Treatment.

The methods of treatment in vogue at the present time consist of removal of the diseased or damaged cartilage combined with careful suturing of the capsule in one layer. As far I know, no attention has been directed towards remedying the lengthened internal lateral ligament, if one may except a caveat uttered against incising it in opening the capsule. This removal, even if it has been performed before the internal ligament has appreciably lengthened after the softening of a synovial effusion, will leave an internal lateral ligament relatively lengthened by one-eighth of an inch, which serves as an excellent starting point for a further actual lengthening, just as an imperfectly removed sac results in a "recurrence" of inguinal hernia, be the sac merely a "dimple" in the peritoneum. In addition, the usual incisions used for removal of the internal semilunar cartilage almost invariably encroach on the anterior fibres of the internal lateral ligament, which is still further damaged thereby. I refer to the curved incision passing to the inner side of the patella and then backwards just below the joint line, or the horizontal one on a level with this internal cartilage. Bearing this in mind, I have during the last two years operated with my eyes turned to the internal lateral ligament as the chief offender in the resultant lack of function of this joint.

Formerly I adopted the horizontal incision, but as this almost invariably resulted in severance of the anterior fibres of the internal lateral ligament, or an insufficient entrance to the joint cavity, I have now returned to the curved incision convex anteriorly.

The skin incision should be large, considerably larger than that which is made through the capsule; this having been found and all bleeding stopped, the internal lateral ligament is defined and thereby protected from damage; if it is so extensive as to reach far forward, its anterior fibres are deliberately divided, and in view of the knowledge of this severance can be united afterwards by separate sutures. The internal semilunar cartilage is then removed in the ordinary way, care being taken not to damage the internal lateral ligament at its attachment to the circumference of the semilunar cartilage, which may need careful division with knife or scissors.

The closing of the wound is the most important part of the operation. The incision through the capsule should be enlarged and the edges of the capsule excised so that at least one-eighth of an inch reduction in its vertical measurement is brought about, the edges are then tightly secured. The internal lateral ligament is shortened in its entirety by two or three mattress sutures, and, finally, the slip of fascia from the semimembranosus is detached from the muscle and swung forwards more vertically to act as an additional stay to the inner side of the joint and attached to the structures to the inner side of the condyle of the femur. If this slip is absent, a strip of fascia lata can be fashioned into an additional superficial internal lateral ligament to assist in the support of the inner aspect of the knee.

The chief points in the operation I wish to emphasize are:

1. The large skin incision, of "flap" form, allowing of the identification of the internal lateral ligament, and, when present, the slip from the semimembranosus.
2. The avoidance of damage to the internal lateral ligament, or the deliberate severance, when it cannot be avoided, of its anterior fibres.
3. The excision of a portion and tightening of the capsule by one row of sutures.
4. The shortening, or even plecting, and, where damaged, the reconstruction, of the internal lateral ligament by a second row of sutures.
5. Lastly, the manufacture of an additional superficial internal lateral ligament.

Passive movements should be begun early, but the leg should not be used to carry the weight of the body for one month, and exercises should be gradually initiated.

As to results, I can only plead that they appear satisfactory. I have only employed this method in some half-dozen cases, and though (as yet) I am quite satisfied with their condition, they have not been as severely tested as I could wish. No vigorous athlete appears among them, and the most strenuous are a railway porter and a policeman, both heavy men, continuously on their feet, and used

to a fair amount of sudden turns. The knees are not in any sense lax, and lateral movement of leg on thigh is absent, as in a normal knee.

The most striking result is shown in a man with very lax lateral ligaments who was having repeated attacks of synovitis, and, as he expressed it, need no longer "lead a life in a straight line, but can turn corners with the best." Yet my purpose in publishing this paper is not to presume to teach my surgical superiors but rather to ask for a frank recognition on our part that the condition of loose cartilage has not been blessed by surgical cures in sufficient numbers to warrant a satisfied complacency with the present methods of treatment, and the possibility (it is almost a probability) that treatment of the cartilage itself is not the only procedure necessary for the repair of a damaged joint.

Lastly, I trust that others with more surgical experience of these cases than myself may come forward with criticism or condemnation of the methods advocated above.

THE MODERN DIETETIC TREATMENT OF DIABETES MELLITUS.*

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At the close of the eighteenth century John Rollo discovered that abstinence from starch and sugar benefited the symptoms of diabetes. For more than a hundred years this epoch-making discovery dominated the treatment of the disease. From the middle of the nineteenth century onwards physicians, however, began to realize that glycosuria did not always disappear on a purely animal diet and to recognize the danger of the supervention of acidosis and coma on such a dietary. Towards the close of the century it was discovered that sugar could be derived from protein as well as carbohydrate and that the fats played a vital rôle in diabetes. During the first decade of the present century various observers, such as Naunyn, von Noorden, and Guelpa, recognizing the advantage to diabetes of occasional abstinence from protein and fat as well as the starches, instituted periodic fast or semi-fast days. The adoption of these methods met with considerable success, but glycosuria commonly recurred when the former diet was resumed; this was especially the case when, as was customary, the patient afterwards was fed the more generously in the hope of making good the loss of tissue incurred during the period of restricted diet. The main object of treatment was to maintain the patient at the highest possible level of weight and nutrition with the intention of assisting him to withstand a wasting disease. As the result of Allen's experimental work at the Rockefeller Institute, the very opposite object is now kept in view, for we have learnt that the permanent reduction of bodily nutrition is in itself beneficial to the diabetic state.

Minkowski and von Mering in 1889 had shown that complete extirpation of the pancreas in animals caused permanent diabetes; and in 1900 Opie and others demonstrated the association between degeneration of the islands of Langerhans and the existence of glycosuria. Allen based his researches on the assumption that these islands furnished an internal secretion which supplies substances required by the body cells in the metabolism of carbohydrates. In 1913 he reported the results of his attempts to secure a "working model" of the disease by experiments on partially depancreatized dogs. Virtually every detail of clinical diabetes could be reproduced by removing varying proportions of the pancreas in animals, mild or severe diabetes being secured at will. The animals were then rendered sugar-free by fasting; in other words, by affording physiological rest to the external pancreatic secretions associated with the grosser digestive processes, the flow of the more specific internal secretion of the gland was augmented.

These experiments showed not alone why fasting was advantageous, but indicated practical methods for preventing the return of glycosuria when fasting was completed. Diabetic animals which from the outset were kept

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on restricted diet remained thin, but were vigorous and lively and continued sugar-free. Others, allowed to eat what they chose, appeared at first much better nourished, but sugar returned and they grew emaciated, cachectic, and finally died. The secret of success lay in keeping the diabetic animal permanently under-nourished and thereby adjusting the total load of the food intake to the lowered capacity of the pancreatic endocrine secretion. Correctly treated animals not alone continued sugar-free, but their tolerance to carbohydrates actually improved; weakened function was restored and strengthened by judicious feeding.

In 1914 Allen¹ applied the results of his experimental work to the treatment of the disease in man. At about the same time Graham, in London, discovered independently by clinical observation the value of fasting, followed by underfeeding. The principles of his method closely correspond to those of Allen, although they differ in details of application. The work of these observers has placed the whole problem of the dietetic treatment of diabetes upon a scientific basis, and affords one of the most notable advances of recent years in the field of medical therapeutics.

GENERAL PRINCIPLES OF TREATMENT.

The object of the modern treatment is twofold: First, to render the patient as quickly as possible sugar-free without producing acidosis or increasing an already existing acidosis. Second, to keep him free by means of a diet adjusted to his lowered assimilative capacity and designed to strengthen that capacity.

1. Method of Rendering the Patient Free of Sugar and Acidosis.

Freedom from both glycosuria and acidosis is usually readily achieved by fasting. Since diabetes is a disorder of total metabolism extending to protein and fat as well as carbohydrate, it is necessary—save in the mildest cases, when the restriction of carbohydrate alone may suffice—to withdraw all food materials. By cutting off the entire food intake, as in starvation, the risk of precipitating coma is avoided. On fasting, the main source of sugar is removed by prohibiting the ingestion of pre-formed carbohydrate; the body is consequently made to utilize its own store of sugar, so that, as Poulton² points out, there is soon none left to pass out into the urine. The same applies to protein (potential carbohydrate), although the process here takes a longer time to accomplish. Finally, when the tissues have been caused to burn their own sugar, the fat stored in the body is completely oxidized without the formation of acetone bodies as toxic by-products. Acidosis consequently disappears, as a rule, along with glycosuria during fasting.

2. Method of Building up a Suitable Diet.

The aim after fasting is successfully completed is to build up a diet which will keep the patient free and at the same time provide sufficient energy for the maintenance of health. This object, which is sometimes immensely difficult of accomplishment, can be reached by different methods.

When the new treatment was first introduced it was believed necessary to investigate separately the patient's tolerance for the individual food elements—first for carbohydrates, next for protein, and lastly for fat. This took a great deal of time and entailed, during the estimation of the carbohydrate tolerance, a relative protein deprivation detrimental to health. Clinicians, in their anxiety to avoid former evils attendant upon a high animal diet, went to the opposite extreme with diets excessive in vegetables and deficient in protein and fat.

Allen³ now recommends in most cases a diet composed from the outset of almost pure protein. Mosenthal⁴ had previously outlined diets predominant in protein, and Fenlon⁵ quite recently has advocated a similar method. Graham⁶ employs the "ladder diet," in which carbohydrate is maintained at a low level, whilst protein and fat are fixed from the outset at a relatively high level and gradually increased; carbohydrate is added in at the end. This system has many adherents; it is easy of application and yields brilliant results, especially in those milder cases tolerating high protein-fat allowances and reacting badly only to carbohydrates. Quite recently Graham¹⁰

has instituted modifications of his method which would appear to promise even greater success in their clinical application.

In my own experience, based upon the treatment of 30 cases of diabetes, the best results on the whole have been obtained along the lines of the arrangement of diet outlined in Allen's earlier papers¹ and standardized by Joslin in America and by Leyton and Cammidge in England. Broadly, the primary purpose of this system is to learn the tolerance for carbohydrate and cover the protein loss as quickly as possible; fat, usually less urgently needed, is added later as conditions may seem to indicate. The method may be regarded as a compromise between the earliest schemes, involving extended periods of vegetable diet, and the newer plans, entailing possible risks from the stimulating effect upon metabolism of an initially high protein intake. It is simple of accomplishment, and possesses the merit of being applicable alike to mild and severe cases.

Whatever method may be selected, the keynote of treatment is under-nutrition. As Allen⁷ has pointed out, the fact must never be lost sight of that any kind of food in excess weakens tolerance for other foods. Consequently the diet must be adjusted carefully with reference to all its constituent elements. Strict adherence to the scheme adopted is essential, for the patient who undertakes treatment and then relaxes his diet is in a worse plight than if he had never been treated.

APPLICATION OF MODERN METHODS.

The individualization of the patient is of the highest importance. No two cases of diabetes are alike, and although a basic plan of treatment is essential each case must be managed according to its type of severity. When a diabetic presents himself for treatment the primary step is the careful examination of the patient. The history of his illness, the condition of his organs, and his weight are ascertained. In the scientific study of the metabolic disturbances of the disease diabetes, elaborate methods are required for the investigation of the state of the blood fat, the nitrogen and ammonia content of the urine, the percentage of CO₂ of the alveolar air, etc. In clinical practice, as Joslin⁸ has insisted, complicated analyses are not necessary, and it is ordinarily sufficient to examine the urine for the presence of glucose and diacetic acid. Estimation of the blood sugar is essential and must not be neglected unless laboratory facilities are wholly unavailable.

The required data having been elicited, the patient is advised to enter, if possible, a hospital or nursing home whose staff are familiar with modern dietetic methods and trained in the accurate weighing and measuring of foods.

The patient first of all is made to fast. Allen⁹ has shown by experimental observations in animals that light exercise is useful in mild diabetes, whereas it increases the blood and urinary sugar in severe cases. Consequently the patient is allowed to be up and about during the fasting period if his general condition is good, whilst the weak and emaciated diabetic with much acidosis is kept in bed. It is wise, as emphasized by Joslin,¹⁰ not to withdraw all food abruptly. In order to anticipate possible danger from acidosis, a modified diet, with fat excluded, is first of all employed. In severe cases with a strong diacetic acid reaction protein may next be withdrawn for forty-eight hours and carbohydrate food finally eliminated. As a rule, however, it is sufficient to place the patient for forty-eight hours on a mixed diet rendered fat-poor by the exclusion of butter, cream, meat-fat, etc.

The actual fast then follows, mitigated by the administration of tea or coffee (without milk, sweetened by saccharin if necessary), water and soda-water as desired, and a quantity of clear soup (beef-tea, bovril, etc., skimmed of fat) not exceeding 10 to 20 ounces per diem. Actual hunger is allayed by the use of substances such as biscuits made of agar or bran, which are practically devoid of nutritive contents. Alcohol to the amount of from 1 to 2 ounces daily may be allowed during the period of meagre diet, although its use is not approved by all authorities.

* As Graham¹⁰ points out, in using Fehling's test equal quantities of urine and mixed solution should be boiled separately, mixed when boiling, and not reheated.

Fasting is continued until the urine is sugar-free, and for at least twenty-four hours afterwards. The duration of the fast should be determined, where possible, not alone by examination of the urine, but by the measure of the sugar content of the blood. Hyperglycaemia frequently persists after the urine is free. Tests based on glycosuria alone, as Allen³ has shown, may yield a false standard subject to considerable error on account of the wide variations of renal permeability. For this reason the fast is extended to a period of not less than twenty-four hours after the urine is free, when the blood sugar as well may be hoped to have reached the normal. Leyton²⁰ states that the disease is not arrested unless the diet is reduced until the blood sugar is normal.

The disappearance of sugar indicates that the overtaxed internal secretions of the pancreas have been sufficiently restored by alimentary rest to permit the complete assimilation of sugar formed from the body tissues. It is expected that later, by judicious exercise, these functions will further become strengthened and able in addition to utilize the sugar contents of a carefully adjusted diet.

A mild case will become free in twenty-four hours; in severe cases the process may occupy many days. Allen¹¹ originally employed continuous fasts, extending in some cases to as long as ten days. Joslin¹² shortly afterwards substituted the more universal method of intermittent fasts, restricted to three or four consecutive days, interrupted by a few days of low carbohydrate-protein diet, and repeated if necessary. This alternate process of limited fasting with interpolated food days may require several repetitions before freedom from sugar is produced. Attainment of the aglycosuric state is accompanied by prompt cessation of the more distressing symptoms of diabetes, such as thirst, dryness of the mouth, polyuria, excess of appetite, pruritus.

Usually the diabetic reaction disappears together with the sugar. Some moderate diabetics exhibit slight persistence of this reaction so long as they are starved. This may be disregarded, for it will usually cease when feeding with carbohydrates is begun and nutrition reaches a certain level. Once the patient is free there follows the infinitely more difficult task of arranging his subsequent diet. The first step is to introduce carbohydrates, which even the severest diabetic retains some power to burn. This is best done by allowing a limited quantity of green vegetables, such as French beans, spinach, lettuce, or other "greens" (see Table B, Group 1). These are poor in nutritive value; when cooked three times in different waters they contain less than 2 per cent. of carbohydrate. At the same time they are rich in cellulose, which furnishes a comfortable feeling of fullness and stimulates intestinal peristalsis.

The first addition to the diet, then, is made in the form of from 5 to 10 or 15 oz. of thrice-cooked greens, each ounce of which represents approximately one gram* of carbohydrate. This ration is increased by 5 to 10 grams daily until sugar appears. In order to avoid the risk of sudden flooding of the tissues it is necessary to divide the food and distribute it in three or four portions during the day (for instance, at breakfast, lunch, tea, and dinner). Occasionally glycosuria will recur immediately vegetables are introduced; this phenomenon, which probably is the result of unpreparedness of the tissues for a carbohydrate influx, need not be viewed with alarm, since it ceases as a rule on increasing the quantity of this food. A very few diabetics, according to Joslin,¹² reach a daily tolerance level of between 200 and 300 grams of carbohydrate; most have a tolerance below 100 grams; the majority below 50 grams. In severe cases the attainment of a tolerance of between 40 and 50 grams may be considered satisfactory, provided a sufficient tolerance for protein and calories is at the same time achieved.

On the third day, whilst the carbohydrate tolerance is still being tested, about 20 grams of protein are added to the dietary. Three eggs will furnish this quantity. A further daily addition of 10 to 20 grams is made in the form of other predominantly protein foods, such as white of egg, lean meat, fish, etc. The increase is maintained until the patient receives from 1 to 1½ grams of protein per kilogram† of his body weight. Thus a patient weighing 110 lb., or 50 kilos, would be allowed some 50 to 70 grams of protein daily, provided he remains

sugar-free. Some severe diabetics are unable to tolerate so high a level of protein, and will develop sugar on an excess of this food material as surely as on an excess of carbohydrates. The adjustment of the protein allowance consequently must be carefully made.

A small amount of fat has of necessity been included in the food during the process of building up the protein allowance, but until a relatively high carbohydrate ration is reached this element is restricted in order to minimize any tendency to the production of acetone bodies. When, however, the protein limit has been approached a sufficient carbohydrate standard reached, and the blood sugar is normal, fat as such is introduced into the diet. It is convenient to commence with an ounce of thin cream (containing 6 grams of fat). Thereafter from 10 to 20 grams of fat are added daily in the form of butter (containing some 25 grams to the ounce) and other predominantly fatty foods. Daily additions are made either until the body weight becomes stationary, or until the total caloric value of the diet reaches a level of about 25 calories* per kilogram of body weight—provided that sugar does not recur and there is no increase in acidosis. Cammidge¹³ recommends that the final proportion of fat to carbohydrate in the diet shall not exceed a ratio of two grams to one.

An excess of total calories is the commonest mistake of inexperience, and is responsible, as Allen³ states, for much unfavourable progress and mortality in diabetes. The patient, who has grown thin during treatment, is generally anxious to put on flesh by increasing his fat intake. This desire must be curbed lest any good results hitherto achieved should be completely nullified. As Geylin¹⁴ points out, apart from immediate ill effects such as the possible precipitation of acidosis, fat exerts a depressing effect on carbohydrate metabolism and prevents a high degree of tolerance being maintained. These effects are the more dangerous in that they may be delayed and insidious in onset. Many a patient who up to this point has reacted well will relapse if he is permitted an excess of fat. Allen¹⁵ has shown experimentally that the assimilative powers of diabetic animals rise and fall inversely with a gain or loss of weight dependent upon fat ingestion. In some manner an increased fat supply or formation of adipose tissue imposes a burden on the functional capacity of the islands of Langerhans.

It follows that although sufficient fat should be allowed to prevent further loss of weight, or even to permit of a gain of a few ounces per week, any material increase in weight which recalls sugar or acidosis must be checked by fasting. The patient must be schooled to accept the sparseness of permanent under-nutrition as a substitute for the emaciation of disease. In most cases he will ultimately tolerate a greatly increased carbohydrate intake if his fat is kept low.

Throughout the treatment a twenty-four hours' specimen of urine is examined daily, and the return of the slightest trace of sugar is a signal for fasting. Usually a single fast-day will suffice to clear up the sugar. The diet thereupon should comprise not more than 50 per cent. of the food contents consumed just prior to the relapse. Further additions are cautiously made, and the maximum intake restricted for weeks to a level of from 10 to 20 per cent. lower than that previously reached.

During the course of treatment, and after its completion, the patient is subjected to a restricted diet on one day in each week. He is required to fast on every seventh day if his condition is severe, or merely to reduce his food to half-rations if the case is a mild one.

It is clear that the details of treatment must vary in accordance with the type of disease. Great difficulties are experienced in the treatment of the extremely emaciated and cachectic patient. It may be necessary, as Allen¹ expresses it, in such cases to juggle carefully the various factors of glycosuria, acidosis, and bodily maintenance. In some a prolonged period of almost pure protein nutrition may be required before the pancreatic function is sufficiently restored to permit the assimilation of even so small a quantity of carbohydrate as 10 or 15 grams without the return of glycosuria. In others, the supply of

*A calorie = the amount of heat required to raise the temperature of 1 kilo of water 1° C.

1 gram carbohydrate = 4.1; 1 gram fat = 9.3; 1 gram protein = 4.1 calories.

In practice it is convenient to ignore the decimal places.

* 30 grams = 1 oz.

† 1 kilogram = 2.2 lb.

pancreatic hormone may be inadequate to dispose of the minimum supply of food materials—namely, those derived from the patient's own body stores; glycosuria under these circumstances is beyond control. Again, in the severest forms of diabetes the patient may be unable to tolerate sufficient fat in his diet to subserve the needs of a comfortable existence, whatever the proportion of other food materials tolerated. In such cases although, as Janney¹⁶ points out, the only danger-free existence for a diabetic is a sugar-free existence, the persistence of a moderate degree of glycosuria is preferable to a condition of chronic starvation.

Fortunately a course of dieting, conducted broadly on the lines described, in the great majority of instances will achieve brilliant results in a few weeks. As Joslin²¹ says, there are now few cases of diabetes for whom little hope remains. The earlier in the disease treatment is begun the better will be the results. In many cases of young diabetics formerly pronounced hopeless, with an expectation of only a year or two of life, the patient after treatment is able to resume his ordinary routine of existence with an increased tolerance for starchy foods. His symptoms are relieved; he regains energy, resistance, and a sense of hopefulness and well-being. His life is prolonged, and risks from the common diabetic complications of gangrene and coma are greatly diminished. He is provided with a dietary offering a wide range of variety which robs it of monotony. His food intake, it is true, is restricted as to quantity; but it is known that the diabetic can lead an active life, maintaining his weight, on much less food than a healthy person of the same weight.

An important factor in treatment is the education of the patient in the rationale of the methods employed. His intelligent co-operation is essential at all stages. As Leyton¹⁷ says, the patient below a certain standard of intelligence and possessing no self-control cannot be treated. The intelligent patient is readily taught to examine his own urine and to fast if sugar recurs at any time. He is instructed in the elementary principles of dietetics and the significance of food values. He is shown how his rations are weighed and measured and learns to estimate with sufficient accuracy his food portions, so that he is able after a time to dispense with weighing scales. He is given a limit which he must not exceed with regard to the various food elements. This limit, in order to provide a margin of safety, is placed at some 10 to 20 per cent. below the actual level he has been found capable of tolerating. Lists are supplied to him (see Tables A and B) showing the food value of the commoner articles of diet and their interchangeability. From these he is taught to select his menus within the limits prescribed. Finally, he is told not to gain weight but to follow a dietary just sufficient to cover his body needs as indicated by the weighing machine.

PROGNOSIS.

Under former systems of dieting none but the mildest cases were rendered sugar-free for more than very brief periods. Even moderately severe diabetics, in spite of the most rigorous carbohydrate restrictions, remained glycosuric and subject to constant danger from gangrene or coma. The immediate outcome of modern methods is the arresting of the progress of the disease with consequent prolongation of life, whilst the risk of disastrous complications is enormously lessened. Acute diabetes has been largely abolished.

Of ultimate results it is too early to speak with certainty, for the method is yet in its infancy. When the new treatment was first introduced it was hoped that if the patient could be kept sugar-free for a prolonged period tolerance would gradually improve and approximate the normal. In mild diabetes this expectation appears to be justified in the case of experimental animals; in the case of the human diabetic the point is still undecided, and many years of observation will be needed before it can be settled. So far as the severer type of human diabetes is concerned, sufficient data are available already to show that the immediately favourable results are not always permanent. In some grave cases, in spite of most careful dieting and the avoidance of overstrain from an excessive food intake, the disorder is clearly of an inherently progressive character and spontaneously advancing. Even in mild cases which have remained well for years under treatment, the supervention of

intercurrent conditions such as septic infections, influenza, pyorrhoea, or even trivial ailments and emotional disturbances, may produce metabolic set-backs of a grave and permanent character not amenable to further fasting and suitable dieting.

The modern dietetic treatment of diabetes is not a cure in the true sense, since it represents the sparing rather than the restoration of a weakened function. As Allen¹⁸ says, "Any positive means of augmenting the endocrine pancreatic function even by a little would give therapeutic results far surpassing those of the negative plan of sparing the function by diet." Some day we may hope to be able to stimulate or strengthen the pancreatic function in a direct manner, and so to supersede palliative measures by actual cure.

TABLE A.: GENERAL.

	Carbo- hydrates. Grams.	Fat. Grams.	Protein. Grams.	Calories.
1 oz. "greens" ...	1	—	0.3	6
1 oz. oatmeal (cooked) ...	3	0.5	1	20
1 oz. milk ...	1.5	1	1	20
1 oz. thin cream ...	1	6	1	60
1 oz. butter ...	—	25	—	225
1 oz. fat ...	—	30	—	270
1 oz. bacon (average) ...	—	15	5	155
1 oz. meat (lean) ...	—	3	8	60
1 oz. ham (cooked) ...	—	7	6	90
1 oz. fish ...	—	—	6	25
1 oz. sardines (tinned) ...	—	6	7	80
1 oz. broth (clear) ...	—	—	0.7	3
1 oz. bread (white) ...	15	0.5	2	70
1 egg (hen's) ...	—	5	6	70
1 oz. white of egg ...	—	—	4	16
1 oz. calf's foot jelly ...	5	—	1	25
1 oz. Dutch cheese ...	1	5	11	95
1 oz. Cheddar cheese ...	1	13	9	160
1 oz. almonds ...	5	16	6	200
1 oz. walnuts (dry) ...	3	25	6	160
1 oz. alcohol ...	—	—	—	200

TABLE B: VEGETABLES AND FRUIT.

- GROUP I.—Containing average 1 gram carbohydrate per ounce:
French beans; spinach; asparagus; sea-kale; brussels sprouts; cabbage; cauliflower; vegetable marrow; pumpkin; lettuce; cucumber; celery; watercress (cooked) tomatoes; rhubarb.
- GROUP II.—Containing average 3 grams carbohydrate per ounce:
Onions; turnips; carrots; artichokes; leeks; radishes; watercress (raw); beetroot; mushrooms; lemons; strawberries; water-melon; peaches; oranges; pineapple.
- GROUP III.—Containing average 5 grams carbohydrate per ounce:
Green peas; broad beans; macaroni; apricots; pears; apples; nectarines; cherries.*
- GROUP IV.—Containing average 7 grams carbohydrate per ounce:
Boiled potatoes; haricot beans; rice; fresh figs; bananas; plums; grapes.

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* Show wide seasonable variations in carbohydrate content.