

## Professional Review.

CLAUDE BERNARD.

A new volume of the Masters of Medicine Series is always welcome, and "Claude Bernard," by Sir Michael Foster, K.C.B., is no exception to the rule. It is published by Messrs. T. Fisher Unwin, of Paternoster Square, and the price is 3s. 6d. The name of Bernard, though less familiar to the laity in this country than that of many scientific men of our own nation, is held in esteem by his medical colleagues as that of a scientist in the front rank. Of humble origin—his father being the proprietor of a small estate near Villefranche, where he supported himself on the proceeds of the wine made from his vines—Claude Bernard, though unpretentious and unassuming, made so deep an impression upon his country by his brilliant career, that when he died he was laid to rest with all the pomp and ceremony of a public funeral at the expense of the State, a token of national esteem previously given to none but princes, statesmen, or soldiers.

His first great discovery was the glycogenic function of the liver. The terms glycogen and glycosuria, are now familiar to every nurse, and are understood more or less according to the intelligent interest which she takes in her cases; but before Bernard made his brilliant experiments, the very existence of glycogen was unknown. At that time, it was widely held that a radical chemical difference existed between animals and plants, in that the plant, out of inorganic elements, built up the organic compounds such as carbohydrates, fats, and proteids, which formed its chemical basis. The animal, on the contrary, received these ready-made organic compounds into its body and destroyed them, and resolving them again into inorganic constituents, used them for its support. The plant, in point of fact constructed, while the animal destroyed, never building up, or manufacturing fat, carbohydrate, or proteid; any of these constituents present in the animal body being brought to it in its food.

These being the prevalent views, Bernard's discovery is the more remarkable. He took up a research on the physiology of sugar, partly because he intended to study all the three great classes of food stuffs, carbohydrates, fats and proteids, and he began with sugars because they were the simplest; partly because he was fascinated by the problems presented by diabetes, and wished to discover the cause of the excess of sugar in the blood, and so to find a remedy for it.

He had already demonstrated that cane sugar is converted in the alimentary canal into dextrose before being absorbed. What he desired to find out was what became of the dextrose, and in the course of experiments in this direction, he made the then surprising discovery that though no dextrose was present in the alimentary canal, or portal blood, it was still present in large quantities in the blood of the hepatic vein, and careful verification of this phenomenon established beyond doubt the fact that "the liver is a sugar producing tissue, it manufactures sugar out of something which is not sugar, and within it lies the secret of diabetes."

Further, it was thus demonstrated, that animals, instead of living wholly on the food which they assimilate and destroy, also construct, by means of "internal secretion," thus supplying, for their support and nourishment, constituents which are not taken in in the form

of food. Besides discovering the existence of glycogen, Bernard showed that while its formation is a vital act, its conversion into dextrose is brought about by a process of fermentation independent of life, and that the blood contains a ferment capable of effecting the transformation. He thus not only began, but completed the discovery connected with this substance.

Another fruitful research made by him was an investigation into the uses of the pancreas, which at this time were very little known. He showed that the action of the pancreatic juice was threefold. It emulsified and split up into fatty acids and glycerine the neutral fats discharged from the stomach into the duodenum, it had a powerful action on starch, converting it into sugar, and lastly, that the bile having precipitated the products of the gastric digestion of proteid matters, and put an end to peptic changes, the pancreatic juice acted subsequently on these precipitated matters, as well as on the proteid constituents of a meal which had escaped solution in the stomach, that, in fact, it had a powerful influence on both carbohydrates and proteids, and that two acts of digestion perfectly distinct take place, one in the stomach, the other in the intestine, one duly following the other, "Gastric digestion is only a preparatory act."

Another fact which is strongly brought out in the work under consideration, is the dominant effect of the nervous system in influencing disease. It is one with which all observers of pathology must be necessarily acquainted, and is almost universally considered in the treatment of disease, but its scientific foundation is by no means so commonly understood. Limited space forbids us to enlarge upon this point, but we refer those of our readers who are interested in this question to the book itself.

The government of the blood vessels by the nervous system is well known, and a simple demonstration is to hand in the faintness, and even occasional death, which are the result of a sudden shock. The influence of the nervous system on animal heat is less well understood, though this also is frequently observable in everyday life.

It was Bernard who made the discoveries in these directions, as well as upon vascular changes, upon which much of our present knowledge is based.

For a long time Bernard held aloof from social distinction, which he in no way cared for, but eventually he was invited by the Emperor Louis Napoleon to attend the festivities at Compiègne, and the Emperor was so fascinated with him that he subsequently gave instructions that he should have "all that he wanted." Bernard's reply to the Minister who asked what he could do for him is characteristic: "For myself I want nothing, but my science is in great want of proper laboratories."

In conclusion, the author of this interesting volume asks "What were the qualities of Bernard's mind and character?" and he defines the most important as an imagination ever on the alert. He always worked under the guidance of some leading idea, and he himself said, "He who does not know what he is looking for will not lay hold of what he has found when he gets it." Another conspicuous trait was "the readiness with which he turned aside from an inquiry to follow out a new line suggested by some intercurrent fact," and, lastly, his success was largely due to his marvellous manual dexterity.

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