

less content to interpret the liver as an organ for secreting bile (now regarded as for the most part a waste-product), Bernard detected a much more important activity, namely, that the liver utilizes the sugar brought by the blood from the food-canal to build up a reserve product, glycogen or animal starch.

Thereafter came many interesting advances, gropings, and stumblings, but in 1889 a step was taken by Minkowski so firm and definite that it gave stability to a whole series of similar investigations. This step concerned the pancreas, which is well known to be a most important digestive gland, secreting a juice which attacks all the three kinds of food—carbohydrates, fats, and proteids. Minkowski demonstrated that phenomena of diabetes followed extirpation of the pancreas; and as one of the features of this disease is the appearance of sugar in the urine there was here an opportunity for precisely proving and exactly measuring at least one of the results of tampering with the organ in question. In short, Minkowski proved that the pancreas, besides being a digestive gland, exerts an essential influence on the blood which passes through it.

Minkowski's discovery gave an impetus to the study of other organs, notably the thyroid gland. Various theories had been hazarded in regard to its function, but probably the most general opinion was that it was not of any great importance. Gradually, however, observations accumulated showing that degeneration of this organ was associated with goitre, Derbyshire neck, and cretinism; that its absence was the structural fact implied by the disease of myxœdema; and that all these diseased states could be ameliorated or temporarily cured if the patient compensated for the degeneracy of his own organ by eating that of sheep, &c., or receiving injections of the thyroid extract of his companion mammals.

We had smiled at the ancients for recommending the coward to eat the lion's heart, and for many similar prescriptions; yet here were the cautious nineteenth-century physicians injecting thyroid extract in order to cure myxœdema, or to stimulate the retarded de-