

of fat and from 400 to 500 grams of carbohydrate would cover the requirements, and these are about the average proportions of each naturally used in health.

In the case of the diabetic patient the problem is not so simple, because the carbohydrate foods in such cases are rendered more or less inefficient for the reason that they are more or less—indeed, sometimes totally—excreted in the urine as unused or waste material. We can very readily perceive what a serious obstacle is placed in the way of supplying the normal amount of nutritive material by the withdrawal of the whole or even a considerable proportion of the carbohydrate group, constituting as it does normally at least 60 per cent. by weight of the whole daily ration. Fortunately, however, in many cases of diabetes—in fact, in most cases after middle life—a very considerable capacity of utilizing carbohydrates remains. In such cases we may, therefore, give more or less carbohydrates, and the deficiency in heat or force units remaining may usually be made good by increasing the proteids. I have frequently in such cases been able to give from four to six ounces of ordinary table bread daily without causing sugar to appear in the urine, and this represents a calorie value of from 400 to 500 units.

As previously indicated, there exists among diabetic patients the greatest difference in individual capacity for utilizing the carbohydrates. Some can take and utilize comparatively large amounts, as has just been shown; others very much smaller amounts, while a few cannot take carbohydrates in the smallest quantity without their immediate escape by the urine in the form of sugar. Not only this, but also very wide oscillations of the tolerance for carbohydrates occur in the same case at different, and sometimes very briefly separated periods. We are not always able to fix upon the precise cause of these oscillations, because we are not entirely familiar with all the influences which lead to them, but they furnish us one of the strongest reasons for constant vigilance over the balance of metabolism. Again, some cases may ingest 200 grams of carbohydrate food and lose 45 or 50 grams by the urine, leaving available for the system 150 grams, nearly 450 units. In such case it is clearly good policy to allow a moderate proportion of carbohydrate food, both for its value as a strengthening and building material and for the variety it offers the patient in his daily ration.