again and in the United States at any rate they gradually gained in popularity. Research workers in Britain were not idle, however. Many of them had been to America, and Donaldson's work and later Dr. Alfred Pennington's caused great interest.

Then in July 1956, in the Lancet, Professor Alan Kekwick and Dr. G. L. S. Pawan published the results of a scientific evaluation of Banting's diet undertaken in their wards at the Middlesex Hospital in London. They proved that Banting was right. Here is their conclusion:

"The composition of the diet can alter the expenditure of calories in obese persons, increasing it when fat and proteins are given and decreasing it when carbohydrates are given."

Today this work is being quoted in medical journals all over the world. Here is a quotation from the February 1957 number of the American journal, Antibiotic Medicine and Clinical Therapy:

"Kekwick and Pawan, from the Middlesex Hospital, London, report some news for the obese. All of the obese subjects studied lost weight immediately after admission to hospital and therefore a period of stabilisation was required before commencing investigation.

If the proportions of fat, carbohydrate and protein were kept constant, the rate of weight loss was then proportional to the calorie intake.

If the calorie intake was kept constant, however, at 1,000 per day, the most rapid weight loss was noted with high fat diets . . . But when the calorie intake was raised to 2,600 daily in these patients, weight loss would still occur provided that this intake was given mainly in the form of fat and protein.

It is concluded that from 30% to 50% of weight loss is derived from the total body water and the remaining 50% to 70% from the body fat."

In other words, doctors now have scientific justification for basing diets for obesity on reduction of carbohydrate rather than on reduction of calories and fat. Before going on it should be explained that Banting did in fact take some carbohydrate. Kekwick and Pawan and other investigators have shown that up to 60 grammes (just under 2 ounces) of carbohydrate a day are compatible with effective weight reduction on a high-fat, high-protein diet, although in some subjects even this amount will slow down the rate of weight loss. In such cases further restriction of carbohydrate with stricter adherence to the high-fat, high-protein foods results in satisfactory weight loss again.

Summary of the argument so far (1958)

There are two kinds of people: the Fatten-Easilies and the Constant-Weights.

If a Constant-Weight eats more carbohydrate than he needs, he automatically pushes up his metabolic rate (turns the bellows on his body fires) until the excess has been consumed.

A Fatten-Easily cannot do this because of a defect in his body chemistry. Excess carbohydrate is laid down as fat.

It is carbohydrate which makes a fat person fat.

Medical research has now proved that Banting was right and that diets for obesity may be based successfully on reduction of carbohydrate rather than on restriction of calories and fat.

2. The Calorie Fallacy

BEFORE GOING any further, it is important to be sure of the meaning of some of the words we have been using: FAT, PROTEIN, CARBOHYDRATE AND CALORIE.

Fat, protein and carbohydrate are names for the main chemical classes of which foods are composed. Just as we visualise something like a garden gate when the question-master in "Twenty Questions" says that an object is vegetable with mineral attachments, so when someone says that a food is fat and protein most of us visualise an egg or a steak and when they say fat and carbohydrate, we think of bread and butter or biscuits or cake.

Since the rise of dietetics as a branch of popular science, many people have learnt enough about the chemical composition of common foods to say roughly how much fat, protein or carbohydrate they contain.

This is essential knowledge for anyone wishing to Eat Fat and Grow Slim, for without it you cannot avoid carbohydrates, nor can you choose the high-fat, high-protein foods.

To help you decide exactly about the composition of any particular food, tables of those with high fat and protein and low carbohydrate are given in Appendix B at the end of the book.

The beauty of this method of slimming is that once you have got the hang of the proportions of fat, protein and carbohydrate in the foods you choose to eat, you can afford to ignore calories altogether. For as Banting so wisely said:

"Quantity of diet may be safely left to the natural appetite. It is quality only which is essential to abate and cure corpulence."

The much publicised diets with emphasis solely on calories are fallacious. It is excess carbohydrates and not calories only that make a fat man fat. The tiresome business of totting up daily calories, on which most modern reducing diets are based, is a waste of time for an obese person. Because, as Professor Kekwick and Dr. Pawan showed, a fat man may maintain his weight on a low-calorie diet, if it is taken mainly as carbohydrate, but he will lose weight on a much higher calorie diet provided he eats it mainly in the form of fat and protein.

What is a calorie?

The calorie is the unit of heat. Just as inches are units of length and pounds or grammes are units of weight, calories measure the amount of heat (and therefore energy) a particular food will provide.

One gramme of fat provides 9.3 calories.

One gramme of protein provides 4.1 calories.

One gramme of carbohydrate provides 4.1 calories.

All food, of whatever sort, provided it can be digested and absorbed from the gut, can be used to give heat and energy for muscular movement and the various internal processes of the body.

The steam engine analogy holds good this far:

Fuel → Heat → Movement

Theoretically, the amount of heat (number of calories) that can be provided by any particular bit of food is the same whether it is burnt in a steam engine, the human body or a special laboratory oven called a calorimeter. The one exception to this is protein which is not burnt quite as completely in the body as in the calorimeter.

But in obesity, the kind of food more than the amount determines the extent to which it is burnt or stored as fat. The proportion of calories obtained from carbohydrate is more important than the total calorie intake.

Some people cannot get used to the idea of the body burning food to give itself heat and energy. Where does the burning take place? - they ask.

Well, of course, there are no flames, but obviously since the body maintains a constant temperature even on a cold day, heat must come from somewhere and combustion of a sort does occur in every cell in the body just as it does in a pile of grass mowings left at the end of the garden.

The most astonishing thing about protoplasm, which is the living basis of every cell, plant, animal or human, is the way in which it is able to carry out, without any apparent effort, chemical processes which could not be performed even in the largest and most modern laboratory.

The light flashing at the end of a firefly's tail involves chemical processes more intricate than those going on in the atomic piles at Harwell. Dr. Edward Staunton West, Professor of Biochemistry in the University of Oregon Medical School, Portland, U.S.A., emphasises this point in the introduction to the 2nd (1956) edition of his textbook of Biophysical Chemistry, which deals with the chemistry of human metabolism:

"One of the most marvellous things about protoplasm is the efficiency of its chemical processes and the mildness of the conditions under which they take place. Food materials are synthetised and organised into definite kinds of highly complex protoplasmic structures in an aqueous medium of nearly neutral reaction and at body temperature. Carbohydrates and fats are rapidly and completely oxidised, under the same mild conditions, to carbon dioxide and water with the liberation of as much energy as if they had been burned in oxygen at the temperature of an electric furnace. Here in protoplasm we have chemical reactions proceeding quite differently from those commonly observed by the chemist in his test tube. The main reason for the difference is that the chemical processes of living things are largely controlled by catalytic systems known as enzymes which are highly specific in their actions."

Nevertheless in spite of the qualitative differences between the chemistry of an engine and of the human body, the same basic reaction takes place whenever or wherever there is combustion with the evolution of heat:

Basic equation: CARBON + OXYGEN = CARBON DIOXIDE + HEAT

Coal + Draught = Smoke + HEAT → Steam → Movement

or

Fuel from food or in fat store + Air breathed in = Air breathed out + heat via a complex biochemical reaction → energy and movement

Here the steam engine analogy with the human body should properly end, but most slimming pundits press on and argue that it is your calorie intake, or total consumption of food, alone which determines whether you gain or lose weight. Fat is often severely restricted because it is the most concentrated source of calories.

Mr. Marvin Small, in his popular pocket book, Reduce with the Low Calorie Diet, 1955 edition, with an introduction by Dr. James R. Wilson, secretary to the Council of Foods and Nutrition of the American Medical Association, writes:

"While it is possible to become overweight from over eating almost any food, no matter how few calories it may contain, it is the high calorie foods which are usually the cause of 'men running to belly and women to bum,' as an old English couplet put it. You are on the road to successful dieting when you learn how to satisfy your appetite and appease your hunger with filling low calorie foods, instead of concentrated, high calorie foods.

Why Fat makes Fat? Each gram of fat (about 1/4 teaspoonful) contains 9 calories, while each gram of pure protein or carbohydrate contains only 4 calories. An ounce of pure fat contains 255 calories, while an ounce of pure carbohydrate or protein contains less than half - 113 calories …an astounding difference! So your first lesson is that when you substitute carbohydrate or protein for the fat in your diet, you cut down the calories."

Anyone who has followed the Eat-Fat-Grow-Slim argument so far can see that Mr. Small is over-simplifying the matter. He assumes that the body treats all kinds of fuel alike, as a steam engine does, and that once you have over stepped your calorie ration for the day, the excess is laid down as fat whether the fuel is fat, carbohydrate or protein. To him, fat is the most fattening food because its calorie value is greatest.

We now know that the calorie value of fat is irrelevant as far as slimming is concerned, and that fat is the least fattening of all foods because in the absence of carbohydrate it (and to a lesser extent protein) turns the bellows on the body fires in a fat person and enables him to mobilise his stored fat as well as helping him to burn up the food he eats more efficiently.

Compare what happens when Mr. Fatten-Easily eats fat and protein with what happens when he eats carbohydrate.

Eats Fat and Protein → Stokes Up Metabolism → Removes Water → Mobilises Fat → **Weight Is Lost** (Extra Calories Burnt)

or

Eats Carbohydrates (Daily Needs + Excess) → Fires Damped Down → **Weight Is Gained**

On a high-fat diet, water accounts for 30% to 50% of the weight lost. (The other 50% to 70% comes from body fat.)

Turning the bellows on the body fires makes all parts, including its largest organ, the skin, work harder. This gives rise to a considerable increase in the insensible loss of water from the skin surface and to a subjective feeling of warmth. Fat people on high-fat diets often remark on this.

Insensible or "dry" perspiration is water which evaporates from the skin without appearing as beads of sweat. It has no smell.

We all lose water in this way all the time, but when a fat person's metabolism is stimulated by a high-fat diet, this insensible perspiration increases in proportion to the rise in the metabolic rate, and contributes to the weight loss.

To go back to the steam engine for a minute: the orthodox view is that a fat man's engine is stoked by a robot fireman, who swings his shovel at the same pace whether fat, protein or carbohydrate is in the tender. This is true for Mr. Constant-Weight, but as he does not get fat anyway, it is only of academic interest to us. It is certainly not true for Mr. Fatten-Easily, with whom we are concerned. Mr. Constant-Weight has a robot stoker in his engine. The more he eats - of whatever food - the harder his stoker works until any excess is consumed, so he never gets fat.

Recent research has shown that Mr. Fatten-Easily's stoker is profoundly influenced by the kind of fuel he has to shovel.

On fat fuel he shovels fast. On protein slightly less fast but on carbohydrate he becomes tired, scarcely moving his shovel at all. His fire then burns low and his engine gets fat from its inability to use the carbohydrate which is still being loaded into the tender.

Mr. Fatten-Easily's stoker suffers from an inability to deal with carbohydrate, but he can work fast on fat and protein.

What is it that causes Mr. Fatten-Easily to be affected by carbohydrate in this way while Mr. Constant-Weight can deal with all foods alike and burn up any excess automatically, like the robot stoker?

The answer to this question has only recently been found and it is one of the keys to obesity.

Biochemists and physiologists have discovered that Mr. Fatten-Easily's inability to deal with carbohydrate is due to a block in the chain of chemical reactions leading from glucose to the release of heat and energy in his body.

Glucose is the form in which most carbohydrate is absorbed from the gut. Every bit of starchy or sugary food we eat has to be broken down by our digestive juices to glucose or other simple sugars, before it can be taken out of the gut and into the body for use.

Once through the gut wall, the glucose, in solution, is carried in the blood along veins leading to the liver.

What is not wanted for immediate conversion to heat and energy is stored in the liver as a complex sugar called glycogen and further storage can take place by changing glycogen into fat.

In Mr. Constant-Weight these chemical changes go smoothly and are reversible, i.e. the fat can quickly be broken down again to give energy and, by stepping up his internal combustion, Mr. Constant-Weight soon burns up any excess carbohydrate he has eaten, thus keeping his weight steady.

The chemical reactions which enable the body to deal with food in this way are extraordinarily complicated and we know that they can go wrong. We also know that they depend on certain hormones and enzymes which some people may lack or be unable to manufacture properly.

It is this lack or deficit which is thought to distinguish the Fatten-Easilies from the Constant-Weights, who can deal with an excess of carbohydrate by fanning their metabolic fires until the surplus is consumed.

Mr. Fatten-Easily's trouble is thought to be his inability to oxidise pyruvic acid properly - the so called pyruvic acid block.

He gets stuck with large quantities of pyruvic acid which is bad for him in two ways:

He cannot readily use it for energy, so he takes it by a short cut to his fat stores.

It prevents the mobilisation of fat from his fat stores by inhibiting the oxidation of fatty acids.

If a fat man stops eating carbohydrate, he makes little pyruvic acid and removes the stimulus to his "fat organ" to make fat. By eating fat and protein he bypasses his metabolic block.

To put it another way: obesity may be regarded as a compensatory overgrowth of the fatty tissues providing for an increased use of fat by a body incapable of using carbohydrate properly.

Feed a fat man fat and protein in place of starch and sugar and he will deal with that quite well, drawing on his stores of body fat in the process. Paradoxically, he will eat fat and grow thinner.

He will also feel well because he will no longer be subjecting his body to starvation and he will be tackling the fundamental cause of his obesity which is not overeating but a defect in the complex biochemical machinery of his body.

3. Objections To High-Fat Diets

THE EFFECTIVENESS of high-fat, low-carbohydrate diets in obesity will continue to be surprising so long as people continue to regard body fat as an inert slab of suet stored round the hips and in the other fat depots.

The fatty tissues of the body are not inert at all. Together they make up a highly active organ - the "fat organ " - with definite functions comparable to those of the liver.

This "fat organ " is concerned especially with the energy needs of the body. It shrinks under conditions of low food intake and increases when intake is high.

From this most people assume that the fat organ is simply a passive calorie store.

But this assumption is wrong. The fat organ is not passive. It has a rich blood supply and is in a constant state of activity entering into minute-to-minute metabolic changes throughout the body.

This activity can be increased or decreased by many factors, particularly by the kind of food we eat. Carbohydrate (starch and sugar) is the forerunner of excess fat in the fat organ.

On a diet devoid of carbohydrate, there is little stimulus to the "fat organ" to make extra fat. It is doubtful; in fact, whether fat in the diet can add to the weight of the "fat organ," except during recovery from starvation.

On the contrary it seems that a high fat intake depresses the manufacture of fat in the body, while increasing its utilisation as fuel.

In other words - and this is the key to Banting and all slimming - the fatty tissues can only become overweight through making fat from carbohydrate.

These statements are based on experimental work begun by Hausberger and Milstein in the Departments of Anatomy and Biochemistry at the Jefferson Medical College, Philadelphia.

They reported their findings in the Journal of Biological Chemistry, in 1955, as follows:

"Fasting or feeding a high-fat diet abolished lipogenesis (fat formation) in adipose tissue and reduced glucose oxidation markedly lipogenesis increased to the highest levels on a high-carbohydrate, fat-free diet."

They found also that in the experimental animals (rats) with which they were working, fat formation took place mainly in the adipose tissues. Massoro in Boston and Mayer and Silides at Harvard have confirmed these findings, working with tissue slices. More recent work on human subjects seems to show that these observations are also true for man.

Utilisation of radio-glucose (glucose "tagged" with radioactivity so that its metabolism can be followed) by adipose tissue has been investigated under various nutritional conditions. Fasting or feeding a high-fat diet has been found to diminish the formation of fat from carbohydrate.

Stop eating carbohydrate and eat fat instead and you will not only stop getting fat, but will get thinner.

So far so good. But here objections crop up.

"High-fat diets are nauseating and make you bilious. No one could stick to such a diet for long enough to lose weight."

"High-fat diets cause ketosis and make you ill."

"High-fat diets may be all right in cold weather but they are too heating in hot weather."

"High-fat diets are unbalanced and cause deficiency diseases."

"High-fat diets cause heart disease."

These seem to be reasonable objections, yet when we come to examine them, we find that history, anthropology and the highest medical and scientific opinion have refuted them.

1. High-fat diets are nauseating and make you bilious. No one could stick to such a diet for long.

It is true that there are some people who suffer from complaints which make them unable to eat much fat. Gall bladder disease, by interfering with the flow of bile (necessary for the digestion of fat), is the best-known example. Steatorrhoea, another disease where the gut cannot digest fat, also requires a low-fat diet. But these are diseases and the Eat-Fat-Grow-Slim diet is not for people who are ill. It is for overweight adults who are healthy apart from their obesity.

First, then, what do we mean by a high-fat diet?

For the purpose of this book, it means a diet in which the calories are derived mainly from fat and, if not from fat, from protein.

Most people who eat meat consume about three parts of lean to one part of fat because that is the palatable proportion. This means that people who live exclusively on meat, derive about 80% of their calories from fat and the remaining 20% from lean, because fat is a very much more concentrated source of heat and energy than lean. Carbohydrate, as the glycogen contained in meat, would amount to 1/2% of the calories.

In round figures the amount of food consumed would be from 6 to 9 ounces of lean meat and 2 to 3 ounces of fat, cooked weight, at each of the three meals of the day.

Obviously, then, the people to study when we wish to investigate the idea that high-fat diets are nauseating and cannot be kept to for long are those who eat nothing but meat.

There are many such people, but let us take the Eskimos first because nearly everybody knows, or thinks they know, something about them.

The greatest living authority on the Eskimo is Dr. Vilhjalmur Stefansson, the distinguished anthropologist and explorer. In 1906, Stefansson revolutionised polar exploration by crossing the Arctic continent alone, living "off the country" on a diet composed only of meat and fish, travelling exactly as the Eskimos did.

Not only did he remain in good health, but he enjoyed his food, ate as much as ever he wanted and did not put on weight.

More important from the slimming point of view, he never saw a fat Eskimo. Here is what he says:

"Eskimos, when still on their home meats, are never corpulent - at least, I have seen none who were. Eskimos in their native garments do give the impression of fat, round faces on fat, round bodies, but the roundness of face is a racial peculiarity and the rest of the effect is produced by loose and puffy garments. See them stripped, and one does not find the abdominal protuberances and folds which are so in evidence on Coney Island beaches and so persuasive against nudism.

There is, however, among Eskimos no racial immunity to corpulence. That is proved by the rapidity with which and the extent to which they fatten on European diets."

In other words, Eskimos stay slim on a high-fat diet, but as soon as they start eating starch and sugar they get fat.

The European brings obesity to the Eskimo in addition to his other "gifts" of civilisation.

So much for Eskimos who have never lived on anything but fat and protein. What about people who go on to an all-meat diet after they have been used to an ordinary mixed diet of cereals, sugar, vegetables, et c., as well as meat?

The key word here is pemmican, the most concentrated food known to man. It is made from lean meat, dried and pounded fine and then mixed with melted fat. It contains nothing else.

It was originally the food of the North American Indian and, by adopting it, the early fur traders and pioneers were able to perform fantastic feats of endurance.

Pemmican has been called the bread of the wilderness, but this is a romantic not a scientific description. Real pemmican is half dried lean meat and half rendered fat, by weight.

A man working hard all day on a meat diet needs a ration of six to seven pounds of fresh lean meat and a pound of fat.

Most authorities agree that this is equivalent to 2 lb of pemmican and on this ration David Thompson, the British explorer, tells us in the Narrative of his Explorations in Western America 1784 - 1812 that men could slave at the hardest labour fourteen and sixteen hours a day, often in sweltering heat, as when paddling canoes up swift rivers and carrying their loads on their shoulders across portages (up beside rapids and over steep escarpments.)

What happens when a European first eats pemmican? Does it make him sick? Can he eat enough of it to keep himself going?

George Monro Grant, D.D., LL.D. (1835 - 1902), in his book Ocean to Ocean, published in 1873, describes his experience as secretary to Sir Sanford Fleming, on an overland expedition from Toronto to the Pacific doing preliminary work for the extension of the Canadian Pacific Railway.

Dr. Grant was educated at Glasgow University and was ordained a Minister of the Church of Scotland. From 1877 - 1902 he was Principal of Queen's University, Ontario, where he gained a great reputation in education and politics. His personal experience of pemmican lasted not more than five weeks, but on the journey he travelled with a number of Europeans who had used it much longer.

The main value of Grant's observations is that they were made at the time, in diary form, not in retrospect. On page 24 of the London, 1877, edition he says:

"Our notes are presented to the public and are given almost as they were written so that others might see, as far as possible, a photograph of what we saw and thought from day to day."

After leaving Fort Carlton on their way up the North Saskatchewan to Edmonton, Grant's entry for August 19th, 1872, says:

"Terry gave us pemmican for breakfast, and, from this date, pemmican was the staple of each meal. Though none of us cared for it raw at first, we all liked it hot....

Pemmican and sun-dried thin flitches of buffalo meat are the great food staples of the plains, so much so that when you hear people speak of provisions, you may be sure that they simply mean buffalo meat, either dried or as pemmican.

August 22 - At the camp, the Chief treated them with great civility, ordering pemmican, as they preferred it to fresh buffalo.

August 26 - Camped before sunset within twenty- seven miles of Edmonton, and in honour of the event brought out our only bottle of claret. As we had no ice, Terry shouted to Souzie to bring some cold water, but no Souzie appearing he varied the call to 'Pemmican.' This brought Souzie, but great was his indignation when a bucket was put into his hands, instead of the rich pemmican he was never tired of feasting on.

On August 31st they left Edmonton and headed west for Jasper House. On September 6th they "halted for dinner at the bend of the river, having travelled nine or ten miles, Frank promising us some fish, from a trouty looking stream hard by, as a change from the everlasting pemmican.

Not that anyone was tired of pemmican. All joined in its praises as the right food for a journey, and wondered why the Government had never used it in wartime …. As an army marches on its stomach, condensed food is an important object for the commissariat to consider, especially when, as in the case of the British Army, long expeditions are frequently necessary.

Pemmican is good and palatable uncooked and cooked …. It has numerous other recommendations for campaign diet. It keeps sound for twenty or thirty years, is wholesome and strengthening, portable, and needs no medicine to correct a daily use of it."

In case anyone should think that these references are too old to be applicable today, I should like to introduce a bit of personal testimony here.

While writing this book I lived on a high-fat, high protein diet for three weeks, eating as little carbohydrate as possible. I should add that I did not sit in front of a typewriter all the time, but ran my practice and worked in the garden whenever I could because it was spring and a lot of planting had to be done.

My diet was as follows:

Breakfast: Fresh orange juice or 1/2 grapefruit Fried egg and bacon or fried kidneys and bacon or scrambled egg made with a lot of butter Coffee and top milk or cream, no sugar.

Lunch: Steak, with fat, fried in butter Green salad with oil dressing, or green peas (frozen) and butter Water or dry red wine Cheese - preferably high-fat type, e.g. Camembert, Danish blue, Apple Coffee and cream.

Tea: 1/4 jar peanut butter, eaten with spoon Tea with dash of milk.

Supper: Meat or fish, fried Salad or green vegetable Cheese Water or dry wine.

Nightcap: Cup of hot milk

I took no bread, no biscuits, no sugar, nothing between meals except a few nuts or a bit of cheese. On this diet, which I enjoyed eating and which never left me feeling hungry, I lost 3 lb. in three weeks, dropping from 11 stone 10 lb. in my clothes to 11 stone 7 lb. I was not trying to slim, only to see if I could live comfortably on it and stay fit. I am 5 feet 8 inches tall and, though not obese, I am a Fatten-Easily and have, in the past, been up to 12½ stone and felt uncomfortable at that weight.

Notice that I paid no attention to calories and ate as much as I felt like of the low-carbohydrate foods allowed. I also drank as much water or dry wine as I wanted. I felt well all the time and got through my work without undue effort.

I now stick to a low-carbohydrate diet of this kind from choice, because it gives me more energy than an ordinary high-starch diet and because I like it.

During the first week on this diet, my wife complained that I was bad-tempered. This I think was due to a mild ketosis which takes about a week to get used to.

Ketosis is explained under objection **No. 2**.

It is surprising how many authorities subscribe to the view that high-fat diets are unpalatable. It must be because they have never actually eaten them. Dr. John Clyde, who approves of high-fat diets otherwise, says in his "Family Doctor" booklet Slim Safely:

"Even with the same number of calories, the high-fat diet results in more and easier weight loss than the high-carbohydrate diet. Ideally, then, one might look for a diet containing mostly protein and fat and almost no carbohydrate. But in fact such a diet is so very different from our normal pattern of eating that I doubt whether anyone would manage to stick to it for more than a few days - which is not long enough." (author’s italics.)

Dr. John Clyde is a pseudonym, so it has not been possible to obtain from him the evidence on which he has based this statement, but he is not supported by others who should know. Professor

Kekwick, who has been using high-fat diets for weight reduction in his patients since 1952, has kindly allowed me to quote the following case which was under his care in the Medical Unit at the Middlesex Hospital. This man was 46 years of age on admission in 1952 weighing 20 stone 12 lb with a height of feet 6 inches. His blood pressure was high. After a period of stabilisation in the ward, he was put on a 1,000-calorie low-carbohydrate diet and in a week lost 8 lb. He was then placed on the high-fat high-calorie diet and lost a further 4 lb during seven days. On reducing the calorie content of this type of diet to 1,000 calories, he lost another 8 lb in the next week. He felt very well all along and not particularly hungry. He was sent home on this high-fat diet.

In February, 1953, his weight was down to 16 stone 5 lb, by April, 1953, it was 14 stone 10 lb and, when seen in October, 1953, he weighed 11 stone 12 lb and felt much fitter. His blood pressure was now normal. At this stage, he was taken off his diet and allowed to eat carbohydrate again. In August, 1956, his weight had increased to 14 stone 7 lb and his blood pressure had risen again. He stated that he wished to go back to the high-fat diet as he felt better on it.

The surprising thing about a high-fat diet is that, contrary to what Dr. Clyde says, it is easy to stick to. I have tried it myself and I am convinced of this. So are some of my patients who have lost weight on it.

Nearly all those who have been on such a diet agree that it is palatable and many, like Professor Kekwick's patient, ask to go back on it when they find themselves starting to regain weight through returning to a mixed diet containing a normal proportion of carbohydrate.

In Appendix D the composition of Professor Kekwick's experimental low-calorie high-fat diets is given. It is important to realise that this high-fat diet was designed for people who were really obese. It is not for those who merely wish to lose a few pounds gained through over eating. For such people, it is only necessary to reduce the proportion of carbohydrate in their normal diet by a half to two-thirds, for weight reduction to occur.

2. High-fat diets cause ketosis and make you ill

Ketosis is a condition in which ketones (chemicals related to acetone) appear in the blood, and in the urine.

They are produced during the oxidation of fat and are made in large quantities in the untreated diabetic who, because he is unable to deal with sugar, attempts to burn fat at a great rate and in so doing makes an excess of ketones.

They accumulate to the point where they are poisonous, and in severe diabetic ketosis, coma will supervene unless insulin is given to enable the patient to utilise sugar.

But in diabetic ketosis, the level of ketones in the blood is very high. It may reach over 300 milligrams per 100 c.c., 30 times higher than the moderate ketosis induced in the obese by fat feeding, which in turn is only half the moderate level of ketosis found in a normal person who has been fasting for two days.

Kekwick and Pawan in their studies on human subjects found that very high fat diets were well tolerated and that ketosis was not a complication in their obese patients.

So there are degrees of ketosis and the effects of the severe ketosis of diabetes are quite different from the mild ketosis of a fasting person or the even milder ketosis of a person on a high-fat diet.

All degrees of ketosis have one thing in common, however. They are caused by the same thing: deprivation of carbohydrate.

It is still very widely believed, by doctors as well as dieticians, that the ketosis produced by a high-fat diet is harmful, and that fats can only be utilised properly by the body in the presence of carbohydrate.

This has been expressed, in a catch phrase for medical students as, "Fat burns only in the flame of carbohydrates." In other words, if you eat a lot of fat you must also eat a lot of carbohydrate or you will not be able to use up the fat and will develop "harmful" ketosis.

Dr. Alan Porter in his "Family Doctor" booklet, Feeding the Family, published by the B.M.A., says:

"Fat is burned down by the body to carbon dioxide and water, but to do this, there must be carbohydrates present. Otherwise, the breakdown is not complete and what are called ketone bodies pass into the blood and urine. This causes sweetish breath and biliousness."

Anyone who has studied the history of diet must view this statement with scepticism. For long periods and in many places man has subsisted on an exclusive diet of fat meat. Before the discovery of agriculture, when all food had to be obtained from animal sources by hunting, man had to live on fat and protein alone, and in more recent times there is plenty of evidence that people remain healthy on an exclusive diet of meat with no carbohydrate except the tiny amount contained in the lean.

In pemmican, fat represents 75% to 80% of the available energy so that if fat really only burns in the flame of carbohydrate, anyone living exclusively on pemmican must be getting only 20-25% of the energy value out of his food. Yet this was the diet which enabled the white man to open up Western Canada and the United States!

In this connection it is interesting to note that in the backroom battles which were waged between the advocates and the opponents of pemmican as a ration for the Allied armies in the Second World War, "fat burns only" was one of the arguments used by the "experts" who succeeded in keeping pemmican out of the rations of our shock troops.

So much for the mythical dangers of ketosis on a high-fat diet in obesity.

What about the possible advantages of ketosis to the obese? Since the war these have become clearer and it now seems that the benign ketosis which develops when carbohydrates are in short supply, increases the mobilisation of stored body fat for fuel, and assists weight loss in the obese.

Further than this, it is now thought that:

"Unless low-calorie diets are ketogenic (have a high-fat content and give rise to ketosis) they cannot operate by increasing the use of fat by the body but only by decreasing the formation of new fat."

I quote from Dr. Alfred Pennington's address to the 11th annual New England Post-graduate Assembly, Boston, Mass., 29th October, 1952, entitled "A Reorientation on Obesity".

3. High-fat diets may be all right in the cold weather, but they are too heating in hot weather.

This popular fallacy is closely related to another one: that Eskimos eat a lot of fat in order to keep warm. Many people are surprised to learn that Eskimos spend the time in their houses naked or almost naked, and that their outdoor clothes are so well designed that even in a temperature of minus 40° F. an Eskimo feels warmer than an Englishman in London on a January day.

To quote again from Dr. Stefansson's book, The Fat of the Land:

"... the clothes the Eskimos wear in the Arctic during the coldest month of the year, January or February, weigh under ten pounds, which is a good deal less than the winter equipment of the average New York business man. These clothes are soft as velvet, and it is only a slight exaggeration to say that the wearers have to use a test to find out whether the day is cold. At minus 40° F, a Mackenzie Eskimo, or a white man dressed in their style, sits outdoors and chats almost as comfortably as one does in a thermostat-regulated room. The cold, about which the polar explorer can read upon the scale of his thermometer, will touch only those parts of his body which are exposed, the face and the inside of the breathing apparatus, a small fraction of the body, needing little fuel for counterbalance. Warm and completely protected elsewhere, he can sit comfortably

even with bare hands. Indeed, the ears, particularly liable to frost, seem to be about the only parts likely to freeze if exposed at 40° below zero while most of the rest of the body is warm...

The houses of Mackenzie River, typical in their warmth of the dwellings of most Eskimos, have frames of wood, with a covering of earth so thick that, practically speaking, no chill enters except its planned ventilation, for which a diving-bell principle of control is used. A room filled with warm air can lose no great amount of it through an opening in the floor, while the cold air below that opening is not able to rise into the house appreciably faster than the warm air escapes at the top.

The roof ventilator of a dwelling that shelters twenty or thirty people is likely to resemble our stove pipes in diameter...

Through this diving-bell control of ventilation there develop several temperature levels within the house, or rather an upward graduation of warmth. Lying on the floor you might be cool at 60° sitting on the floor, the upper part of your body would be warmish at 70° or 80° sitting in the bed platform three feet above the floor you could reach up with your hand to a temperature of 90° or 100° These temperatures, in the Mackenzie district and in many other places, are produced by lamps which burn animal fat, odourless, smokeless and giving a soft, yellowish light.

During my first Mackenzie winter … there were enough lamps extinguished at bedtime, say 10 o'clock, to bring the room temperature down to 50° or 60°. Both sexes and all ages slept completely naked, or under light robes.

While indoors we were living in a humid, tropical environment; when outdoors we carried the tropics around with us inside our clothes. Neither indoors nor out were we using any considerable part of the calorific value of our food in a biologic struggle against chill."

So although an Eskimo lives in a very cold climate, he has contrived to make his immediate environment, both outdoors and in, as warm as the tropics and in this heat the Eskimos and Dr. Stefansson, who lived with them, took a high-fat diet, composed almost exclusively of meat.

These facts about the Eskimo are not so surprising if we consider the position of fat in the diet of tropical and sub-tropical peoples.

The Bible is full of the praise of fat.

"And in this mountain shall the Lord of Hosts make unto all people a feast of fat things, a feast of wines in the lees, of fat things full of marrow."

The phrase, "to live on the fat of the land," which today epitomises all that is best in food, comes from the book of Genesis xlv, 17-18:

"And Pharaoh said unto Joseph . . . take your father and your house holds and come unto me; and I will give you the good of the land of Egypt, and ye shall eat the fat of the land."

Not only the ancient Hebrews, but hot-climate people in every part of the world, relish fat and regard it as the best kind of food for health. Its virtues are extolled in the religious folklore of Burma and Siam.

The Negroes of the American Deep South love fat pork. In central Africa, the Negro gorges fat when he can get it - in preference to all other food.

Travellers in Spain and Italy know that the food is often swimming in oil and in Peru sticks of fat "crackling" are sold like candy-bars.

Australians in subtropical heat consume more meat per head than any other people of European descent except perhaps the Argentinian cowboys, who are the nearest to exclusive meat eaters in the world outside the Arctic.

Nevil Shute in his semi-documentary novel about the Australian outback, A Town Like Alice, described how an English girl tried, without much success, to wean the stockmen from their three steak meals a day to a "civilised" mixed diet.

It is clear from all this that fat is not a cold-climate food only but a much prized and essential food of people in hot countries.

To clinch the point, here is Henry Wallace Bates, friend of the great Charles Darwin, in his book, A Naturalist on the River Amazon:

"I had found out by this time that animal food was as much a necessary of life in this exhausting climate as it is in the North of Europe. An attempt which I made to live on vegetable food was quite a failure."

4. High-fat, high-protein diets are unbalanced and cause deficiency diseases.

Nothing is so dear to the heart of the dietician and the nutrition expert as the concept of a balanced diet.

In every civilised country dietetics is based on tables like "The Famous Five" and "The Basic Seven."

In these tables, foods are divided into categories according to the kind of basic nutriment they supply and the idea is that you must take something from each group every day to get a balanced diet and stay healthy. Yet it is obvious from what has been said already that men can and do remain fit indefinitely on a diet of meat alone.

Our ancestors, before they learnt to plant crops, had to subsist entirely on what meat they could kill. They survived and had children. So also do the primitive hunters of today. Eskimos, who live without vegetable foods of any kind, on caribou meat, whale, seal meat and fish, do not get scurvy and are among the healthiest people in the world.

Eugene F. DuBois, M.D., Professor of Physiology, Cornell University Medical College, in his introduction to another of Dr. Stefansson's books, Not by Bread Alone, wrote in 1946:

"The textbooks of nutrition are still narrow in their viewpoints. They do not seem to realise the great adaptability of the human organism and the wide extremes in diet that are compatible with health. The modern tendency is to encourage a wide selection of foods and this seems to be sensible and economical for the great bulk of our population. The propaganda is strong and on the whole excellent. Take for example the government pamphlet on the so-called 'Basic Seven.'

FOR HEALTH - eat some food from each group every day.

Group	Foods
1:	Green and yellow vegetables; some raw, some cooked, frozen or canned.
2:	Oranges, tomatoes, grapefruit, or raw cabbage or salad greens.
3:	Potatoes and other vegetables and fruits; raw, dried, cooked, frozen or canned.
4:	Milk and milk products; fluid, evaporated, dried milk, or cheese.
5:	Meat, poultry, fish or eggs or dried beans, peas, nuts or peanut butter.
6:	Bread, flour and cereals, natural or whole grain or enriched or restored.
7:	Butter and fortified margarine, with added Vitamins A and D.

IN ADDITION TO THE BASIC 7-; EAT ANY OTHER FOODS YOU WANT

(U.S. Government Chart)

It is startling when we learn that large groups of active hunters in many parts of the world subsist on nothing but a small sub-division of Group 5. It is not quite as startling when we consider that the vegetarians live comfortably on all the groups except this very part of No. 5. The strictest vegetarians exclude also Group 4 and butter in Group 7."

Stefansson himself and a colleague, Dr. Karsten Anderson, finally demolished the balanced-diet-for-health idea in 1928 when they entered the Dietetic Ward of Bellevue Hospital, New York, to be human guinea pigs on an exclusively meat diet and remained, under the strictest medical supervision, on this diet for twelve months.

The committee in charge of the investigation must surely be one of the best qualified ever assembled to supervise a dietetic experiment. It consisted of leaders of all the important sciences related to the problem and represented seven institutions:

American Meat Institute:	Dr. C. Robert Moulton;
American Museum of Natural History:	Dr. Clark Wissler;
Cornell University Medical College:	Dr. Walter L. Niles;
Harvard University:	Drs. Lawrence J. Henderson, Ernest A. Hooton, and Percy R. Howe;
John Hopkins University:	Drs. William C. McCallum and Raymond Pearl;
Russell Sage Institute of Pathology:	Drs. Eugene F. DuBois and Graham Luck;
University of Chicago:	Dr. Edwin 0. Jordan.

The Chairman of the committee was Dr. Pearl. The main research work of the experiment was directed by Dr. DuBois, who was then Medical Director of the Russell Sage Institute, and who has since been Chief Physician of New York Hospital, and Professor of Physiology in the Medical College of Cornell University. Among his collaborators were Dr. Walter S. McClellan, Dr. Henry B. Richardson, Mr. V. R. Rupp, Mr. C. G. Soderstrom, Dr. Henry J. Spencer, Dr. Edward Tolstoi, Dr. John C. Torrey, and Mr. Vincent Toscani. The clinical super vision was under the charge of Dr. Lieb.

The aim of the experiment was not, as the press claimed at the time, to prove or disprove anything. It was simply to find out exactly the effects on general health of an all-meat diet. Within that general plan, it was hoped that the results would answer several controversial questions:

Does scurvy arise when vegetable foods are withheld?

Does an all-meat diet produce other deficiency diseases?

Is the effect on the heart, blood vessels and kidneys bad?

Will it encourage the growth of harmful bacteria in the gut?

Will it cause a deficiency of essential minerals - notably calcium.

Dr. MeClennan and Dr. DuBois published the results of this study in the American Journal of Biological Chemistry in 1930 under the title, "Prolonged meat diets with study of kidney functions and ketosis." Here are their findings summarised for convenience with those of other doctors who reported on other aspects of the experiment:

Stefansson, who was a few pounds overweight at the beginning, lost his excess weight in the first few weeks on the all-meat diet. His basal expenditure of energy (metabolism or general rate of food using) rose from 60.96 calories to 66.38 calories per hour during the period of the weight loss, indicating an increase of 8.9%. He continued the diet a full year, with no apparent ill effects. His blood cholesterol level at the end of the year, while he was still on the diet, was 51 mg. lower than it had been at the start. (Remember this when reading about the next objection - the possibility of heart disease.) It rose a little after he resumed an ordinary, mixed diet. After losing his excess weight he maintained constant weight the rest of the year, though food was taken as desired. His total intake ranged from 2,000 to 3,100 calories a day. He derived, by choice, about 80% of his energy needs from fat and 20% from protein. These proportions are close to those derived by a person from his own tissues during prolonged fasting. The instinctive choice of about 80% of the

calories from fat seems to be based on selection by the metabolic processes of the body. It was found that with carbohydrate restricted in the diet, the appetite for fat greatly increased. The body adapted itself to a greater use of fat for energy when this substance was supplied in increased amounts.

So the answers to our five special questions listed above are all "**no**" Nothing untoward occurred and both subjects remained healthy, free from scurvy and other deficiency diseases, with normal heart and kidney functions. Their bowels behaved normally except that their stools became smaller and lost their smell. Deficiency of calcium or other minerals did not develop.

So much for the balanced diet. It is evidently not as important as some pundits would have us believe. In fact, many of the assumptions about diet on which national food policies are based may one day have to be revised.

5. High-fat diets cause heart disease

The medical term for a heart attack is coronary thrombosis. "Coronary" comes from the Latin word for a crown or circle. The small blood vessels which encircle the heart, supplying the heart muscle, are called coronary arteries. A coronary thrombosis is a clot or thrombus in one of these arteries.

In 1921 coronary thrombosis was a rarity and accounted for only 746 male deaths in Britain. In 1956 the figure was 45,000. It is still going up.

Even allowing for the survival of more people into the coronary-prone age group, and for better diagnosis, the rise is alarming.

One theory put forward to account for this epidemic of heart attacks, blames the fat we eat. According to this theory, too much dietary fat is supposed to raise the level of a waxlike chemical called cholesterol in the blood, and form deposits on the linings of arteries, narrowing their bore and encouraging the blood to clot within them.

The deposits are called atheroma from two Greek words *ather* = porridge and *oma* = tumour, and the process is known as atherosclerosis.

The fat-furs-the-arteries theory really began with animal experiments in the 1930s which showed that feeding large quantities of fat to rats raised their blood cholesterol and induced atherosclerosis rapidly.

This work has never been repeated in man since it would be impossible to do so under experimental conditions. But it suggested a link between fat in the diet, blood cholesterol and atherosclerosis, and inspired a number of statistical studies, notably those of the American biochemist, Dr. Ancel Keys, which showed that coronary deaths were rare among primitive people who ate little fat.

Mortality figures for European countries published after the war seemed to confirm this.

They revealed a sharp fall in the number of deaths from diseases of the heart and arteries between 1939/45, followed by a rise when rationing ended.

On the basis of the earlier work with animals, this rise was attributed to raised blood cholesterol from an increased consumption of bacon, butter and other animal fats.

There was certainly no direct evidence that eating fat caused coronary thrombosis in man. But it was argued that if a high-fat diet raised the blood cholesterol of rats and mice and increased their liability to atheroma, the same thing might happen in humans heavily indulging in fats after the lean years of rationing.

The weak link in this argument is that we do not know how coronary thrombosis comes about in man. It can occur without atherosclerosis and with normal blood cholesterol.

So that although it is certainly possible to reduce the blood cholesterol by eating little or no fat, there seems little point in doing so since cholesterol is an essential constituent of most tissues and can be synthesised in the body easily from carbohydrate.

Nor is there any evidence to show that low blood cholesterol will either delay the onset of atherosclerosis or prevent a coronary thrombosis from happening.

A number of other findings have since cast doubt on the idea that a high total fat consumption is an important cause of coronary thrombosis.

Australians, who had fewer coronaries during the war, ate no less fat. And in Great Britain, while the mortality from heart attacks has risen steeply since the war, consumption of fat has gone up only 7%.

A more interesting theory is now current. It is that the kind of fat you eat is more harmful than the amount. The proportion of "hard" to "soft" fat in the diet is said to be critical.

This theory has led to claims that "unsaturated" cooking fats and oils protect against coronary thrombosis.

The soft, unsaturated fats stay liquid when cool and include the natural vegetable oils like olive oil, cotton seed and sunflower seed oil as well as the marine and fish oils. Saturated fats set hard when cool and include animal fats, hydrogenated vegetable fats and shortenings, margarine and solid cooking fats.

In 1955, Dr. Bronté Stewart, then at Oxford, found that the blood cholesterol level could be lowered by giving people more unsaturated fat. But a survey of countries with different tastes in fats and oils fails to show that this protects against heart disease, or that eating mainly saturated fats encourages it. Norwegians, who eat a lot of saturated fat as margarine, have fewer fatal coronary thromboses than New Zealanders who eat little.

And if the Norwegians are protected by the unsaturated oils in the fish they eat, then it is strange that Aberdeen, where a lot of fish is eaten too, has twice the coronary death rate of Oslo.

Indeed Dr. Bronté Stewart has recently drawn attention to the weakness of the links between coronary thrombosis and either the kind or the amount of fat we eat.

Writing in the British Medical Bulletin, in September 1958, he said that while there is strong evidence for a direct connection between diet and the level of cholesterol in the blood, any links between these two and atherosclerosis and coronary thrombosis are not convincing. He wrote:

"Any policies regarding preventive programmes that the alarming increase in incidence demands would be founded more on assumptions than on facts."

The United States Department of Health is in agreement with this and early in 1960 issued the following statement:

"It is the opinion of the Food and Drug Administration that any claim, direct or implied, in the labelling of fats or oils or other fatty substances offered to the general public that they will prevent, mitigate or cure diseases of the heart or arteries is false and misleading, and constitutes misbranding within the meaning of the Federal Food, Drug and Cosmetic Act."

It is difficult to see how the anti-fat theory has gained so much ground. History does not support it. The men who won the battle of Agincourt, the men who broke the Spanish Armada and the heroes of Waterloo all fed on butter, fat beef and fat bacon. They did not suffer from coronary thrombosis. If they had done so, the careful medical observers of the time would have described it.

It is only since the introduction of highly refined and processed cereals and sugars into the diet that civilised man has been plagued with coronaries.

If the fat we eat is implicated at all, it is likely that artificially processed fats are to blame rather than the natural animal and vegetable fats which have been our best food from the beginning of history.

Dr. H. M. Sinclair's name is associated with this view. In a letter published in The Director (February 1960), he claimed that naturally occurring fatty acids (removed from present-day edible fats by modern methods of production and processing) could protect against coronary thrombosis.

He called these substances "essential fatty acids" (E.F.A.) because the body needs them for its economy and must rely on a ready-made supply in the diet since it cannot make them for itself.

It is wrong, he said, to condemn animal fats and praise vegetable fats. Each fat should be considered good or bad according to the amount of E.F.A. in it.

On this basis, coconut oil is bad, because it is almost devoid of E.F.A., while some margarines are quite good, being manufactured to contain useful quantities, and lard varies with the way the pig is fed.

For completeness, one other theory must be mentioned. That high-fat meals accelerate the clotting of blood and so increase the likelihood of a thrombosis.

This is based on observations made at the laboratory bench, with blood in test tubes, not in living people. There is no evidence linking fatty meals with the time of coronary disasters in patients.

From this confusing but fascinating field of study two conclusions may fairly be drawn about advising a high-fat diet for obesity.

1. When a person is overweight and has already got heart disease

There is at present no good evidence of the effect of reduction of dietary fat on the progress of established coronary artery disease.

But when it can be shown that the blood cholesterol of such patients is raised, there is a case for putting them on a dietary regime designed to bring the blood cholesterol down. This need not mean the restriction of total fat, although such a diet (which is very unpalatable) will often have the desired effect.

Natural, unprocessed vegetable oils and fish oils will also reduce the blood cholesterol and certain substances, like sitosterol, which block the absorption of cholesterol, can also be given for this purpose.

But the most valuable single measure in prolonging the life expectancy of an obese patient with coronary artery disease is weight reduction and if this can be achieved on a high-fat, high-protein diet the benefits will far out-weigh any possible danger from raised blood cholesterol. The sensible thing for such a patient would therefore seem to be weight reduction by dietary means with a good intake of unsaturated fats—corn oil, soya bean oil, peanuts, kippers and herrings to depress the blood cholesterol.

2. When an overweight person has not got heart disease

The beneficial effect of weight reduction in preventing the onset of coronary thrombosis is generally accepted, based on life insurance experience over many years. And there is no scientific support for the suggestion that eating a lot of fat leads to "furring of the arteries" and increases the chance of having a coronary thrombosis.

One of the acknowledged experts in the field of epidemiology and medical statistics has refuted the suggestion that the intake of dietary fat has anything to do with the rise in the number of deaths from coronary thrombosis.

Speaking to the Manchester Medical Society on 23rd January, 1957, Dr. J. N. Morris, Director of the Medical Research Council's Social Medicine Research Unit in London, was reported in the Lancet as saying:

"What might be called the 'appeal to epidemiology' was persistently refusing to confirm the hypothesis of a single or simple dietary aetiology for ischaemic heart disease. In the present climate of opinion such a negative role was exceedingly uncomfortable! But it was not possible, in time series or other series, to correlate what was known of the mortality from coronary heart disease with what was known of trends in fat consumption. Thus, the great variations of mortality among Western countries having similar high-fat intake disposed of any story that total fat consumption was the critical factor.

Changes in animal fat consumption in the United Kingdom during the present century could be related to the changes in coronary atheroma found in the London Hospital records, but they showed no relation to the Registrar-General's figure of mortality from coronary heart disease. The trend of consumption of butterfat in the United Kingdom showed absolutely no relation; the steep increase in coronary deaths since 1943 was only one illustration of this. Changes in vegetable-fat intake followed the mortality experience more closely; and changes in the hydrogenated-fat intake were even more closely reflected in the mortality figures, except for the social-class distribution of coronary mortality, which did not agree with the pattern of margarine intake."

On 10th April, 1957, Dr. John Yudkin, Professor of Nutrition at London University, in his farewell address as Chairman of the Nutrition Group of the Society of Chemical Industry, related diet to deaths from coronary thrombosis in three ways:

By comparing diet with deaths in different countries.

By comparing the deaths in different social classes.

By comparing trends in diet with trends in mortality in Britain over the last thirty years.

None of these comparisons showed any significant correlations except a slight association between coronary thrombosis and high living standards. From numbers of graphs based on the most painstaking statistical research, the answers to the questions about dietary fat and deaths from coronary artery disease emerged as follows:

As fat intake rises do deaths from coronary thrombosis rise? No.

Is there a relationship between the proportion of calories obtained from fat and the incidence of coronary thrombosis? No.

Is the intake of animal fat related to coronary thrombosis? No.

Is there a relationship with butter, cheese and milk fat consumption? No simple, relationship.

With vegetable fats? No.

Hydrogenated or saturated fats: margarine, shortening, et c.? No.

After pointing out that even if you show a statistical relationship between two things you do not show that one causes the other, Professor Yudkin concluded that not one single dietary factor shows any clear statistical relationship with coronary thrombosis. Later he published his survey in the Lancet on July 27th, 1957, and again concluded that on the available evidence it was "difficult to support any theory which supposes a single or major dietary cause of coronary thrombosis." On that point most authorities now seem to be in agreement and in the present state of our knowledge there is absolutely no justification for scaring an obese person in normal health off a high-fat diet for the treatment of his obesity. On the contrary, there is evidence to show that the loss of weight which he can easily achieve on a high-fat, high-protein, low-carbohydrate diet will lessen considerably his chances of having a heart attack and will also add years to his expected span of life.

Summing up the position, the British Medical Journal, in its leading article on 13th July, 1957, said:

"Until we have more precise information on the relationship, if any, between dietary factors and coronary disease, there is no need for the middle-aged man to forgo his breakfast of egg and bacon in favour of cereal and skim milk, followed by toast and marmalade with a scraping of butter."

In spite of a world-wide research effort, "more precise information" has not appeared at the time of revising this for the Fontana edition (Sept. 1960) and it is appropriate to close with a story about the Jack Spratts of medicine told recently by Dr. Charles H. Best, co-discoverer of insulin.

He had been invited to a conference of heart specialists in North America. On the eve of the meeting, out of respect for the fat-clogs-the-arteries theory, the delegates sat down to a special banquet served without fats. It was unpalatable but they all ate it as a duty.

Next morning Best looked round the breakfast room and saw these same specialists - all in the 40-60 year old, coronary age group - happily tucking into eggs, bacon, buttered toast and coffee with cream.

If the very people who started the anti-fat scare do not apply it seriously to themselves why should ordinary men and women be expected to avoid the food which has been, with protein, the staple diet of mankind for nine-tenths of our time on earth?

The evidence against fat is full of inconsistencies. A better case can be made out for lack of exercise. We certainly ate more butter when the war was over, but we also bought more motorcars and started to put in long hours sitting in front of the television.

Eskimos on their native diet eat more fat than anyone else, but they lead more strenuous lives.

More bus drivers die of coronaries than conductors, who are up and down stairs all day. Treasury clerks have more coronaries than postmen.

Americans, who get more heart attacks than anyone else, have more cars and elevators.

The most impressive evidence of all was obtained by Morris and Crawford (British Medical Journal, 1958) by asking pathologists all over the country to report on their next 25 post-mortems in the 40 - 70 age group, no matter what the cause of death.

Healed coronary thrombosis was found in more men in light work than in heavy occupations. More of the light workers had high blood pressure and these were the ones with the greatest number of coronary thrombosis scars.

This brings us back to obesity, which is closely correlated with high blood pressure.

Get your weight down by keeping active and avoiding carbohydrate and you will keep your blood pressure normal, and have the best chance of avoiding a coronary.

4. Eating Fat And Growing Slim In Practice

THE MOST recent work here and in America shows that unrestricted calorie, high-fat, high-protein, low-carbohydrate diets will get weight off the obese more effectively than any other kind of regime.

The evidence, set out briefly in the earlier chapters of this book, is clear and incontrovertible. The five main arguments against eating a high-fat diet which have been examined, do not stand up to serious investigation. They are that such diets:

Are nauseating and cannot be followed for long enough to lose weight;

Cause ketosis and make you ill;

Can only be followed in cold weather;

Are unbalanced and therefore lead to deficiency diseases; and

Cause heart disease.

The way is open for all overweight people in normal health to start losing weight without difficulty or starvation. What holds them back?

Three things. The question of expense, prejudice against fat and an immoderate craving for starch and sweet things which many fat people feel they can never do without.

I will tackle these three objections before going on to explain how easy the diet really is to follow.

Expense.

It is no use denying that the kind of diet which slimmed Banting costs a lot more than the kind of diet to which many fat people are accustomed.

Fat and protein foods are the most expensive to buy and anyone who wants to lose weight must be prepared to spend a bit more each week on food. But they need not spend much more. Mrs. Stefansson in her preface to the American edition of this book, says that it actually costs less because meat keeps in the refrigerator and money does not have to be spent on cakes, puddings, biscuits and all the starchy things which usually go on the table. Later in this chapter the Eat-Fat-Grow-Slim diet is adapted to three income levels and to the needs of those who have to eat out, at restaurants, cafes, pubs and the Lyons/ABC type of cafeteria. The only place where it is difficult to follow the diet is the canteen where there is no alternative to the set meal provided.

It is important to get this question of expense into perspective. Nearly everything we want to do costs money, directly or indirectly, and the person who is overweight and wants to slim is usually prepared to spend quite a lot of money to do it.

On Friday, 29th March, 1957, a woman weighing 17 stone appeared on the I.T.V. programme, "State your case for £100," asking for the money to enable her to go to what she called a "slimming farm". She did not get the £100, but if she had had that amount of money of her own, it is probable that she would gladly have spent it on trying to get her weight down. Her considerable courage in discussing the problem of her obesity in front of millions of viewers proves it.

So although expense is a factor to consider when starting this diet, it is not a big factor when weighed against the benefits of weight loss. Very few fat people would hesitate to spend a bit extra each week on food if by so doing they could be sure of returning to the happy physical state of being the right weight for their height and build.

So much for the cost. Now for prejudice against fat. This is very widespread and has increased lately as a result of people getting the idea that protein (lean meat) is slimming. So it is, but not nearly so slimming without fat. Just how far this anti-fat feeling can go is shown by this protest from the meat industry reported in the Observer on Sunday, 17th March, 1957, under the heading:

“A LEAN TIME FOR THE HOUSEWIFE”

"The 'don't-give-me-any-fat' attitude of housewives is likely to force up the price of the week-end joint. So many young cattle have been killed off in response to the demand for lean meat that there is a shortage of store cattle for fattening on the summer grass.

"Ever since the end of rationing, butchers have found that housewives will not tolerate fat and this has led to the premature slaughtering of cattle which before the war would have been described as scraggy and unfinished. Slaughterings rose by 10% last year (writes Clifford Selly) and this has brought beef cattle numbers below the 1955 figure...

Many farmers and butchers feel that the housewife's aversion from fat is becoming a fetish and a strong plea that the housewife should be educated in meat quality was made recently by Mr. F. W. Salisbury, director of the large firm in the Home Counties. (Sainshury's.)

So much has been written to warn humans of the disadvantages of obesity,' he said, 'that in my opinion the pendulum has swung too far in favour of unfinished meat." Experiments had shown that palatability in terms of texture, flavour and juiciness increased with the fat content up to an optimum of 38% of fatty meat."

Mr. Salisbury might also have said what nonsense is written about fat being fattening. With unfinished meat it is very difficult to eat the ideal proportion of one part of fat to three parts lean, which gets weight off most efficiently on a low-carbohydrate diet.

How has this dislike of the idea of fat taken hold?

In two ways, more recently, as a result of propaganda for high-protein diets, and over many years because of the use of certain words in our language which have given visible fat unpleasant associations. For although many people will tell you they cannot eat fat you will find that it is only in certain forms and under certain names that they refuse it.

They will eat butter, bacon and suet puddings quite happily but the words blubber, greasy food and cold mutton fat make them queasy. The truth is that a rose by any other name does not smell as sweet and we are all extremely sensitive to word-associations, pleasant and unpleasant.

Today the word "fat" itself has come under nearly as strong a taboo as blubber and tallow in years gone by. But notice that it is not fat itself which is disliked but only what people think of as "fat."

The man who cuts the fat off his ham will admit to being very fond of steak pudding and the woman who "can't stand that greasy Spanish food " will cheerfully polish off a couple of chocolate sundaes.

In fact, the consumption of edible fats has risen steadily over the years both here and in the United States, but the rise has been mainly in the consumption of "invisible" fats, contained in bacon, lean meat, fish, cheese, milk, eggs, ice-cream, chocolate, cakes, biscuits, nuts and mayonnaise.

Visible fat consumption has gone up too but more in respect of popularly approved fats-butter, cooking fats and oils, margarine-than the unpopular animal fats, lard, ham fat, mutton fat and beef fat and dripping.

So opposition to fat is apparent rather than real and anyone who starts to eat a high-fat diet can do so without offending their tastes by choosing-at first anyway-those foods high in "invisible" or "approved" fats which they like already.

After a week or two on a high-fat, low-carbohydrate diet they will be surprised to find that they will develop a taste for fat of all kinds and will relish the fat crackling on pork and the fat layer on a joint of roast beef. They will have got back to the ideal diet of their forefathers and will be living on the fat of the land.

Lately, too, the false story that fats predispose to heart disease has tended to put people off the visible fats which they think of as "fat" in the obvious sense.

Lastly, the third personal objection: the fat person's craving for starch and sweet things.

Carbohydrate foods are the cheapest foods and are most readily to hand for snacks. Therefore, if people are going to overeat, whether for social or emotional reasons, they will probably tend to overeat starch and sugar.

These are the obvious reasons why fat people tend to eat a lot of sweet things. They like what they are accustomed to and these things are forever being pressed on them by well meaning friends and relations. There is, however, a more fundamental reason why a fat person should overeat starch and sugar. This was hinted at in Chapter Two, where it was explained that a person fattens easily because his body is unable to deal with carbohydrate properly. Turn back to the discussion about the block that prevents the fat person utilising carbohydrates and stored fat for energy.

It would appear that owing to this block the fat man on a high carbohydrate diet is nearly starving in the midst of plenty. Most of the carbohydrate he absorbs is turned into fat and accumulates in his fat stores and he cannot easily get it out again. The rest of the tissues of his body suffer a relative deprivation of nutriment and naturally he feels hungry and eats more. Habit, reinforced by the cheapness and ready availability of starchy and sugary foods, ensures that he attempts to satisfy his hunger with yet more carbohydrate which in turn forms more fat and still leaves him hungry. The vicious circle goes on and he gets fatter.

This is so particularly when he is gaining weight or trying to get it off on a low-calorie diet containing carbohydrate. The reason for this will be explained in a minute, after the fat cycle:

Fat Cycle

Mr Fatten-Easily eats carbohydrate → Turns to fat → little available for energy → soon feels hungry and again eats more → only makes him fatter → still feels hungry.→.fatter still and still not satisfied → and so it goes on.

On a predominantly carbohydrate diet, this vicious spiral of weight gain and unsatisfied hunger will go on until a certain degree of obesity has been reached. The weight will then level off at an excessive though constant figure and will remain there for a long time, or even indefinitely.

This curious fact is not easy to explain in terms of the popular "fat comes from overeating" theory of obesity. But it is additional confirmation of the correctness of the Beddoes-Harvey-Pennington theory of faulty internal metabolism of carbohydrate.

A possible explanation is that there are two phases of obesity, the dynamic in which weight is being actively gained or lost and the static in which a state of equilibrium has been reached between the internal forces making for gain and loss.

Rony, in 1940, first suggested this explanation and said that more might be learned about why a fat man gets fat from studying his metabolism in the dynamic phase, while he was gaining or losing weight.

He further suggested that as it would be impossible to tell which phase a person who had recently been gaining weight was in, the dynamic phase might be induced by causing weight loss with a low-calorie diet.

Strang and Evans had done this in 1928 when they studied the energy exchange (balance between calories in and calories out) of obese subjects before and after they lost weight on low-calorie diets.

They reported: "When obese patients are reduced by dietary measures alone, the energy exchange diminishes proportionally much more than the weight or the surface area", i.e. the abnormally low metabolism of the Fatten-Easilies when gaining or losing weight is unmasked by throwing them into the dynamic phase.

This, of course, explains the rapidity with which people regain the weight lost on a low-calorie diet.

In the static phase of obesity, the fat man's lowered rate of fat mobilisation has been compensated for by an increase in his total fat mass. So he levels off at this excessive weight relying upon the increased mass of available fat in his body to compensate for his inability to get energy from carbohydrate.

This is supported by Rony's and Levy's finding, in 1929, that fatty acid blood levels in the obese are raised.

Thus obesity should be regarded as an overgrowth of the fatty tissues providing for an increased use of fat (for energy) by a body incapable of using carbohydrate properly.

Cut off the carbohydrate and immediately not only will the stimulus to Mr. Fatten-Easily's body to make fat be removed, but also the brake on the oxidation of fatty acids and the mobilisation of fat from the fat depots will be taken off.

Now if he starts eating fat and protein, in the absence of carbohydrate, he will step up his metabolism (stoke up his body fires) so that combustion of fat for energy increases and he loses weight.

On such a diet a high-calorie intake (2,000-3,000 a day) is compatible with a weight loss of 7-12 lb a month. No need to go hungry or count the calories ever again!

Before starting on the diet it is essential to understand clearly what you are trying to do.

As far as possible, you are going to avoid all foods containing starch and sugar (carbohydrate).

You are going to obtain your nourishment mainly from fat and protein foods, in the rough proportion of one part fat to three parts protein by weight. This is the proportion which gives the best weight loss and there is no advantage in further increasing your fat intake at the expense of protein. Both are essential to health.

You are going to let your appetite decide how much you should eat and you are going to drink as much water as you like.

You are not going to take much added salt.

If you have got a fair amount of money to spend on food this diet is simple. All you need to do is to eat practically an all-meat diet with the fat left on, with salads, cheeses and fruits as second courses or side dishes.

Although extra salt is discouraged, many other things may be used for seasoning: black pepper, cayenne, horseradish, paprika, celery seed, lemon, mint, chives, chopped parsley, mixed herbs.

Coffee without sugar, black or with cream or a little milk, tea with lemon or a dash of milk, or water, with or without unsweetened lemon juice, may be drunk in any quantity at every meal. Alcohol, if desired, should be taken only in "dry" sugar-free drinks.

It is when you try to make the diet cost less that it becomes more difficult. Nevertheless, with the help of the food composition tables in Appendix B, and the menus in Appendix C, it is quite possible to obtain an Eat-Fat-Grow-Slim diet at a cost not far above your present expenditure on food.

The tables are of two kinds.

Non-carbohydrate foods (meats, fish and certain dairy products) which may be taken freely, but in which you should watch the proportion of protein to fat so as not to depart too much from the ideal, three of protein to one of fat, which gets weight off best.

Low-carbohydrate foods (vegetables and fruit) which contain protein but no fat. An exception in this table are the nuts which contain a lot of fat as well as a fair amount of protein and a little carbohydrate.

This is how to use the tables. The meats and fish are marked to show the protein to fat ratio at a glance:

very high fat, about ten times as much fat as protein;

more fat than protein;

about equal proportions with protein sometimes higher;

(unmarked) substantially more protein than fat

The vegetables and fruits are marked to show the protein to carbohydrate ratio (they do not contain fat, except the nuts which may be eaten in moderation, apart from chest-nuts which contain a lot of carbohydrate).

The "daggered" items in this table have the least carbohydrates and may therefore be taken most often; three times a day if you wish.

The items with **crosses** contain quite a lot of carbohydrate and should be restricted to one small serving a day.

The items marked with **circles** are in between and should be eaten only in moderation not more than twice a day.

Now supposing you find you have taken a crossed (high) carbohydrate item and a meat dish with a low proportion of fat, at one meal. At the next meal you should choose a three- or two-star item from the meat and dairy list and a "daggered" item from the fruit and vegetables, i.e. one low in carbohydrate.

In this way, you will be keeping up the proportion of fat in your diet which should not be allowed to fall below the ideal one of fat to three of protein by weight. And you will be helping to keep your carbohydrate below 2 oz a day.

A little practice with the tables will soon give you the idea. Eventually, you will know them by heart and will be able to leave the book at home. To help you remember, a short list of Stop, Caution, Go foods is printed at the end of the book for tearing out.

DETAILS OF THE DIET

Eggs, fish, meat are the stand-bys. You can eat as much as you like of these, preferable fried in plenty of fat, BUT WITH NO FLOUR, BATTER OR BREADCRUMBS.

Cheese comes next. You can have all you want, especially the high-fat kinds like Brie, Gruyere and Camembert. Ordinary English or New Zealand Cheddar is excellent, cheap and contains no carbohydrate at all.

Your drinks must be sugar-free. Beer, which contains a lot of carbohydrate, is strictly forbidden. You can drink unlimited coffee or tea with restriction of milk as mentioned above, or water. Wine may be taken but it must be dry, i.e. without much sugar. This means claret, Chablis, or a dry white Bordeaux. The question of alcohol is still under investigation and will be discussed in the next chapter, but as Banting managed to lose weight on a quite considerable consumption of alcohol, it seems probable that sugar-free alcoholic drinks like gin are not fattening when taken with a high-fat diet.

"Diabetic" preparations will help you when you are entertaining people who normally eat sweet things. They will also help you to taper off your desire for sugar. But please do not imagine that you can gorge these things. They do contain a certain amount of carbohydrate, and should be taken in the greatest moderation. The packet, can or bottle usually states the carbohydrate equivalent. So you can allow yourself a little relaxation from time to time, and know where you are, from a carbohydrate point of view.

Less Expensive Diet For Eating At Home

Breakfast: kippers, bloaters, fried eggs, bacon (cheaper streaky cuts), haddock stewed in milk, tea with top of the milk, starch-reduced rolls (not more than two), e.g. Energen, butter or margarine in plenty

Midday meal: Corned beef, braised beef stew and vegetable (no thickening), mince made into hamburgers, ham (tinned, sold by weight, sliced), pig's head brawn, home-made or bought, salted pig's head, fried sprats, boiled skate, sardines or pilchards in oil, salad or green vegetable, cheese, tea with top milk.

High tea: "Flank", " Breast of mutton", omelette or fried eggs and bacon, fried liver, vegetable, salad, potato crisps, one packet, cheese, starch-reduced rolls (not more than two) with butter or margarine and Bovril or Marmite, fruit -apples, oranges, nuts. no bananas, tea with top milk

Nightcap: Cup of hot milk, Cheese, Hard-boiled eggs, Starch-reduced rolls (not more than two) with plenty of butter or margarine

Be very careful to avoid bread and crispbreads, which are only breads with the water dried out of them and just as fattening as ordinary bread.

Only genuine starch-reduced rolls (as made by Energen) should be taken and not more than eight a day of these.

Eating Away From Home

Before you start queuing up, read the dishes listed on the big menus displayed round the walls and hung above the self-service counters.

You will be able to pick out the high-fat, high-protein, low-carbohydrate dishes quite easily.

Here is a selection of permissible dishes, made at a cafeteria in the suburbs of London in March, 1957:

Egg Salad; Ham and Salad; Hard-boiled egg; Margarine; Butter; Liver and Bacon, Cheese, Tea, Coffee, Coffee (large)

For about 3/6 at such a place, it is possible to have a satisfying Eat-Fat-Grow-Slim meal:

Ham and Salad; Hard-boiled egg; Cheese; 2 pats margarine (to spread on the cheese); Tea; Total

While eggs are cheap, 6d could be saved by hard-boiling an egg at home and taking it along.

Most people are prepared to spend 2/- on a midday meal away from home, and for 1/- more it is possible to eat such a meal and not break the rules of the diet.

For those who prefer to take a packed midday meal, here are some suggestions:

Cold meat (if there is some going at home) and salad

Sandwiches made of a slice of ham or bacon or fresh apple rings between cheese slices

Large wedge of Cheddar cheese and two apples or oranges

Hard-boiled eggs and tomatoes

Corned beef slices between lettuce leaves

Thermos of tea with a little top milk. No sugar.

Suit the amount you eat to your appetite which in turn will be dictated partly by habit, partly by the amount of work you do. Remember you can eat as much as you like of the foods allowed, but if you take starch or sugar, you will stop the diet from helping you to burn up your excessive fat stores.

Middle-Income Group Eating At Home

Breakfast: Fresh orange juice, or half grapefruit, Fried eggs and bacon, Omelette. Ham. Kidneys. Liver, Scrambled eggs made with plenty of butter, Two starch-reduced rolls with butter or margarine, Coffee and cream. No sugar, Tea and a little top milk, Saccharine to taste

Midday meal: Vegetable broth made with meat stock (unthickened), Beef stew with vegetables in it. (No flour), 4 to 6 oz. any meat with fat. Mince, Corned beef. Tongue, Tuna fish. Sardines in oil. Tinned salmon, Whelks or winkles, Jellied eels. Any fish (fried without batter), Head of lettuce with tomatoes, Vinegar/olive oil dressing. Black pepper for seasoning, Serving of peas or French beans with butter, Fresh fruit, e.g. raspberries or blackberries in season, with cream

Tea: Cheese. Peanut butter. Nuts. Apple. Yoghurt, Tea with top milk,

Evening meal: Plate of clear soup, 1/2 lb. meat plus fat: mutton, beef, bacon, ham, pork, veal, Tomatoes, lettuce, cauliflower, cabbage, carrots, peas, head of braised celery. One packet potato crisps, Grated cheese and salad, Tea or coffee with top milk or cream Cheeses and apple

Nightcap: Cup of hot milk

Middle-Income Group Eating Out

Here is a typical menu from a cafe which caters for business people. The low-carbohydrate dishes allowed are marked with an asterisk and the forbidden parts of them, and other forbidden dishes, are printed in italics.

A LA CARTE MENU

High Teas: Fried Fillet Plaice and Chips; Fried Haddock and Chips; Fish Cakes (1) and Chips; Fish Cakes (2) and Chips.

Omelettes: *Cheese or Tomato; *Ham or Mushroom

Egg Dishes: *Fried Egg and Bacon and Chips; Grilled Pork Sausage and Chips; *Fried Egg and Chips; Poached Egg on Toast; *Scrambled Egg on Toast; *Boiled Egg and Bread and Butter.

Savouries: Spaghetti on Toast; Buck Rarebit; Welsh Rarebit; *Herring Roes on Toast; Baked Beans on Toast; *Sardines on Toast.

Special: *Mixed Grill and Chips; *Lamb Chop and Chips; *Ham, Egg and Chips; *Rump Steak and Chips;

Cold Table: *Chicken and Salad; *Ham and Salad; *Tongue and Salad; *Corned Beef and Salad; Egg Mayonnaise; *Green Salad.

Ice-Cream and Sundries: Strawberry Ice; Vanilla Ice; Fruit Sundae; Peach Melba; Ice-Cream Soda; Minerals Various; Tinned Fruit as available; Lucozade; Sunfresh; *Coffee; *Pot of Tea.

A small portion of chipped potatoes may he taken once in the day or a packet of potato crisps without much salt, provided no other carbohydrate is eaten.

Eating At The Pub

Many people do business in pubs and as they are still among the most congenial eating-houses in Britain, it would be a pity not to mention how the diet may be followed in these places.

You can eat in a pub in two ways - at the snack bar or sitting at a table where a set meal is served.

At the snack bar, Easting-Fat-and-Growing-Slim is easy. There are always hard-boiled eggs, salad and cheeses, and in the bigger places huge joints of beef and hams, not to mention fish dishes: smoked mackerel, salmon, mussels and so on.

At the tables it is not quite so easy. The set lunch nearly always includes boiled potatoes and a pudding. But usually it is possible to get a steak or a ham salad and cheese.

Beer should be rigorously avoided, and all sweetened drinks, alcoholic or not, should be avoided too.

Settle for a tomato juice, a glass of dry wine or a pink gin, if you wish to be sociable and yet not spoil the effect of your diet.

More Expensive Eating

I do not propose to go into details of the diet for people with money. Anyone who has seen executives tucking into an "expense account" lunch knows that there is no difficulty at all about getting the right foods in the type of restaurant that has a head waiter or in the type of home from which the patrons of such eating-places mainly come.

Instead I would like to quote Elizabeth Woody, who described a high-fat, high-protein diet for slimming in 1950 in the American publication, Holiday Magazine:

"A problem nobody had was learning to like meat! That's the one thing we have to thank, more than any other, for the fact that people stayed on the diet and liked it. Or maybe I'd do better to put that the other way round. Our dieters liked this all-the-meat-you-want pattern for losing weight so much that they stuck to the program in spite of the few other things about it they didn't like quite so well.

High-protein (and high-fat), then, was not the whole secret of the diet's success. High pleasure in the eating was, apparently, the top trump. People welcomed a reducing diet that allowed them all they wanted of the food they liked so well, meat."

For those who can afford it, eating fat and growing slim boils down to taking a diet which is the essence of good eating. Sizzling lamb chops with cool fresh fruit to follow; steaks fried or grilled with onions; roast pork and apple sauce (made without sugar); mixed grills of steak, kidneys, liver, bacon, eggs and tomatoes; green salads and all the cheeses you want from the enormous variety now available: Camembert, double Gloucester, Port Salut, Gorgonzola, Wensleydale and so on.

Perhaps if we could sort out our international differences and stop spending so much money on the means of destruction, we could solve the problem of how to provide enough of these wonderful foods for everyone at a reasonable price. Obesity would then melt away and the world might return to the Garden of Eden before the serpent tempted Eve to eat carbohydrate-even the small amount in an apple.

5. Facts And Fancies About Obesity

THERE IS no subject, with the exception perhaps of psychiatry, on which the ignorant are more ready to expound than obesity.

Anyone who likes to keep his ears open in a pub or a restaurant can be sure of picking up some gem of misinformation on the subject.

This great tangle of modern folklore about food and its effects has grown up because food is really one of our main concerns from the cradle to the grave and has become very closely connected with another of our big concerns-love.

My grandmother, who was as worthy a Victorian as any of her generation, used to put the matter in its place very nicely with the slightly disapproving phrase, "Like food, love people," when we children used to goggle at the chocolate fool and say we loved it.

The food symbols of ordinary speech are clear evidence of the strong associations between food and the emotions which exist for all of us.

When we say that someone makes us sick, no further explanation is required and many common endearments make use of food symbols: honey, sweetheart, sugar.

Shakespeare, whose plays are rooted in the hidden springs of human feeling, makes Court Orsino say,

"If music be the food of love, play on."

Love and food cannot help being bound up together because, from the moment of birth, and through infancy we rely upon the one we love best for the food on which our lives depend.

Therefore, the biggest single reason for overeating the ever-ready starchy and sugary foods and so getting fat, is a feeling of love deprivation or insecurity.

Everyone has seen or heard of cases of girls disappointed in love who either stop eating and get very thin ("I can't have love so I won't have food either") or who start to eat to excess and get very fat ("I can't have love so I'll make up on sweets instead").

Misery is the commonest cause of substantial weight loss or gain in young women. Love cures both.

This close relationship between obesity and the emotions can be seen on all sides: the mother who has no real love for her child and resents the way it curtails her freedom, who stuffs it with puddings in an unconscious attempt to make up for the love she cannot give; or the young man jilted by his girl who goes off and swills mild and bitter to drown his emotional disappointment.

Fear is also a potent cause of obesity.

Fear of illness makes a mother urge her child to eat more and more and to regard any falling off of his appetite with horror.

Fear of not getting enough leads some people who have once been hungry, to over-eat whenever there is a chance. I remember during the war when I was medical officer to a camp of Russian prisoners near Grimsby, being struck by their well-nourished appearance.

These men, mostly of Mongolian stock, had been captured working for the Todt organisation, building the "western wall" against our invasion of Europe. The Germans had kept them very short of food.

When they came to England their rations were comparatively liberal, though mainly carbohydrate, and they became quite plump through eating everything they could lay their hands on. The camp kitchen swill-buckets were always empty. They even ate the potato peelings.

People who have gone hungry in childhood never quite lose the fear of hunger and may tend to overeat even when they have become rich. This may account for the traditional, portly figure of the self-made man.

Fear of social failure - much commoner than is generally admitted - may result in avoidance of any situation where shyness may be exposed and humiliation result. Instead of joining in the conversation at a communal meal, the bashful person over-eats silently, relying on the excuse of a full mouth for not speaking.

Gradually the overeating which is used to compensate for the missed pleasures of social intercourse may cause obesity and then the obesity itself is used as an excuse for not competing.

Fear of failure can fatten the shy person out of the game of life.

Because obesity is so often precipitated by overeating for emotional reasons, hypnosis has been tried in treatment, with some success.

In good subjects it has been made to work remarkably well but it is not a method to be recommended. By substituting the will of the hypnotist for the will of the patient, hypnosis has been used to ensure that a low-calorie diet shall be followed in spite of a tendency to self-indulgence.

The hypnotist works first by obtaining relaxation in his patient. He then ensures by some device-a light above eye level, for example-that he has the subject's undivided attention. Next he suggests that sleep is coming and as the patient's conscious mind dozes off, he suggests firmly to the impressionable unconscious or dreaming mind that on waking, sugar, cakes, biscuits, pastry or whatever foods the hypnotist thinks are fattening, will no longer be of interest.

Sure enough, when the patient goes home he no longer wishes to eat any of the foods on which the hypnotist has placed a taboo. The suggestions may have to be reinforced at intervals, but while they last there will be no difficulty in sticking to a diet. On the other hand, they may work too well and the patient may end up under-nourished.

Most people would agree that it is better for people to face their own problems and overcome them by their own will power than that they should rely on the artificial support of the hypnotist, and with all hypnosis there is a danger that there may be unexpected and undesirable psychological effects.

So far, then, two big factors in the production of obesity have emerged:

A defect in dealing with carbohydrates which makes a person fatten easily on an ordinary mixed diet;

Overeating especially of sugars and starches as a result of loneliness, fear or emotional dissatisfaction.

When the two factors are present, weight is gained very rapidly.

So anyone who finds himself tempted to overeat for emotional reasons and who shows a tendency to get fat, should be careful to choose low-carbohydrate foods.

The metabolic defect in the Fatten-Easilies (their tendency to store carbohydrate as fat instead of promptly turning it into energy) is probably hereditary and may be regarded as a failure to make the adaptation to a diet based on agriculture which the Constant-Weights have achieved.

Before the cultivation of cereal crops, our ancestors, as has been said before, lived by hunting animals and subsisted on an all-meat diet of fat and protein. If they lived near woods or in forests, they may have taken a few berries, fruits and roots as well, but on the open plains they lived on meat alone and there is evidence that on this diet they were never corpulent.

With the gradual introduction of starch and sugar which followed the cultivation of the land, some people found that they could adapt themselves to the new foods and stay slim, while others must have failed to develop the biochemical mechanism for getting energy from carbohydrate and became fat instead.

These were the Fatten-Easilies.

Dr. Leonard Williams, a Harley Street physician in the 1920s, says the same thing in a more fanciful way in his book Obesity published by the Oxford University Press:

"There are a certain number of people, and they are not a few, who, in spite of the fact that they eat enormously, never grow fat. The case of such people will repay a moment's consideration. The explanation of their case is, briefly, that they are constitutionally devoid of a 'sausage machine.' They are unable so to deal with superfluous food as to render it fit for absorption and storage. A possible explanation of this is that in comparison with the fat man they represent a higher stage of evolution….The reason why such people represent a higher stage in evolution is this: the deposition of fat is a provident measure taken against a lean period. In these people whose tissues have hereditarily no longer any reason for anticipating a lean period, this particular mechanism for self-preservation atrophies from disuse, and the storage of fat becomes impossible to them. Certain it is that the typical aristocrat, whose ancestors through the ages have had no necessity for hoarding fat, is always depicted as lean."

We all know that obesity runs in families and so does the power to maintain a constant weight on a large food intake.

So here is a third important factor in obesity - heredity.

So far, very little has been said about protein apart from the fact that, like fat, it gets weight off by speeding up metabolism. This class of food will be discussed next. There is much muddled thinking about protein and the role it plays in obesity. It is commonly supposed that lean meat is slimming while fat meat is not. In fact, as has been shown, fat meat gets weight off better than lean and is more palatable.

Most people now know that proteins are essential to health because they are the materials of which the body is built.

We are, each one of us, made largely of meat like other animals and it is reasonable that to keep ourselves in good repair, we should eat animal protein. In this sense, cannibals take the most logical diet of all.

Lack of protein in the diet leads to very severe disease and this has only been fully appreciated in the last twenty years or so.

In 1933, Dr. Cecily Williams first described for western medicine a condition due to protein malnutrition which is now known as kwashiorkor (from two African Gold Coast dialect words meaning a red boy). This disease is seen mainly in children, and is characterised by extreme weakness, oedema (swelling), skin eruptions and a curious reddish tinge in the hair when the sufferer is black-skinned. It has been known for years (under different names) all over Africa and Asia.

Dr. Williams showed that kwashiorkor was a deficiency disease due to a diet low in protein and high in vegetable starch. She cured the sick children by feeding them protein, in whatever form she could - milk, fish, meat, peanuts, et c.

In 1951, she and a medical team under the British Committee of the Food and Agricultural Organisation (F.A.O.) travelled across Central Africa from east to west, making a film about kwashiorkor as they went. This film was shown at the meeting held in London on 6th April, 1957, to celebrate the ninth anniversary of the founding of the World Health Organisation.

The most striking thing about the film, apart from the clinical details of kwashiorkor which are well demonstrated, is the contrast between the meat-eating and carbohydrate-eating tribes encountered: the hunting and pastoral Masai with their herds of animals, tall, well-built, slim and healthy; the agricultural Kikuyu, grinding a wretched subsistence from the soil, puny but often corpulent, disease-ridden, their children bloated with kwashiorkor, flies swarming round the sores on their faces. Fed solely on a sort of cornstarch porridge, these Kikuyu children were showing the full effects of protein deficiency at an early age.

The purpose of the film was to emphasise the wide distribution of kwashiorkor and to suggest measures for its relief: education of primitive agricultural people in the production of protein foods; ground nuts cultivation, fishing, animal husbandry and dairy farming.

But behind this obvious lesson, the film leaves the impression of a relationship between food and character: the meat-eaters, calm, friendly and self-reliant, the starch-eaters, irritable and afraid.

Political and economic considerations apart, it is impossible not to draw an unfavourable comparison between the starch-eating Kikuyu with their murderous cult of Mau-Mau, and the aloof but good-tempered, meat-eating Masai with their obvious self-respect and dignity.

Ever since Cain, the agriculturalist, killed Abel, the hunter, it has seemed that a diet of fat and protein makes for mental and physical stability while vegetarianism, with its high-carbohydrate intake, encourages the opposite.

Hitler was a vegetarian and Davy Crockett was a meat eater.

Vance Thompson has pointed out the connection between corpulence and dishonesty:

"There is a strange kinship between obesity and financial crime - almost all embezzlers are fat."

Horatio Bottomley seemed to bear this out.

Further evidence suggesting a relationship between low-protein diets and bad character comes from a study of scurvy, the disease which was the bane of mariners before its prevention by foods containing Vitamin C was established.

The early symptoms of scurvy are emotional rather than physical. They make their appearance long before the weakness, bleeding from the gums and joint pains which are so characteristic of the fully developed disease.

The victim becomes irritable, argumentative, truculent and quick to take offence. And of course it is this aspect of the disease which has come down to us in the epithet "a scurvy fellow," meaning a churlish man.

"Blackleg", the sailor's other name for scurvy, which derives from the dark haemorrhages under the skin of the legs in more advanced cases, has also come to be used as a term of abuse, particularly during industrial disputes.

What has all this to do with a low-protein diet? Just that one of the essential functions of proteins in the body is now known to be similar to that of vitamins: the supply of substances essential for the manufacture of enzymes which enter into the catalytic processes from which the body derives its energy and its life.

One authority has said that today, nutritionally speaking, we are emerging from the vitamin era into the age of protein.

The body cannot make certain proteins. They have to be supplied in the food. Neither can it make Vitamin C.

It is reasonable to suppose, therefore, that just as the "scurvy fellow's" churlishness is due to the withholding of a substance essential to his metabolism, so the unreliability of the high-carbohydrate, low-protein eater is similarly caused.

This might make embezzlement by a fat person a symptom of protein deficiency!

It may be his diet that makes the cowboy a better bet from the health standpoint, than the starch-eating city dweller.

The most extreme cases of obesity are seen, as you would expect, where a carbohydrate diet has been taken in its purest, most concentrated form - sugar.

In India many of the women, particularly in the towns, are exceedingly fat. They eat enormous quantities of sweets, like haiwa which they make themselves or buy from the mithai-wallah. Travel across India to the Burmese border and you find the Nagas, wiry, energetic, resourceful, living by hunting and on the meat of pigs and jungle bison, mithun, which they have domesticated. It is very rare to see a corpulent Naga.

Apart from the long-term effects of protein in the diet, certain biochemical aspects of protein are important for the obese. These may be summarised as follows.

Biochemical Aspects Of Protein

Fat cannot be made up from protein in the body to any appreciable extent.

Protein draws up the body fires (increases metabolism) and helps to burn up fat stores. This is called the specific dynamic actions (S.D.A.) of protein.

Proteins are essential for health because without them the body cannot make certain hormones and enzymes (chemical regulators) concerned in energy exchange reactions, growth and repair.

These three points naturally prompt the question: why not an exclusively lean-meat diet, with no fat, for obesity?

Wouldn't that get weight off well?

The answer is that protein alone, without fat, makes a person ill, although it gets weight off quickly.

Stefansson confirmed this at the beginning of his year on an all-meat diet under medical supervision at the Bellevue Hospital. Here is his own description of what happened, from page 69 of The Fat of the Land:

"The chief purpose of placing me abruptly on exclusively lean was that there would be a sharp contrast with Anderson, who was going to be on a normal meat diet, consisting of such proportions of lean and fat as his own taste determined.

In the Arctic we had become ill during the second or third fatless week. I now became ill on the second day. The time difference between Bellevue and the Arctic was due no doubt mainly to the existence of a little fat, here and there, in our northern caribou - we had eaten the tissue from behind the eyes, we had broken the bones for marrow, and in doing everything we could to get fat we had evidently secured more than we realised. At Bellevue the meat, carefully scrutinised, was as lean as such muscle tissue well can be. Then, in the Arctic we had eaten tendons and other indigestible matter, we had chewed the soft ends of bones, getting a deal of bulk that way when we were trying to secure fat. What we ate at Bellevue contained no bulk material of this kind, so that my stomach could be compelled to hold a much larger amount of lean. Moreover, I had in New York a much larger stomach than in the Arctic: there it had been constricted in accord with the small bulk of a lean-fat diet; here in 'civilisation ' it had been expanded through the needs of a bulky mixed diet.

The symptoms brought on at Bellevue by an incomplete meat diet (this ration of lean without fat) were exactly the same as in the Arctic, except that they came on faster, diarrhoea and a feeling of general baffling discomfort.

Up North, the Eskimos and I had been cured immediately when we got some fat. Dr. DuBois now cured me the same way, by giving me fat sirloin steaks, brains fried in bacon fat, and things of that sort. In two or three days I was all right, but I had lost considerable weight."

Primitive people who are forced by adverse circumstances to live on lean meat, e.g., rabbit meat - with no fat from other sources, develop diarrhoea within a week with headache, lassitude and vague discomfort. If they continue for long on lean meat they become incapable of working. They can eat until their stomaches are distended but still feel unsatisfied - they suffer from fat-hunger. Introduction of fat into their diet rapidly relieves all the unpleasant symptoms.

Fat-hunger, which is almost unknown among northern hunting people like the Eskimos, where the animals are rich in fat, becomes increasingly common towards the Equator, and it is from hot countries that most of the stories of fat-hunger come.

Sir Herbert Wilkins in his book, Undiscovered Australia, published in 1928, which describes the two year expedition he conducted for the British Museum in tropical northern Australia, gives a macabre account of fat-hunger among the aborigines.

The missionaries were having trouble in breaking the natives of cannibalism and their difficulties increased in proportion to the corpulence of the deceased.

Apparently the Australian cannibals did not mind their cadavers high so long as they were fat.

In Liberia where most of the wild meat is excessively lean and even domestic cattle are skinny, those animals which store fat are preserved by the natives for eating. Snakefish, the giant rat (Cricetomys Gambianos Liberiae), porcupines and warthogs are all highly prized foods because they are rich in fat.

Significantly, the literature and folk tales of tropical people are full of the praise of fat while northern people whose meat is always fat have little to say about it. Necessities do not call for comment until they become scarce.

What is the lesson to be drawn from all this for those who wish to lose weight on a high-fat, high-protein diet?

Simply that it is essential to keep the proportion of fat to protein at about that preferred by people on an all-meat diet: one part of fat to three of lean by weight. How to do this was explained at the end of Chapter Four.

Too much protein will not do. On a low-carbohydrate intake fat is needed to supply energy as well as to furnish essential compounds for the biochemical reactions on which the proper functioning of specialised cells and tissues depend.

So much for protein in the Eat-Fat-Grow-Slim diet. It is essential and it helps to get weight off, but without fat it leaves you hungry and will soon make you feel ill.

Now to consider some other factors in obesity about which people express conflicting opinions.

Water

Although we now live on dry land, there was a time millions of years ago when our ancestors came out of the sea in which they had evolved as very simple animals. To survive on land they had still to carry the sea within them and this we do to this day.

Apart from the skeleton, the tissues of the body contain from 70% to 90% water. Everything that we eat has to be dissolved in water before it can be absorbed and once absorbed it is carried in the blood-another watery solution - until it is used for energy or growth or repair by the cells of the body. These cells contain protoplasm, a semi-fluid substance, the basis of which is water.

Lack of water is much more quickly fatal to human life than lack of food and it is therefore unwise to attempt to lose weight by drastic restriction of fluid intake.

Some obese people do retain more water than they need and a reducing diet may not remove this extra water straight away. Water retention by fat people has been demonstrated experimentally by

cutting cylinders of fatty tissue from obese and thin subjects and comparing the proportion of fat to water in them.

Sir Adolphe Abrahams, for many years honorary medical officer to the British Olympic athletic team, discussed this point in one of his answers to a questionnaire on slimming published in the News Chronicle on 18th March, 1956: "One must differentiate between loss of weight and loss of fat. I have seen a man lose 9 lb weight in running a marathon race. Of this, probably 3/4 lb was fat, the rest was water which was recovered in the ensuing forty-eight hours.

Similarly it sometimes happens that, on account of the dietary alteration, the onset of slimming therapy leads to retention of water, so that no loss of weight occurs. After a certain time lag there is then a rapid fall.

It may well happen that, disheartened by the experience in this early stage, the treatment is abandoned before the loss begins."

Sir Adolphe was here referring to orthodox, low-calorie diets.

Professor Kekwick and Dr. Pawan found that loss of water increased fairly rapidly on high-fat, high-protein diets and accounted for from 30% to 50% of the weight lost by the subjects under observation.

Finally, it is worth noting that some women retain water before their monthly period and become heavier at this time. This extra water is lost when the period starts and is of no significance except that if such a woman wants to slim she would find it better to weigh herself just after a period than just before.

Alcohol

Dr. Pennington, who has probably had more experience of high-fat, high-protein diets in the treatment of obesity than anyone else, says that alcohol checks the combustion of fat in the body.

On the other hand, there is Banting's evidence. He took six glasses of claret a day and a glass of rum or something like that most nights when he went to bed, and still he lost weight. And Dr. Pawan has mentioned to me the intriguing possibility that alcoholic drinks, by dilating the blood vessels in the skin and making it work harder, may step up metabolism to an extent which more than compensates for the calories taken in as alcohol.

This increased metabolism, coupled with increased loss of water from the skin and in the urine, could then result in weight loss. There is experimental evidence for this.

Professor Kekwick found that obese patients who were losing weight satisfactorily on a high-fat, low-calorie diet, continued to lose if alcohol was added in amounts up to 500 calories a day (equivalent to about a third of a pint of gin). But if the extra 500 calories were given as chocolate or other carbohydrate food, they stopped losing weight and started to gain.

This confirms the belief - quite widely held - that pink gins are slimming. Probably all alcoholic drinks except those like beer which contain large amounts of carbohydrate, are slimming too.

But it must be remembered that the stimulation of appetite and the removal of inhibitions by alcohol may mask the slimming effect by tempting you to overeat the fattening, carbohydrate foods which are so often provided with drinks.

Exercise

Any attempt to lose weight through exercise without modifying the diet is doomed to failure. Banting put the matter in a nutshell:

"From my earliest years I had an inexpressible dread of corpulence, so, when I was between thirty and forty years of age, finding a tendency to it creeping upon me, I consulted an eminent surgeon, now long deceased - a kind personal friend - who recommended increased bodily exertion before

my ordinary daily labours began, and thought rowing an excellent plan. I had the command of a good, heavy, safe boat, lived near the river, and adopted it for a couple of hours in the early morning. It is true I gained muscular vigour, but with it a prodigious appetite, which I was compelled to indulge, and consequently increased in weight, until my kind old friend advised me to forsake the exercise."

This does not mean that all exercise is bad for the corpulent, only that suddenly plunging into unaccustomed and strenuous exertion in an effort to "sweat weight off" is valueless as a treatment for obesity.

Exercise has a definite place in the Eat-Fat-Grow-Slim regime.

It is used in two ways to help increase the metabolism and to step up the mobilisation and combustion of stored fat.

1. By increasing calorie expenditure.

If you restrict your hours in bed to eight out of the twenty four and do not lie about in a chair during the day, you will ensure that your muscles are active all day and using fuel. This is exercise through the maintenance of posture - much more effective in getting weight off than a game of squash or a quarter-mile sprint, either of which will throw a serious strain on your locomotor system while you are overweight and may leave you with backache or a strained foot.

2. By helping to throw the body over to using fat.

A sharp half-hour walk on an empty stomach before breakfast, by inducing a mild ketosis, will make stored fat supply the energy for the exercise.

If you have a dog and can bend and pick up a ball or a stick repeatedly on the walk, this will start your bile flowing in readiness for the digestion of the good breakfast you will eat when you get home.

Another reason for restricting the number of hours in bed is that some very recent research suggests that fat people reduce their metabolism almost to zero while they sleep. Like hibernating animals they use very little oxygen and thus conserve their calories and their weight.

With exercise, it is convenient to take the question of massage and Turkish baths.

Massage is useless when performed by somebody else. It will increase the expenditure of energy by the masseur but it will not do so for the subject lying on the couch.

Self-massage with patent rollers and gloves is good exercise and as such to be recommended, but it cannot be relied upon to perform the spot reducing claimed for it by some people.

Turkish baths are also useless as a treatment for obesity.

They clean the skin and may remove a pound or two of water as sweat, but this is soon put back again by the long cool drinks in the rest-cubicle afterwards.

Banting's experience of Turkish baths accords closely with modern medical opinion:

"At this juncture Turkish baths became the fashion, and I was advised to adopt them as a remedy. With the first few I found immense benefit in power and elasticity for walking exercise; so, believing I had found the 'philosopher's stone,' pursued them three times a week till I had taken fifty, then less frequently (as I began to fancy, with some reason, that so many weakened my constitution) till I had taken ninety, but never succeeded in losing more than 6 lb weight during the whole course, and I gave up the plan as worthless; though I have full belief in their cleansing properties, and their value in colds, rheumatism and many other ailments."

Drugs

Every general practitioner is familiar with the obese patient who comes into the surgery with a request for "Something to get my weight down, doctor."

Drugs for the treatment of obesity fall into three classes:

Aperients and purgatives or laxatives;

Appetite-depressants like amphetamine; and

Hormones.

First, the laxatives. Saline aperients are the oldest drugs used for slimming, and will get weight off temporarily if they cause diarrhoea and loss of water, but the resulting thirst soon leads to drinking more.

Continual abuse of purgatives for slimming can seriously interfere with the digestion and absorption of food and will eventually cause loss of weight through malnutrition.

The advertising of such remedies as cures for obesity is unscrupulous and misleading.

Second, the amphetamine group of drugs. These are now obtainable only on a doctor's prescription but even so, enormous quantities are consumed daily. They should be used with the greatest caution.

They are supposed to destroy appetite and while doing so to increase energy and well being.

There is no doubt that they will do this, for a time, in many cases. But they can do it only by using the whip of a stimulant on the back of a person drugged into partial starvation. Extreme irritability and sleeplessness often result and the patient becomes tired and ill looking.

Dr. Bicknell, in his paper, "The Dietetic Treatment of Obesity," published in The Medical Press of 19th November, 1952, had this to say about the amphetamines:

"In many cases they do not reduce the appetite while they may cause a restless excitement which is most unpleasant. In other patients they do reduce the appetite though this effect often wanes in a few months. Whether any drug should be used for months to prevent such a fundamental feeling as hunger is a debatable point. But there are other clear reasons against these drugs.

With myocardial degeneration, which is a common accompaniment of obesity and a common reason for the necessity to lose weight, amphetamine is said to be a cause of tachycardia or heart block and of a raised and persistent blood pressure. The present writer in one week saw three cases of heart block in elderly men all of whom had been taking small doses of amphetamine.

Addiction, which is said to be easily cured, may cause chronic restlessness and hyperexcitability alternating with melancholia. Since it is often the menopausal woman who needs to slim, it would seem at best unwise to expose her to a drug which by giving her spurts of artificial energy may initiate her into the delights of drugs or drink at the very period in her life when such temptations are most dangerous.

The danger of death from an overdose may be slight, but mere 'slimming pills' are unlikely to be zealously kept from children. Even with normal doses adults may suffer from abdominal pain and spasm of the sphincters of the bladder and rectum: conditions which, especially in the elderly, may cause unnecessary distress and investigation before being traced to their simple origin."

Though the amphetamines are potentially bad, other drugs like the polynitrophenols, which induce wasting of the body, are very much worse and should on no account be used for slimming.

Sir Adolphe Abrahams was reported in the *News Chronicle* slimming series already referred to, as follows:

"No words of condemnation can be too strong for the nefarious employment of drugs to produce wasting by their poisonous effect.

At the present day amphetamines are fairly extensively employed. By reducing the appetite they reduce food consumption.

Also, by palliating the empty feeling, they relieve some of the discomfort resulting from partial starvation. To this extent their employment can be condoned, but it is by no means without danger."

Before leaving the appetite-depressant drugs, mention should be made of a range of preparations which are used for the same purpose but act in a different way. These are the expanding stomach fillers made from cellulose or other non-food substances and taken before meals to dull the appetite. While these preparations have none of the serious medical dangers associated with the polynitrophenols and amphetamines mentioned above, they act in a way which may have the long-term effect of upsetting the normal responses to hunger and the regulation of appetite in relation to metabolic needs.

In any case such preparations are unnecessary in the eat-fat-grow-slim regime, in which obesity is tackled in a more fundamental way, and partial starvation is not a prerequisite of success.

Thirdly, hormones. Here we are on much safer ground and today the use of hormones opens up the most interesting possibilities in the treatment of obesity.

Hormones are complex chemical substances manufactured in the ductless glands and discharged into the blood stream to be carried round the body to act as chemical regulators of the various organs and processes. Among other things, they are intimately concerned with regulating metabolism.

Lack of the hormone thyroxine, from the thyroid gland in the neck, leads to a condition called cretinism in child-hood, or myxoedema in adult life, in which there is a general slowing down of all the processes of the body and mind and weight may be gained.

Over-production of thyroxine, on the other hand, has the opposite effect. In this condition (thyrotoxicosis or exophthalmic goitre), there is over-activity with mental and physical agitation and considerable weight loss.

Observation of these diseases has led to the employment of thyroid hormone for the treatment of simple obesity.

Medical opinion is still divided on the results. Some doctors seem to be against the use of thyroid tablets, holding that when you give them to a person with a normal thyroid, the thyroid gland just knocks off making that much hormone and you are back where you started.

Other doctors have found thyroid tablets valuable. Dr. Bicknell is one of these. Here is what he says:

"Thyroid preparations, on the other hand, have few of the drawbacks of amphetamine and are often extremely valuable even for patients who show no definite signs of myxoedema. This is especially so if after a couple of months of dieting the loss of weight is no longer satisfactory."

Sex hormones have also been employed in obesity with varying results. Certainly, where there is evidence of male hormone deficiency-eunuchoidism-treatment with male sex hormones can bring about a change towards a more masculine physique and fat is lost from the feminine subcutaneous depots, the hips and breasts.

But generally speaking, sex hormones are disappointing in the treatment of obesity.

Of all the ductless glands, the pituitary has the best possibilities.

The pituitary has been called the master gland or conductor of the hormone orchestra. It is situated below the brain, in a bony pocket at the base of the skull, roughly at the junction of a line drawn from the bridge of the nose to the back of the head with a line joining one ear to the other.

Nature has placed this vital gland in a well protected position and although it is only the size of a cobnut it turns out dozens of hormones which stimulate or inhibit all the other glands in the body, correlating their activities into a marvellously unified rhythm which in normal health keeps all the functions of the body running smoothly.

If a hormonal method of controlling obesity is possible, the most likely source of such a hormone would be the pituitary. This thought is not new and some fascinating work has already been done on the subject. In 1920, Dr. Leonard Williams, in the last chapter of his book already mentioned, discussed hormones which were then newly, discovered substances. On page 151 he wrote:

"Another fact which has tended to obscure the issue is the length of time which it often takes for pituitary extracts taken by mouth to produce their effects. Physicians who are accustomed to the prompt and decisive results to be expected from thyroid, seem to lack the patience which is necessary for a fair trial of pituitary. I have had to persevere for several weeks before being rewarded by any signs of the expected therapeutic action, which nevertheless eventually accomplished all that I had asked of it. One of the most annoying sides to the particular feature is the great expense of the extract; for unless people are warned at the outset that the remedy will take a long time to produce its effect, their inclination is to discontinue a costly remedy which seems to be producing no results."

In 1936, in the *Journal of Physiology*, C. H. Best and J. Campbell described a substance from the pituitary gland which had the specific capacity of accelerating the mobilisation of depot fat. They called it adipokinin. In 1948, two Americans, Rudolf Weil and deWitt Stetten, Jun., wrote in the December number of the *Journal of Biological Chemistry*:

"During fasting, under conditions in which an increase in the mobilisation of depot fat might be anticipated, there appears in the urine a material capable of provoking such an increase, which at least superficially resembles pituitary adipokinin."

In 1954, in the *Canadian Journal of Physiology and Biochemistry*, Collip described the isolation of a metabolism-increasing factor from the pituitary.

What all this amounts to, in untechnical language, is this: if you take a fat rabbit and inject it with a substance obtained from the urine of a fasting rabbit, the fat rabbit will get thinner. Research into the nature and effects of this fat-mobilising substance in fasting urine is going on at the present time. Work with human volunteers is giving encouraging results similar to those in rabbits.

The urine of fasting humans contains large quantities of a material which when administered to mice will increase their utilisation of stored fat.

Constant-Weights produce this fat-mobilising substance (F.M.S.) on all types of diet. Fatten-Easilies produce quite a lot on a high-fat diet, rather less on high-protein and none at all on high-carbohydrate.

The effect of carbohydrate eating in the obese must therefore be to inhibit, probably via insulin blockage, the production of F.M.S., which is necessary for the metabolism of fat and the production of energy.

F.M.S. has recently been isolated as a pure substance (Chalmers, Pawan and Kekwick, the *Lancet*, July 1960). It may turn out to be a pituitary hormone and it may be the final key to the riddle of obesity. Lack of it may prevent Mr. Fatten-Easily from mobilising his excessive fat stores. It is even possible that before long doctors will be able to use it to turn the Fatten-Easilies into the constant-weights. When that day comes, obesity as a medical problem will be a thing of the past.

6. Summing Up

SO FAR, very little has been said about the dangers and disadvantages of being overweight. This is because very little needs to be said that a fat person does not know only too well already.

Shakespeare in *Two Gentlemen of Verona* has written something which strikes to the heart of every sufferer from obesity:

"Not an eye that sees you but is a physician to comment on your malady."

Not a nice thought either, but uncomfortably true.

At the risk of depressing the overweight reader, a few figures on longevity and the incidence of disease in relation to obesity will now be given. With the means of slimming effectively and painlessly already in his hand, it is perhaps legitimate to present facts which may scare him into doing something about getting his weight down. Mr. McNeill Love, surgeon to the Royal Northern Hospital in London and co-author of that "Bible" of surgery known affectionately to generations of medical students as Bailey and Love, wrote in a recent paper on the surgical hazards of obesity:

"A well known insurance society states that a person fifty years of age who is 50 lb overweight, has reduced his expectation of life by 50%. Increased risks are also reflected in the mortality and morbidity of the obese when surgical procedures are required."

Fat people tend to forget that not only do they run an increased risk of dying early or developing diseases which interest the physician like hypertension, diabetes, arthritis and coronary thrombosis, but also that if they should ever have to have an operation they will make the surgeon swear as he struggles to distinguish the relevant anatomical landmarks in a sea of adipose tissue.

And even when the surgeon has managed to find the appendix or repair the hernia, the fat man's post-operative progress is bound to be poor compared with his lean brother's.

Next, a physician's view. Dr. John S. Richardson, consultant physician to St. Thomas's Hospital, writing in the *Post-graduate Medical Journal*, December, 1952:

"Insurance statistics show that between the ages of 45 and 50 for every 10 lb overweight there is roughly a 10% increase in the death-rate over the average for that age. This is largely a result of cardiovascular and renal disease. (Diseases of heart blood vessels and kidneys.)"

Lastly, life insurance examination, the most ruthless estimate of our chances. The late Dr. A. Hope Gosse, TD, MD, FRCP, consulting physician to St. Mary's and the Brompton Hospital, writing on obesity from the point of view of the insurance medical officer in the same number of the *Post-graduate Medical Journal*:

"Both for life assurance and sickness assurance the two commonest causes of 'loading' the premium are to be found in the figures for the weight or blood pressure of the proposer, when such figures are regarded as above the average for his height and age."

These are some of the dangers of obesity and it is clear that they increase as the weight goes up beyond what it should be for height and build.

Luckily the converse is also true. As a fat person's weight comes down so his chances of developing those diseases known to be associated with obesity become less and his expectation of life increases. This was strikingly demonstrated by Dr. Alfred Pennington when he slimmed the executives of E.I. du Pont de Nemours, the American chemical firm, on an unrestricted calorie, high-fat, high-protein diet similar to the one advocated in this book.

Shortly after the last war, the Medical Division of du Pont became concerned about the obesity of some of the staff and gave Dr. Pennington the job of finding out why orthodox low-calorie diets were so conspicuously unsuccessful in dealing with the problem. After an enormous amount of

sifting through the scientific literature on the subject, Pennington came to the conclusion that Banting was right and that obesity is caused not by over eating but by an inability to utilise carbohydrate for anything except making fat.

He decided to bypass this block in the pathway from starch and sugar to energy by withholding these foods, and gave fat and protein instead, in the proportion of one to three by weight (Stefansson's proportion on his year's all-meat diet).

The results amply justified all the groundwork he had put in.

Here is part of a report of an interview he gave to Elizabeth Woody, published in a supplement to *Holiday Magazine*:

"Of the twenty men and women taking part in the test, all lost weight on a dietary in which the total calorie intake was unrestricted. The basic diet totalled about 3,000 calories per day, but meat and fat in any desired amount were allowed those who wanted to eat still more. The dieters reported that they felt well, enjoyed their meals and were never hungry between meals. Many said they felt more energetic than usual; none complained of fatigue. Those who had high blood pressure to begin with were happy to be told by the doctors that a drop in blood pressure paralleled their drop in weight.

The twenty 'obese individuals,' as the paper unflatteringly terms them, lost an average of twenty-two pounds each, in an average time of three and a half months. The range of weight loss was from nine to FIFTY-FOUR POUNDS and the range of time was from about one and a half to six months.

Now let's take a look at the effects the regimen had on some of the people in this group who suffered from high blood pressure.

Dr. Pennington sorted out from the papers strewn over his desk half a dozen sheets of graph paper filled with lines and notations. A solid line stood for the patient's weight on a given date, while a dotted line recorded his blood pressure at that time. The two lines told a thrilling and unmistakable story. As they passed vertical divisions representing weeks and months, the dotted lines dipped almost precisely parallel to each dip in the solid lines. Certainly, as Dr. Gehrmann (Dr. George H. Gehrmann, Medical Director of du Pont's Medical Division) had suggested earlier, overweight and high blood pressure seemed to be Siamese twins. Most gratifyingly, on each sheet both lines progressed as a beautiful slant from the upper left quadrant of the sheet to a point near the lower right-hand corner."

With regard to the discomforts and disadvantages of obesity, it is appropriate to return to William Banting, whose work has had to wait a hundred years for proper recognition.

When his Letter on Corpulence was published, medical men called his system a humbug and held it up to ridicule. In those days of aggressive drugging and violent purgation this was to be expected.

On 28th December, 1956, the B.B.C. gave Banting the credit he and his medical adviser, William Harvey, have long deserved.

In a broadcast called "Beautifully Less" devised by Nesta Pain, about the best scientific scriptwriter working today, with advice from Professor Sir Charles Dodds and Dr. Alexander Kennedy, Banting's system of weight reduction was dealt with at length and described as "thoroughly sound."

Let him speak for himself in his delightful nineteenth-century English:

"Oh! that the faculty would look deeper into and make themselves better acquainted with the crying evil of obesity-that dreadful tormenting parasite on health and comfort. Their fellow-men might not descend into early premature graves, as I believe many do, from what is termed apoplexy, and certainly would not, during their sojourn on earth, endure so much bodily and consequently mental infirmity.

Corpulence, though giving no actual pain, as it appears to me, must naturally press with undue violence upon the bodily viscera, driving one part upon another, and stopping the free action of all. I am sure it did in my particular case, and the result of my experience is briefly as follows:

I have not felt so well as now for the last twenty years.

Have suffered no inconvenience whatever in the probational remedy.

Am reduced many inches in bulk, and 35 lb in weight in thirty-eight weeks.

Come down stairs forward naturally, with perfect ease.

Go up stairs and take ordinary exercise freely, without the slightest inconvenience.

Can perform every necessary office for myself.

The umbilical rupture is greatly ameliorated, and gives me no anxiety.

My sight is restored-my hearing improved.

My other bodily ailments are ameliorated; indeed, almost passed into matter of history."

No suggestion here that excessive fat storage might be independent either of the food intake or the energy expenditure or both. Nor any mention of the possibility that different kinds of food might be metabolised differently in fat and in thin people.

Yet as long ago as 1898, Zuntz in Berlin reported a case of a man who gained weight on a high-carbohydrate diet and lost weight on a high-fat diet of equal caloric value.

In 1907, Benedict and Milner in the United States confirmed this observation with a subject who did a uniform amount of work each day on a bicycle ergometer, and since then the lowered metabolism of the obese, particularly on calorie-restricted diets, has been confirmed again and again during energy balance studies.

It is well known that Donaldson and Pennington in America have been slimming people on high-fat "Eat-as-much-as-you-like" diets since 1944, and since 1950 such diets have been finding their way into women's magazines in the U.S.A.

But in this country, the writers of popular books on slimming still say this kind of thing:

"During an absolute fast, a person naturally lives on the deposits (that is fat and carbohydrate reserves) which we have within us - first and foremost in the liver. It has been found that we use up the carbohydrate reserves first. There are some 3/4 -1 lb of them. After that comes the turn of the fat, which we are so anxious to get rid of.

This fact has, indeed, given rise to an extraordinary slimming cure, which for a brief period had a certain success. The patient was given fat! Meanwhile the body used up its carbohydrate reserves. But over twice as much sugar is needed to give the same amount of calories as fat - so the patient lost weight. He did so even more because the sugar (carbohydrate) reserve holds three times its weight of water, which is also eliminated when the sugar is burnt up. The fat which was taken instead held a smaller quantity. Thus the patient lost weight, but at the same time became fatter - and it is fat which we find it difficult to get rid of. Therefore that cure's success did not last long."

This passage, which I find confusing, is from *Eat, Drink and be Slim*, by Edward Clausen and Knud Lundberg, revised and adapted in 1955 by Miss G. H. Donald of the *Good Housekeeping Institute*.

These two writers go on to pour scorn on the idea that obesity may be the result of altered metabolism:

"Let the truth be told". - they write. "This is not the reason we have become fat. It is because we like food. Our whole trouble is that we eat more than we use up-and the balance is stored in the form of a corporation … the truth about metabolism is that 95% to 98% of all sufferers from fat have a

normal base metabolic rate….Our trouble lies not in how food changes inside us, but in what food we eat."

Glausen and Lundberg have got it the wrong way round. To borrow their form of words: The truth about the basal metabolic rate (expressed per pound of body weight) of people who are gaining weight is that in 95% of cases it is substantially lower than normal. Their trouble lies in how food changes inside them, not in how much they eat.

Dr. Pennington has put the matter straight once and for all in the summary to his excellent paper "*Obesity: Over-nutrition or Disease of Metabolism?*", published in 1953 in the *American Journal of Digestive Diseases*:

"Analysis of the results, of studies of the energy exchange in obesity, in regard to their evidence for or against a passive dependence of the excessive energy stores on the balance between the inflow and the outflow of energy, indicates that these stores have a significant degree of independence of the energy balance. This appears to necessitate an explanation of obesity on the basis of some intrinsic metabolic defect. The decline in energy expenditure which occurs when the obese go on low calorie diets appears to have the same significance as it has when people of normal weight are subjected to under-nutrition. A treatment of obesity, alternate to that of caloric restriction, takes into account the metabolic defect in obesity, aims at a primary decrease in the excessive energy stores, and allows for weight reduction without any decline in the energy expenditure and without any enforcement of caloric restriction."

This theory is the only one which explains all the known facts about obesity and for ten years it has stood up to the only valid test of any theory-practical application. Nobody can now deny that most fat people can grow slim on high-fat, high-protein diets and still eat as much as they like.

Leaving aside Beddoes in 1793 and Harvey in 1856, who had ideas a bit before their time, ever since 1907, when Von Noorden in America suggested a defect in the metabolism of carbohydrate in the obese (and compared it, as Harvey did, to the diabetic's inability to metabolise sugar), the abnormal metabolism of fat people during weight gain and on low-calorie diets has been hinted at in paper after paper in the medical and scientific journals.

Even if all the early investigators did not agree on the interpretation of their results, for the past fifteen years at least, the evidence for Mr. Fatten-Easily's defective metabolism of carbohydrate has been overwhelming.

A simple equation makes it easier to understand the point:

A = B + C

energy intake = energy storage + energy expenditure

calories in as food = calories put away as fat + calories used up for energy

If B changes passively with variations in **A** and **C**, then the fat depots are just storage dumps to be depleted or filled up according to differences between the food intake (**A**) and the energy expenditure (**C**).

This is what all the "cut-down-the-calories" experts have believed since the time of William Wadd and the Prince Regent. But if, as I believe to be the case, the fatty tissues of the body are not inert but highly active and concerned particularly with the metabolism of carbohydrate, then in obesity, B might vary independently of A and C under conditions of disturbed or abnormal metabolism.

Weight would then be gained on quite a small intake of carbohydrate food because most of it was being diverted into storage and prevented from being got out again for use.

This is what seems to happen in the obese and a possible cause is the pyruvic acid or some such block on the normal metabolic pathway from carbohydrate to energy and from stored fat to energy.

It is now thought probable that Mr. Fatten-Easily's inability to burn up carbohydrate and his tendency to make and store excessive fat may be due to lack of a hormone: a fat-mobilising factor. Lack of this hormone may be preventing him from using the carbohydrate he eats for anything except making stored fat. Expressed pictorially, the energy balance looks like this for Mr. Constant-Weight eating carbohydrate:

For Both: Carbohydrate Food is converted into a storage vat of fat which is on tap to the fires of the metabolism.

Mr Constant-Weight The greater the fat storage the more fuel for the fire the higher the fire burns So the fat storage does not increase.

Mr Fatten-Easily The flow of fat to the fires of the metabolism are choked. Regardless of the volume of fat only a small trickle is allowed to reach the fire of the metabolism, so fat storage increases.

Mr Fatten-Easily wants someone to come and take the cork out and fit back his pipeline from fat to fire, not someone to tell him to eat less.

It may be a long time before the hormone which will take the cork out and enable Mr. Fatten-Easily to utilise carbohydrate fully is available for general use in the treatment of obesity, but we now have the next best thing - an understanding of the fat person's defective capacity for dealing with carbohydrate and a dietary means of correcting it WITHOUT RESTRICTING THE AMOUNT OF FOOD EATEN.

Eat-Fat-and-Grow-Slim is not only a practical proposition but it is good for a fat person and will make him feel well while it gets his weight back to normal.

Another great advantage of the diet is that it will not take your weight below normal for your height and build, nor will it do you any harm if you only want to lose a few pounds.

But if this is the case, it will not be necessary to restrict carbohydrate to the minimum, but merely to cut it down to a level where the amount of pyruvic acid (which is preventing you mobilising your fat) in your body is reduced to a level at which you can lose weight. This level can be found by trial and error. As Dr. Pennington puts it:

"It seems that the emphasis should be put on fat as a major source of energy, with carbohydrate restricted to the degree necessitated by the obesity defect, and ample protein allowed for its well-recognised benefits to health."

<u>There are only three classes of people who should not go on the diet:</u>

The sick.

People of normal weight, the constant-weights.

Those rare people who, though overweight, have no metabolic obesity defect and who develop symptoms of low blood sugar (hypoglycaemia) when they cut down their carbohydrate below a certain level.

Hypoglycaemia manifests itself gradually, with symptoms like sweating, flushing or pallor, numbness, chilliness, hunger, trembling, weakness, funny feelings in the head, raised pulse, palpitations, apprehension and fainting.

Such people should be forewarned that if any of these symptoms do develop on the diet, it means they should increase their carbohydrate. A sweet, syrupy drink will relieve the symptoms in 20 minutes.

Children should not be put on this diet without personal medical advice, but in my experience there is no danger in their following it. I have slimmed a number of fat children from ages between 9 and 17 with success on this regime.

Results come quickly - more quickly than in adults. But with children and adults I now insist that fats be eaten as fresh as possible and unprocessed. Fat-soluble vitamins and other substances in fat which are essential to growth and health, come better from natural sources.

It is worth stressing again that none of Professor Kekwick's obese patients developed low blood sugar on high-fat diets so that hypoglycaemia is not a serious hazard for a fat person.

Any doctor who has seen a fat patient struggling in semi-starvation to keep to a low-calorie diet and do a day's work must have wished for a better way of helping his patient.

A high-fat, high-protein, low-carbohydrate unrestricted calorie diet is that better way.

Many doctors are sceptical, and rightly so, of books on medical subjects written for the public, as this is. Yet even the most sceptical would be convinced if they could have seen fat patients in Professor Kekwick's wards at the Middlesex Hospital, losing only a pound or two on a 1,000-calorie diet containing a high proportion of carbohydrate, being switched to a high-fat diet with a much greater calorie intake and immediately losing weight, then ceasing to lose again when put back on a high-carbohydrate calorie-restricted diet. Starch and sugar are the culprits. Cut them right down and eat fat and protein in the palatable proportion of one to three. You will then grow slim while you eat as much as you like and feel well because you will be eating the best kind of food. It is as simple as that.

Never mind the theory, which may still have to be modified as research goes on.

Try out the diet. It works.

Appendix A

Tables Of Normal Weight For Height And Build
(based on Life Insurance Tables (1958))

Normal Weights For Men Of Ages 25 And Over				
Weight in pounds according to build (in ordinary clothes)				
Height (with shoes on)		**Build**		
Feet	Inches	Small	Medium	Large
5	2	116-125	124-133	131-142
5	3	119-128	127-136	133-144
5	4	122-132	130-140	137-149
5	5	126-136	134-144	141-153
5	6	129-139	137-147	145-157
5	7	133-143	141-151	149-162
5	8	136-147	145-156	153-166
5	9	140-151	149-160	157-170
5	10	144-155	153-164	161-175
5	11	148-159	157-168	165-180
6	0	152-164	161-173	169-185
6	1	157-169	166-178	174-190
6	2	163-175	171-184	179-196
6	3	168-180	176-189	184-202

Normal Weights For Women Of Ages 25 And Over				
Weight in pounds according to build (in ordinary clothes)				
Height (with shoes on)		**Build**		
Feet	Inches	Small	Medium	Large
4	11	104-111	110-118	117-127
5	0	105-113	112-120	119-129
5	1	107-115	114-122	121-131
5	2	110-118	117-125	124-135
5	3	113-121	120-128	127-138
5	4	116-125	124-132	131-142
5	5	119-128	127-135	133-145
5	6	123-132	130-140	138-150
5	7	126-136	134-144	142-154
5	8	129-139	137-147	145-158
5	9	133-143	141-151	149-162
5	10	136-147	145-155	152-166
5	11	139-150	148-158	155-169

Appendix B

Quick Reference Table To Foods With Little Or No Carbohydrate

based on data in the M.R.C. revised (1946) edition of *Chemical Composition Of Foods* by McCance and Widdowson

Non-Carbohydrate Foods
You May Eat As Much As You Like

Meat, Poultry And Game (***Legend***)			
	Protein:Fat Ratio		Protein:Fat Ratio
Bacon, raw Danish, Wilts, (average)	4.0:10.6	Heart, roast	7.1:4.2
(fore end)	4.2:9.0	Kidney, stewed	7.3:1.6
(middle)	3.7:12.7	Kidney, fried	7.9:2.6
(gammon)	4.3:8.0	Liver, fried	8.3:4.1
Beef, corned	6.3:4.3	Mutton chop, grilled, lean and fat	4.4:17.1
Beef, silverside boiled	7.9:57	Mutton leg, boiled	7.3:4.7
Beef, sirloin, lean and fat	6.0:9.1	Mutton leg, roast	7.1:5.8
Beef steak, fried	5.8:5:8	Mutton scrag and neck, stewed	5.2:5.2
Beef steak, grilled	7.2:6.1	Pheasant, roast	5.5:1.7
Beefsteak stewed	8.7:2.4	Pork leg, roast	7.0:6.6
Brain, boiled	3.4:1.6	Pork loin, roast, lean and fat	6.7:4.5
Chicken, boiled	7.4:2.9	Pork chops, grilled	5.3:14.3
Chicken, roast	8.4:2.1	Rabbit, stewed	7.6:2.2
Dripping, beef	tr.:28.1	Tongue	5.4:6.8
Duck, roast	6.5:6.7	Tripe, stewed	5.1:0.9
Goose, roast	8.0:6.4	Turkey, roast	8.6:2.2
Grouse, roast	8.6:1.5	Veal cutlet, fried	8.6:2.3
Ham, boiled, lean and fat	4.6:11.2	Venison, roast	

Fish(*Legend*)			
	Protein:Fat Ratio		Protein:Fat Ratio
Bloaters, grilled	6.4:4.9	Mackerel, fried	5.7:3.2
Bream, steamed	3.3:0.6	Mussels, raw	3.3:0.5
Cockles	3.1:0.1	Mussels, boiled	4.8:0.6
Cod, steamed	5.1:0.3	Oysters, raw	2.9:0.3
Cod, fried	5.9:1.3	Plichards, tinned	6.2:3.1
Cod, grilled	7.7:1.5	Plaice, steamed	5.1:0.5
Cod roe, fried	5.8:3.4	Plaice, fried	5.1: 4.1
Crab, boiled	5.4:1.5	Prawns	6.0:0.5
Eels, stewed	5.0:9.2	Salmon, fresh steamed	5.4:3.7
Flounder, fried	4.8:3.7	Sardines, tinned	5.8:6.4
Haddock, steamed	6.2:0.2	Scallops, steamed	6.4:0.4
Haddock, fried	5.8:2.4	Shrimps	6.3:0.7
Haddock,smoked steamed	6.3:0.3	Skate, fried	4.3:4.7
Hake, steamed	5.2:0.9	Sole, steamed	5.0:0.4
Hake, fried	5.5:3.2	Sole, fried	5.7:5.2
Halibut, steamed	6.4:1.1	Sprats, fried	6.3:10.8
Herring, fried	6.2:4.3	Trout, steamed	6.3:1.3
Herring, baked in vinegar	4.8:3.7	Turbot, steamed	5.9:0.5
Herring roe, fried	6.6:4.5	Whitebait, fried	5.2:13.5
Kippers	6.6:3.2	Whiting, steamed	5.7:0.3
Lobster, boiled	6.0:1.0	Whiting, fried	4.4:2.6

Dairy Products(*Legend*)			
Note MILK contains carbohydrate and must not be taken freely - limit half-pint a day.			
	Protein:Fat Ratio		Protein:Fat Ratio
Butter, fresh	0.1:24.2	Egg white	2.6:0
Cheese, cheddar	7.1:9.8	Egg yolk	4.6:8.7
Cheese, cream	0.9:24.5	Eggs, raw/boiled	3.4:3.5
Cheese, Dutch	8.0:4.8	Eggs, dried	12.3:12.3
Cheese, gorgonzola	7.1:8.8	Eggs, fried	4.0:5.5
Cheese, Gruyere	10.4:9.5	Eggs, poached	3.5:3.3
Cheese, packet	6.4:5.4	MILK, fresh whole	0.9:1.1
Cheese, parmesan	9.8:8.4	MILK, fresh skimmed	1.0:0.1
Cheese, St. Ivel	6.6: 8.7	MILK, condensed whole unsweetened	2.2:2.4
Cheese, Stilton	7.1:11.4	MILK, dried skimmed household	9.7:0.1
Cream	0.5:11.9		

Low Carbohydrate Foods

Some of these must be restricted

Vegetables(*Legend*)			
	Protein:Carbohydrate Ratio		Protein:Carbohydrate Ratio
Asparagus	1.0:0.3	Lettuce	0.3:0.5
Beans, broad boiled	1.2:2.0	Marrow	0.1:0.4
Beans, french	0.2:0.3	Mushrooms	0.5:0.0
Beans, haricot	1.9:4.7	Onions	0.2:0.8
Beans, runner	0.2:0.3	Parsnips	0.4:3.8
Beetroot	0.5:2.8	Peas	1.4:2.2
Brussels sprouts	0.7:0.5	Potatoes, boiled	0.4:5.6
Cabbage	0.4:0.3	Pumpkin	0.6:3.4
Carrots	0.3:1.3	Radishes	0.3:0.8
Cauliflower	0.4:0.3	Spinach	1.4:0.4
Celery, raw	0.3:0.4	Spring Greens	0.5:0.31
Celery, boiled	0.2:0.2	Swedes	0.3:1.1
Chicory	0.2:0.4	Tomatoes, raw	0.3:0.81
Cucumber	0.2:0.5	Turnips	0.2:0.71
Leeks	0.5:1.3	Watercress	0.2:0.21

Fruit (*Legend*)			
Stewed fruit must not be sweetened with sugar. Tinned fruit should be avoided unless known to be sugar free.			
	Protein:Carbohydrate Ratio		Protein:Carbohydrate Ratio
Apples, eating	0.1:3.3	Greengages, stewed	0.1:2.2
Apples, baked	0.1:2.3	Lemon juice	0.1:0.5
Apples, stewed	-:1.2	Loganberries	0.2:1.0
Apricots	0.2:1.7	Melons, cantaloupe	0.3:1.5
Apricots, dried stewed	0.6:5.1	Oranges	0.2:1.8
Bananas	0.2:5.5	Orange juice	0.2:2.7
Blackberries, raw	0.4:1.8	Peaches	0.2:2.3
Blackberries, stewed	0.2:0.9	Pears	0.1:3.0
Cherries	0.1:3.0	Pears, stewed	0.1:1.8
Damsons	0.1:1.8	Pineapple	0.1:3.3
Damsons, stewed	0.1:1.8	Plums	0.2:2.7
Figs	0.4:2.7	Plums, stewed	0.1:1.1
Gooseberries,stewed	0.2:0.5	Prunes, stewed	0.3:4.4
Grapes, black	0.2:4.4	Raspberries,stewed	0.2:1.1
Grapes, white	0.2:4.6	Rhubarb, stewed	0.1:0.2
Grapefruit	0.1:0.7	Strawberries	0.2:1.8

NUTS(*Legend*)			
Name	Protein	Fat	Carbohydrate
Almonds	5.8	15.2	1.2
Barcelona	3.7	18.2	1.5
Brazil	3.9	17.3	1.2
Chestnuts	0.7	0.8	10.4
Cob nuts	2.6	10.2	1.9
Coconut, fresh	1.1	10.2	1.1
Coconut, dessicated	1.9	17.2	1.8
Peanuts	8.0	13.9	2.4
Walnuts	3.6	14.6	1.4
Olives (with stone)	0.2	2.5	negligible

Legend
Very high fat. Normal serving will balance a restricted item on the fruit and vegetable list.
More fat than protein Larger serving will balance a restricted item on the fruit and vegetable list.
Fat and protein about equal Ordinary items have more protein than fat.
Caution Are medium-carbohydrate and should be taken only in moderation
Restricted Are relatively high-carbohydrate and should be restricted to one serving a day and balanced with one of the high fat or more fat than protein foods in the Meat, Fish and Dairy Products Lists

Appendix C

Unrestricted Calorie Diet For Weight Reduction In Obesity

Based on a diet sheet sent me by Dr. Pennington and adapted for use in my practice, to save time explaining to patients how to eat fat and grow slim

This diet works on an entirely different principle from the usual low-calorie diets. Instead of trying to starve the fat off you, this diet gets your body to burn fat better.

It removes only your excess fat and does not reduce your weight below normal.

You will not feel appetite and not restricted at all. You eat three meals a day but only of the kind of food which helps to burn off about 7 lb. of excess fat a month. Here are the rules:

Do not sleep more than eight hours a night. You burn up more fat while up and about.

Drink a glass of water (with 1/2 lemon squeezed into it but no sugar, if you like) and then take 1/2 hour brisk walk. This exercise on an empty stomach helps to throw your body into gear for burning fat.

After your walk have a good, old-fashioned breakfast of one or more of the following:

Bacon, eggs, kidneys, fried in plenty of fat. Ham or all-meat Continental sausage. Kippers, bloaters, haddock stewed in milk and butter or margarine.

Coffee (not essence) or tea with a little milk or plenty of cream. No sugar.

Starch-reduced Energen or Proferin rolls and peanut butter, butter or margarine. No jam or marmalade.

NO BREAD. NO CRISPBREADS. NOTHING SWEET OR SWEETENED WITH SUGAR. You may take saccharine if you wish.

You will not feel hungry after this breakfast until the midday meal, so eat nothing but drink at least three glasses of water, flavoured with fresh unsweetened lemon juice if desired.

Midday meal. Steak or any meat with its fat. Fish fried in fat but NO BATTER. Omelettes or ham or all-meat sausage. Lettuce and tomato salad dressed with olive oil and vinegar. Small serving of peas, string or French beans or other green vegetable with plenty of butter or margarine. Apple or orange. Cheese -preferably high- fat kind: cream cheese or camembert. Coffee or tea with cream but little milk.

Main evening meal: as for midday meal and breakfast combined.

Nightcap: cheese and cup of hot milk.

You will not feel hungry on the diet because the amount of food you eat is left to your appetite.

Water is not restricted at all and you should drink plenty. Do not take much extra salt as this checks the burning of fat. Pepper may be used for seasoning. Alcohol: Only "dry" alcoholic drinks may be taken, and these only in moderation. Dry wines and spirits are allowed but no beer; no liqueurs and no sweet cocktails or aperitifs.

Hints on applying the diet.
Starch and sugar (carbohydrates) are the only things which fatten fat people. They do this by preventing you from burning up your stores of fat and by making you make more fat. Fruits and vegetables contain starch and sugar so should be taken only in moderation.

Fat and protein foods do just the opposite of carbohydrates. They help you to burn up your excess fat and they stop you making more.

So eat nothing that comes from the confectioner or the pastry-cook. The sweet shop and the bakery are out of bounds to you while you are slimming.

Be cautious at the greengrocer, choosing only those fruits and vegetables you know are low in carbohydrate, e.g., grapefruit, rhubarb, gooseberries, tomato, lettuce, orange, lemon. Avoid potatoes and root vegetables. Avoid the grocer, except for his cheeses, ham, bacon, eggs, peanut butter, butter, margarine and cooking fat. Buy your food at the butcher and the fishmonger as much as you can and cook it fresh. They sell the foods that keep you well and help you to burn up your excess fat. It will cost you more but it is worth it to be able to slim without starvation. When you have got back to your normal weight for your age and height you may eat more carbohydrate again in moderation. But watch the scales and if your weight starts creeping up, go back on the diet.

Appendix D

Experimental Low Calorie, High Fat Diet

used by Professor Kekwick at the Middlesex Hospital .

Note that this was used only for patients under medical supervision.

Anyone who suffers from serious obesity-3 or 4 stones or more overweight will find that this 1,000-calorie high-fat diet will slim them most rapidly. Such a low-calorie, high-fat diet should not be followed without first obtaining personal medical advice.

1,000 Calories

Fat =62g (77% of total cal)	– in fact - 577 kcal (56%)
Protein=90g (12%)	– in fact - 369 kcal (36%)
Carbohydrate 20g (4%)	– in fact - 82 kcal (8%)

Arrangement Of Meals

Breakfast:	Milk from daily allowance (1/4 pint) in tea or coffee. No sugar. 1 Energen roll 1 egg or lean ham or haddock Butter from daily allowance (3/4 oz.) 1/2 grapefruit. No sugar
Mid-Morning:	Tea flavoured with lemon, or black coffee
Lunch:	Clear soup or Bovril as desired 4 oz. lean meat of any kind, i.e. beef, mutton, lamb, liver or chicken or game or rabbit Large serving cooked green vegetables or Large mixed green salad Black coffee if desired
Tea:	Milk from daily allowance in tea or tea flavoured with lemon. No sugar 1 Energen roll 1 oz. cheese or 1 egg or 2 oz. Sardine Butter from daily allowance
Dinner:	Clear soup with Bovril if desired Very large portion fish (6 oz.) steamed, grilled, or baked with milk from daily allowance Large serving cooked green vegetable, or Large mixed salad as desired 1/2 oz. Cheese 1 Energen roll Tea flavoured with lemon or black coffee
Bedtime:	Tea flavoured with lemon (no sugar) or Oxo or Bovril 1 Energen roll