DIET IN GASTRIC DISEASES.*

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Since the function of the stomach is to digest all food taken into it, it is obvious that the treatment of any gastric disease must call for very careful consideration of the food which is presented to the diseased organ; for that which is suitable in health may by no means be suitable in disease. Unfortunately, we are still completely ignorant of the pathology of many gastric disturbances, with the result that certain foods may perfectly well agree with one patient while causing acute discomfort, or even pain, in another suffering from precisely the same symptoms, and apparently from the same lesion. It is possible that different lesions may give rise to the same symptoms, e.g., there are several causes of anacidity, though the digestive disturbances which accompany absence of hydrochloric acid vary from patient to patient. Even when the lesion is pathologically and anatomically certain, e.g., a chronic peptic ulcer, the resulting disturbance of digestion is not always the same. It follows then that every case must be accepted as a law to itself, and treated as an individual. A stereotyped diet is useless: it is merely a shot in the dark, and is just as likely to miss as to hit.

But though one may realise the necessity of an individual diet it is equally necessary to realise that the construction of a suitable diet is often difficult, sometimes impossible, without the active co-operation of the patient himself. No person of average intelligence can suffer from indigestion for any length of time without learning for himself what foods disagree with him, and what he can take with impunity: the former he must abjure permanently, or at any rate till such time as his stomach is restored to normal health; the latter he may take unless there is some other definite contra-indication to them. In many cases the patient's sensations are a trustworthy guide; but there are, in addition, certain general principles with regard to diet which it is well to appreciate. Before turning to these, however, there are one or two other points to which I should like to draw attention.

First of all, before trying to elaborate a diet intended to cure or relieve some gastric trouble, be sure that the patient is in a state to make proper use of the food. For instance, it is important to see that the teeth are in order. Probably more harm is done at the present time by extracting teeth than by failing to do so. If a tooth is so far destroyed by caries that it cannot be built up to a serviceable form; or if, clinically or radiographically, there is evidence of apical infection, then that tooth must be sacrificed, but the signs of infection should be unequivocal. If a tooth can be saved it should be: but no tooth should ever in any circumstances be crowned, and any tooth that has been should at once be removed. A gap of any size should be filled by a denture. I am sure that wholesale extractions are the worst possible practice. Over and over again one meets with people who have had all or most of their teeth extracted, but without the slightest benefit or relief. Artificial dentures are better than no teeth, but the best denture ever

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made is not equal to a set of natural, healthy teeth; and the interregnum, while the edentulous patient is learning to wear the artificial dentures, is a time of trial, tribulation and great discomfort.

Mastication must always be thorough, so that the food is intimately and adequately mixed with saliva. Food entering the stomach does not immediately mix with the rest of the stomach contents, but remains for a time segregated, and only some while later does gastric juice get to it and change its reaction. Until this time the reaction remains alkaline, and the ptyalin is steadily converting starch into sugar. Unaltered starch interferes with the digestive action of pepsin, and is thus liable to give rise to symptoms of indigestion.

The manner in which the food is served is often as important as the nature of the food. The appetite depends largely upon psychic influences, and is stimulated by food displayed attractively. So the lay-out of the table or tray, the cleanliness of the napery, good cutlery and china, should all receive attention.

The frequency of meals is another matter which calls for consideration in every case. In health, a few good meals may suit some persons. It is well known that over-eating causes far more numerous and serious disturbances of health than does under-eating, so that two meals will often be found sufficient for the day. But if the stomach be diseased, or its functions out of order, then nothing must be done which may overburden the organ. It must never be heavily loaded, but small quantities of food should be taken at a time, and the frequency of meals increased to allow sufficient volume to be taken. This is especially the case with gastric neuroses, e.g., ærophagy, when the stomach may be so distended with air after a small meal that more food cannot be accommodated, and also in those patients, chiefly women, who vomit after any food, but without loss of weight or other evidence of an organic lesion. In these cases it will be found useful to allow only very small feeds to be taken every hour or two up to eight or ten feeds a day.

The duration of each meal varies with its quantity, but in every case ample time must be allowed for thorough mastication and enjoyment of the food. After the meal, a rest for twenty or thirty minutes in a recumbent or semi-recumbent posture will aid digestion, and may prevent the onset of pain or discomfort.

Congenial company and pleasant conversation are a help to proper, hygienic eating, but are not always obtainable. Reading with meals is generally considered undesirable. Theoretically this cannot be denied, but a solitary meal with a book is pleasanter than one without, and the book tends to prevent that hurry in eating which is almost inevitable without it. On the whole, in many cases at any rate, the book is the less of two evils, and should therefore not be immediately, and without due consideration, condemned.

The essentials of an adequate diet are:—protein, 100 grammes; fat, 75 grammes; carbohydrate, 450 grammes—all these figures are, of course, only approximate—together with a supply of vitamins, and more or less minute amounts of mineral matter. These quantities yield 2,785 calories if completely digested. For a patient in bed, 1,800 to 2,000 calories are sufficient; for sedentary work, 2,500; for average exercise, 3,000; and for hard, manual labour, 3,500 to 4,500. The average person can preserve his health on less than 100 grammes of protein,

but it is well to be on the safe side, and no harm will result from a small excess. If there be hyperpiesis, some hesitation may be felt in giving such amounts of protein. It has been suggested that hyperpiesis is, or may be, due to toxins formed in the bowel by incomplete or improper digestion of proteins, and absorbed therefrom into the blood. No such toxins have ever been demonstrated, and intestinal toxæmia has been invoked to explain so many totally different conditions that one cannot help being sceptical. Moreover, the latest work on hyperpiesis not only fails to confirm the theory, but pretty definitely disproves it.

Protein, therefore, should be provided in adequate quantities, and is most readily utilised by the body if presented in the form of milk, eggs or flesh food. It may also be obtained from legumes or nuts. In most cases proper cooking is essential, since not only does it render the food more appetising and palatable, but it prepares it for digestion. The fibres of lean meat are separated by the development of steam between them while cooking. At the same time the insoluble collagen is converted into soluble gelatin. By this means the muscle-fibres are allowed to separate from each other, and intra-gastric digestion is made possible. Without proper cooking, more or less of the meat eaten passes through the stomach undigested, since the pancreatic juice alone of all the digestive ferments can break up the collagen. The vegetable proteins are surrounded by a cellulose capsule which is completely undigestible. Cooking ruptures this capsule, and so allows the gastric juice to get at the protein and digest it.

All meat should be tender and properly prepared. It was at one time beyond dispute that home-bred meat was superior to the foreign. Since then, however, the breeding of foreign animals has been so much improved, and the stock much bettered by the importation of animals from Britain, that the foreign meat is no longer inferior. Frozen meat must, of course, be thoroughly and completely thawed before cooking, or it will be tough. Provided this has been properly done, I doubt if it is possible in many cases to distinguish between home-bred and foreign meat as served at table. All other meat must be hung for a sufficient time before being eaten, again for the purpose of ensuring tenderness and the finest flavour. Shortly after death, with the onset of rigor mortis, the muscle-proteins coagulate and make the fibres hard and rigid; the soluble myosinogen has been converted to insoluble myosin. After a while, the ferments (proteases) present in the muscles dissolve the myosin, the fibres become soft again, and rigor mortis disappears. The meat is now fit to cook for eating. In country places chickens are sometimes cooked immediately after killing, and before rigor mortis can appear. This is a perfectly good practice: the flesh is tough only if cooked while in a state of rigor. For persons suffering from indigestion preserved meats, e.g., dried, pickled, smoked, are unsuitable.

Fats are an essential ingredient of an adequate diet, and are a valuable source of energy. They tend to diminish the secretion of gastric juice, and slow down the digestion. Butter and lard have little, if any, such action, and do not interfere with digestion as other fats do. All fats, even butter and lard, hinder or prevent the digestion of any food which is impregnated with them. Hot buttered-toast and crumpets, fat meat, oily fish such as salmon and pilchard, are all indigestible, often extremely so. For this reason fried foods are liable to cause dyspepsia and, when digestion is defective, are best avoided. Olive oil may some-

times be used with the greatest benefit both as a food and a gastric sedative. It is an unsaturated fat with no more than a trace of free fatty acid. All food, or practically all, obtainable today in large towns is so synthesised, disintegrated, coloured, even adulterated and generally altered from its natural state by preservatives, by freezing, by canning or bottling, that it is wonderful that we do not develop more digestive troubles. Olive oil is an especial sufferer from these undesirable interferences. It is almost, if not quite, impossible to obtain pure olive oil in this country. All the olive oil sold contains a greater or less admixture of arachis, cotton-seed or soy-bean oils. The adulteration is done almost entirely at the source. It seems, too, that olive oil does not improve with keeping; and therefore the fresher the oil, the better. A pure, first-year oil (that is an oil within twelve months of expression from the fruit) is best.

Whole-meal bread is not suitable where any gastric or intestinal lesion exists. In the outer, undigestible parts of the grain is a considerable amount of silicious matter in the form of hard, sharp crystals which are liable to irritate and damage the alimentary mucosa. Even apart from this, there is no real advantage in the whole-meal. One is told that it contains more vitamin than the white. That may be true, but no one depends on bread for his vitamins which are amply supplied by other foods. It is also said that white bread is adulterated and chemically bleached. I can readily believe it: but I cannot believe that whole-meal is any less adulterated, though the actual adulterant may be different. I am quite sure that white bread is as good as whole-meal bread, and, for persons with indigestion, better. Many of the brown breads, which contain the wheat germ though not the whole-meal, are not open to the objections which apply to whole-meal bread. They may be taken by patients in the same way as white bread, the choice between them is merely one of personal taste. In either case toasting increases its digestibility.

Potato starch is very digestible, but particularly liable to ferment and cause flatulence. Glucose and cane-sugar are valuable foods in that they need no digestion (the latter is first inverted by the hydrochloric acid in the stomach) and are absorbed directly into the blood-stream. If given in too great concentration, they may irritate the gastric mucosa, and so do more harm than good. The same applies to glucose enemata—ten per cent. is the highest limit, and even that is perhaps too high: five per cent. is probably the optimum.

All ripe, soft fruits, such as grapes, oranges, grape-fruit, plums, etc., are easily digestible, as also are ripe pears and apples, but nuts are very indigestible. Lettuce, endive, water-cress, mustard and cress, marrow, and tomatoes are all readily digested: cabbages, savoys, greens, brussels-sprouts, spinach, and celery are also well tolerated though they leave a large, undigestible residue. Radishes, cucumber and mushrooms are very indigestible, and are best avoided.

With regard to the **vitamins**, A and D are more likely than the others to be deficient, and particular attention should be paid to their adequate supply. In any ordinary mixed diet, B and C will be plentiful. I think it is well to be moderate in the use of all these substances, and I am not sure that they are not too freely used generally. Animal experiments show that extraordinarily minute quantities are sufficient to maintain health; and the quantities found in their natural sources are also minute. It would seem, therefore, that large quantities of vitamins are

not necessary, and there is no evidence that they are desirable. It has already been shown that it is quite possible to give too much vitamin D and that ill-effects follow its excessive use. Doubtless before long similar demonstrations will be made in the case of other vitamins. I suspect that in the near future it will be definitely shown that the amount of vitamin taken should be of the same order as occurs in nature; and that most, or all, of the concentrated products now commonly used are, at any rate potentially, harmful.

The same is equally true of many of the mineral elements. A normal, varied diet contains sufficient of all the elements necessary to preserve the body in health. Only in the case of very narrowly restricted diets, and when the restriction is of long duration, is serious deficit likely to occur. In these cases, therefore, it is necessary to consider the composition of the ash; and, if any element be wanting, to make it up in some way.

Every meal must be accompanied by a sufficient amount of fluid to render deglutition easy, and to provide a suitable vehicle for the action of the gastric juice. It was at one time thought and taught that to drink with meals is bad. The contrary is true. It is probably easier to take too little fluid with meals than to take too much. Water is the natural drink of the animal kingdom: it is probably the best drink from the purely physiological point of view: but other factors must be taken into account, and I suppose other fluids will always be extensively used because of a desire for stimulation, and dislike of so insipid a drink as water. Anyhow, water does not interfere with digestion. Even dilution of the gastric contents does not slow down digestion unless the dilution is in excess of anything that is usually possible in a normal stomach. Not only so, but the drinking of water actually stimulates the secretion of gastric juice. Water taken into an empty stomach soon passes out into the bowel, but it is held up for a time. Taken into a full, or partially filled stomach, most of it passes rapidly out. It appears to pass along the lesser curvature over the contents of the organ, and only a small amount is retained and mixed with the other contents.

Natural mineral waters, whether aerated or still, are good drinks; but artificial aerated waters should not be taken if the stomach is diseased. Their gas is given off much more rapidly and in larger amount, so that they are liable to irritate the mucosa. Tea and coffee are best avoided; though freshly prepared, weak tea probably does little, if any, harm, especially if a good, tannin-free brand is used.

The question of alcohol is less easily settled. Apparently it is extremely difficult to get it considered impartially. Those who like alcohol set out determined to find its use beneficial: those who do not like it are equally determined to damn it. Alcohol has many effects, some good, some bad; and the total of these must show whether or not its use is desirable. To-night we are concerned with its use in a very narrow field, and what I say is intended to refer solely and entirely to its use by persons suffering from functional or organic disturbance of the stomach. Alcohol provides a readily available form of energy for the body. It is absorbed directly from the stomach without any preliminary alteration or digestion, and is then oxidised to carbon dioxide and water with the liberation of heat. It is therefore a food, and as such is capable of replacing a certain amount of other elements in the diet. But this power is limited, since the body is incapable of metabolising more than about 45 c.c. of pure alcohol (equal to about three ounces of

brandy) in twenty-four hours. Any alcohol taken in excess of this is excreted unaltered either in the breath or the urine. Such alcohol as is burned is not burned quickly—about 25 c.c. is burned in $7\frac{1}{2}$ hours by a person accustomed to drinking alcohol; a person not so accustomed would take about 15 hours to metabolise the same quantity.

Alcohol stimulates the flow of saliva, and does not in any ordinary dilution interfere with the action of ptyalin, so that it aids the digestion of starch.

If taken in concentrated form it desiccates and hardens the tissues with which it comes in contact; and it is a direct protoplasmic poison in any dilution, though its toxicity naturally varies with its concentration. When absorbed into the blood it is rapidly distributed throughout the body, and all the tissue cells become bathed in an alcoholic medium. Their protoplasm is thereby more or less severely poisoned, their metabolism reduced, and they are no longer able to use up fat which consequently accumulates within them. In this way is produced the fatty degeneration which accompanies the continued excessive use of alcoholic beverages. In the same way carbohydrate metabolism is reduced; and probably to some, but a slight, extent protein metabolism also.

It must be realised, too, that though 45 c.c. of alcohol can be burned by the body in a day with the production of rather less than 400 calories, this is by no means equal in value to the 400 calories produced from 45 grammes of fat. Alcohol dilates the cutaneous capillaries, and allows a rapid loss of heat, so that the nett gain from alcohol is less than from fat.

In the stomach, small amounts of alcohol increase digestion: first, by increasing the flow of gastric juice, which is continued even after the alcohol is absorbed, and so long as any remains in the blood; and secondly, by increasing the proteolytic activity of pepsin. There seems no doubt that alcohol does not interfere with the action of pepsin, but actually enhances it when present in small quantities. In larger amounts, there is some delay in proteolysis, but increase in the flow of juice persists. If a still larger quantity be taken, pepsin is precipitated and inactivated, so that gastric digestion ceases. Unfortunately, none of these effects is standardised; an amount of alcohol which increases digestion in one person may seriously inhibit it in another. Moreover, in practically every case of dyspepsia stimulation of the stomach is the worst possible treatment: rest is the first and most important requisite, and rest alcohol does not give.

In addition to hastening digestion, small amounts of alcohol also hasten absorption of some other substances from the stomach, but on water it has the opposite effect, and for every volume of alcohol absorbed rather more than four volumes of water are excreted from the blood into the stomach: hence alcohol does not relieve thirst, but aggravates it. It also increases the peristaltic activity of the stomach, so that the food passes more quickly into the intestine, and the stomach is more quickly emptied.

But as well as these physical effects of alcohol, the mental aspect of the matter requires equal consideration. Alcohol gives an appetite, or improves it; in addition, it tends to diminish or remove any sense of worry or anxiety which is an almost constant factor in present-day life. A mind at peace with itself, undisturbed by doubts about the morrow, conduces to efficient functioning not only of the stomach,

but of all the other organs. A person, too, who is accustomed to take alcohol (I do not mean necessarily to excess) may miss its customary stimulus, and suffer in health and temper if deprived of it. Never must a disease be treated to the detriment of the patient, and such a person as this should be allowed some alcohol; it will harm him less than will the want of it.

So much for alcohol as such, but alcoholic beverages contain substances other than alcohol. Distilled spirits, for instance, contain not only ethyl alcohol, the effects of which I have just described, but definite quantities of propyl, butyl, and amyl alcohols, which are together commonly called fusel oil, and are all toxic. Spirits and liqueurs, the latter containing various aromatic substances, should therefore never be allowed to a gastric patient.

In my opinion, the verdict must definitely go against all alcohol—the good which small amounts may do is more than offset by the ill, except from the psychic point of view. If it be decided that some alcohol must be allowed, then a good white wine is by far the least harmful. Even then it must be a light wine—Burgundy, Bordeaux, Moselle, or Hock.

One of the most difficult questions to decide in connection with diet is the rôle of condiments and stimulants. In the first place, it has been shown by many physiologists that, when taken with food on isolated occasions, their effect is beneficial, and that they aid digestion. But it cannot be too strongly emphasised that what is tolerated with impunity by a healthy stomach is by no means necessarily good for one that is diseased. In the second place, probably no other organ of the body is so constantly and unceasingly overworked as is the stomach: from the cradle to the grave it is daily overloaded, it is abused by improper food of an improper nature, it is goaded to work by the abnormal and deleterious stimuli of condiments and spices. Mustard and pepper, vinegar, pickles and chutney, curries and sauces of all descriptions are partaken of indiscriminately by child and adult alike, so that even in youth most of us, nowadays, possess but a jaded and wayworn stomach. None of these things is proper for the young: they should be reserved for the sluggish organs of those who have passed their prime. But the crux of the matter is that in the majority of gastric diseases we have to deal with a wearied and dejected organ, and that to flog a tired horse is not only useless but harmful. To set the stomach up, to restore it to normal activity, requires not stimulation, but rest.

In cases of hypermotility and hyperacidity, which are often one and the same, it would appear rational to exclude from the diet all acid-forming articles such as meat, eggs, fish and wheat-flour. This has been tried, but the results have not been good. It would also appear reasonable to suppose that the secretion of hydrochloric acid is one method by which the pH of the blood is regulated. The removal of acid ions from the blood must certainly diminish the pH, and if much acid-forming food be taken the pH of the blood should rise, while an increased secretion of hydrochloric acid would reduce it to its former and proper level. I have not been able to discover that such a process occurs, and the only part which chlorine ions play in the regulation of the pH of the blood is by variation of their distribution between the red corpuscles and the plasma. No theoretical justification, therefore, can be found for eliminating the acid-forming foods from the diet of these patients, and in practice justification is equally wanting. Meat and fish

may be given, and suit the needs of the patients, for while these foods do increase to some extent the amount of gastric juice secreted, yet a given quantity of protein fixes a larger amount of acid than the same quantity of any other food element, so that the amount of free hydrochloric acid in the stomach is diminished. Similarly, limitation of the sodium-chloride-intake does not affect the gastric acidity, and a salt-free diet is of no use in any of these conditions.

In **acute gastritis** the mucosa is swollen, congested and irritable. Its first need is rest, and starvation fulfils this need. Two or three days without food of any sort will practically always enable the organ to recover. During this time liquids must be allowed to relieve thirst. The patient may be given ice to suck, or sips of cold, boiled water to drink. No long drink is permissible. What other fluid is necessary may be given as glucose and saline hypodermically or into the rectum. After a couple of days some milk may be given by the mouth; then toast and vegetable soups. Later, milk-puddings, eggs, butter, honey, and so up to a normal diet.

In **chronic gastritis** it is obviously necessary first to get rid of the cause. That done, an attempt is made to restore the mucosa to health. It is swollen and congested, generally covered with a layer of mucus which adheres firmly and dams up the openings of the gastric glands, so that hypo- or a-chylia results. The only satisfactory method of removing this mucus is by lavage which must be performed daily, and each day continued till all possible mucus has been brought away.

In this connection, I may recall the fact that medicinal paraffin is very liable to cause a closely analogous condition. It may form a thin but firmly adherent layer over the interior of the stomach and intestines, prevent the access of gastric and intestinal digestive juices to the lumen of the alimentary canal, and give rise to more or less severe indigestion. The symptoms are discomfort after meals, a feeling of distension and fullness, flatulence, loss of appetite. Lavage is the best treatment. For this reason, because it often fails to activate the bowels, and because it often passes through unchanged and may dribble away involuntarily with very unpleasant results, I consider that paraffin should never be used internally for the treatment of constipation.

It is very fashionable now to use paraffin emulsified, or mixed with other materials such as agar-agar. One sees beautiful pictures in the advertisements showing the very fine distribution of the oil throughout the faecal mass. How this can affect the movement of the bowel I cannot see. The only action of paraffin is its lubrication of the surfaces of the bowel and its solid contents. No amount of oil emulsified in the contents can exert any lubricating effect. The same is true of the preparations of paraffin with agar-agar, etc. The only action of the mixture is due to the added matter, not to the paraffin.

For the correction of constipation senna is probably the best drug; and it rarely, if ever, fails. One of its chief advantages is that it has no action whatever on the stomach, it affects solely and entirely the large gut. Should it not prove efficient, cascara sagrada, alophen, or vegetable laxative, etc., may be tried. Salts should not be used daily or frequently. For an occasional thorough clearance salts are excellent, but not for any other purpose. All violent aperients should be avoided.

The diet in chronic gastritis should be taken in small amounts frequently. Milk and milk-puddings, eggs, toast and butter, are the principal foods. Vegetable soups and purees may be taken, but all foods, e.g., spinach, cabbage, sprouts, etc., which leave a large undigestible residue, must be strictly avoided. Cooked fruits and fresh fruit-juice are permitted; as also are chicken and fresh meat, if tender, except pork and veal.

To the dietetic treatment of **gastric ulcer** I do not propose to devote much time because it can, in my opinion, be summed up in two words—milk and eggs. I believe that surgical measures are very rarely justified. Certain diets I shall briefly consider because they are extensively used. These are Lenharz' and Sippy's diets. MacLean's is merely a modification of the latter. They are all essentially the same, and consist of a graduated allowance of food commencing with milk and one or two eggs a day until a normal diet is taken at the end of six weeks. Sippy's diet is accompanied by large doses of alkali in order to ensure constant and complete neutralisation of the gastric hydrochloric acid; and by repeated gastric lavage which is an essential feature of the treatment. MacLean's diet is not materially different, but omits the lavage. The alkali is given in the form of a powder consisting of a bismuth salt, sodium bicarbonate and magnesium carbonate. In my opinion, bismuth is a highly undesirable drug. Its only action in the stomach is as an antacid, and there are others quite as good. These others, too, leave no insoluble residue, whereas bismuth is precipitated as a heavy, insoluble powder which must be to some extent irritating. If therefore any such powder is given, I prefer one of sodium bicarbonate, magnesium oxide and calcium carbonate. By varying the proportions of the laxative magnesium and the constipating calcium such a powder, as well as keeping the gastric contents alkaline, will satisfactorily regulate the activity of the bowels.

I do not use either of these diets which are based upon the theory, which I am sure is wrong, that the gastric juice plays a part in the pathogenesis of gastric ulcer. There is little or no evidence that free hydrochloric acid produces or perpetuates a peptic ulcer. Certainly hyperacidity frequently, but not always, accompanies such an ulcer; but it is the result of the ulcer, not its cause. The first, last, and only requisite in the treatment of gastric ulcer is rest. Allow the stomach to do no work whatever, and it matters not the slightest bit whether it is or is not secreting little or much free hydrochloric acid. To obtain complete rest, duodenal intubation is the best method. Where there has been pyloric obstruction or an hour-glass deformity, I have seen a jejunostomy attain the same end, but obviously intubation is preferable if practicable.

Einhorn's duodenal tube is used: I have found in some cases that Ryle's tube is not well tolerated. The metal olive is passed into the duodenum, and is left in for three weeks. It must be removed periodically for cleaning and sterilising. All food is passed directly into the duodenum by the tube, so that nothing enters the stomach so long as the tube is in position. Feeds are given two-hourly, and eight feeds daily. Each feed consists of 8 ozs. of milk, and in every second feed is beaten up one egg, so that altogether 64 ozs. of milk and four eggs are taken in twenty-four hours, giving approximately 1,500 calories. As a rule this is sufficient, but if the patient complains of hunger or loses weight the feeds may be made up to 10 ozs. each, or more eggs may be given.

Recent statistical studies of **hæmatemesis** suggest that operation is the safest and most satisfactory treatment: it certainly offers the maximum hope of definite closure of the bleeding point. If it be decided to rely upon medical measures intubation is still the best method. Originally, when the Lenharz diet was used, twenty-four hours' complete starvation after cessation of bleeding was advocated. Now this is not done, and the diet is commenced immediately. For some time, too, it was fashionable to use ham commonly and early in these graduated diets, but that also has now gone out.

Intubation is also useful in the treatment of **duodenal ulcer** though it is generally thought to give less satisfactory results than with gastric ulcer. I am not convinced that this is correct. I am quite sure that the diagnosis of duodenal ulcer is much less certain than that of gastric ulcer. Radiologists will maintain that they can diagnose duodenal ulcer in every case where it is present, and exclude it whenever it is absent. I am by no means of that opinion, and I am inclined to believe that intubation fails to cure only those cases of duodenal ulcer which have no ulcer; whose symptoms, that is, are due to some lesion other than duodenal ulceration.

As soon as one is satisfied that the ulcer is healed the tube is removed, and food is given by the mouth. Commencing with milk and eggs, the diet is gradually increased by the addition of toast, fish, chicken and so on, till a normal diet is taken at the end of a week. Thereafter, naturally, some care is necessary, and it is well to avoid too stimulating articles; but no severe restriction is necessary.

In cases of **pyloric stenosis**, if the obstruction be complete it is obvious that only surgical measures can be of any avail. If the obstruction be less than complete, and if, for any reason, surgery is impossible, much may be done by thorough lavage. The products of intragastric fermentation are irritating to the mucosa which consequently becomes swollen and congested. If, by means of repeated lavage, the organ be properly cleaned out and kept free from all irritant matter, the mucosa will return to a more healthy state, and the congestion and swelling will disappear. In this way it will often be possible to render the pylorus sufficiently patent to remove the necessity of operation. At the same time the utmost care must be exercised in the matter of diet. Food must be given in small quantities frequently. It should consist of milk and eggs, casein preparations such as sanatogen, plasmon, etc., macaroni and lactose. It is essential to avoid all fermentable matter such as starch, cane-sugar or glucose, and cellulose. In these cases, not only is no water absorbed from the stomach, but water is excreted into the organ, and the body tissues become dehydrated. Water must therefore be supplied in other ways, for example, by the rectum, though the amount taken by the mouth must be strictly limited.

The patient suffering from **cancer of the stomach** must be the sole judge of his own diet; I make no attempt to regulate it. There is nothing which can make matters worse or exaggerate the gravity of the outlook. Whatever he fancies, whatever he finds he can take without paying too great a price in suffering for it, that let him have.

Finally, I would emphasise once more that regulation of the diet in all gastric diseases must be done in accordance with general principles, and not by rule of thumb. Each patient must be treated as an individual, taking into account his own particular idiosyncrasies and peculiarities.