

To the intelligent comprehension of the question it will be necessary to briefly inquire into three points:—

1st. What tissue or tissues of the human fabric more immediately concern the performance of the functions and the continuance of life?

2nd. What kind of food is best adapted to the production and support of such tissue?

3rd. Does extract of beef contain such food in due, or any proportion?

As to the first question, all science teaches us that fibrous tissue largely predominates in the higher order of animals more especially in man. It is contained in bones, tendons and ligaments; nerves and blood vessels are mainly composed of it; the connecting and various lining membranes are almost purely fibrous; and lastly, the great muscular system is made up of bundles of fibres, including the heart itself, which is to the animal what the main-spring is to the watch. To enlarge here would sound too much like demonstrating a self-evident proposition. It is only necessary to add, that every one must be impressed with the important part which fibrous tissue plays in the animal economy, and the paramount necessity of promoting its development and supplying its waste.

The second question is equally easy of solution, since science happily confirms what the experience of ages points out as the most nutritious kind of aliment. In this department of investigation, chemistry has opened up a wide field, the importance of which, to the intelligent physician, is daily becoming more and more apparent. No argument need here be advanced to show that it is from *nitrogenous* substances that muscle and the other fibrous tissues are developed, and the strength of the body maintained, since both observation and science have long ago placed these facts beyond the domain of dispute. *Non-nitrogenous* substances, therefore, do not directly impart strength, or vitality to the system, although useful enough as auxiliaries. It is also admitted on all hands that next to milk and raw eggs, or eggs heated to a point short of coagulation of the albumen, the flesh of animals is the most easily assimilated of all food, being already elaborated and requiring but little change before entering upon its final destination. If to this we add concentration of nutritive power, we can readily see why meat of all kinds, and beef in particular, should be esteemed invaluable as an

article of food. It is on these theories that the extensive use of beef tea and extract of beef is based.

I now come to the consideration of the question, whether extract of beef contains the *azotized* or *nitrogenous* elements of beef. According to the foregoing conclusions—and I have taken nothing for granted, unless it can be shown to be nitrogenous in its ultimate elements, it cannot nourish the system nor impart direct strength to it. By this test, extract of meat must stand or fall. There is not one law for extract of meat, and another law for all other substances. The law is the same in all cases and scrupulously impartial. At the beginning I stated that Baron Liebig was the first to recommend the use of extract of beef. It would appear, however, that he never recommended its *abuse*, for we find that a short time before his death he publicly repudiated ever having stated, that extract of beef was food capable of sustaining life. A synopsis of the paper in which the veteran chemist vindicated his opinions, is given by the *London Medical Record* of April 16th, 1873, and affords highly important evidence on a question on which he was, perhaps, better qualified to speak than any one else.

He wishes it to be distinctly understood that "he never asserted that beef tea and extract of meat contained substances necessary for the formation of albumen in the blood or muscular tissue;" and "that by the addition of extract of meat to our food, we neither economize carbon for the maintenance of the temperature, nor nitrogen for the sustenance of the organs of our body; and that therefore it cannot be called 'food in the ordinary sense,' but we thereby increase the working capabilities of the body and its capacity to resist exterior injurious influences, *i. e.* to maintain health under unfavorable circumstances." The editor of the *Record* summarises the remaining contents of the paper as follows:—"Those constituents of meat which are *soluble* in boiling water take no part in the formation and renovation of the muscular tissues, but by their effect on the nerves they exercise a most decided influence on the muscular work, wherein meat differs from all other animal and vegetable food. He (Liebig) therefore places extract of meat, (essence) and with it tea and coffee, under the head of 'nervous food,' in contradistinction to articles of 'common food,' which serve for the preservation of the temperature and the restoration of the machine. Beef tea and ex-