

There are yet other uses that this nutriment is said to subserve: but they are of a more questionable character than the preceding, viz.:

8. Fat maintains and supplies the heat of the body. Liebig was of opinion that this was its sole use when not taken in surplus quantity; having entertained the idea that fat was intended to be burned in respiration and to sustain the animal temperature by its combustible elements uniting with the oxygen of inspiration—that the fat was transferred to the blood and was burned at the lungs like the oil in a lamp, or the coke in a steam engine. I have no doubt that heat is generated partly by the oxidation of fats—but, neither can I believe that this is their sole use to the body, for we have seen the denial of this in what has been before stated, nor can I consider this consumption to be the only cause of calorification, for as in former lectures it was told you, the proteine compounds in becoming transformed develop heat, and the same is true of metamorphosis generally. Liebig in his exclusiveness evinces a great mistake, into which he has fallen, in regarding animal heat as too independent of other processes.

9. In excess it serves the purposes of stored up nutriment in times of scarcity. This opinion, I think, emanated with John Hunter, who regarded fat as a provision stored away for an emergency in case of failure in the ordinary supply of food. Accordingly we find the adipose tissue the first to disappear during starvation or during exhausting and protracted diseases. Should it happen that all the fat has disappeared, the proteine tissues next are devoured; hence the mucous membranes suffer from a disintegration of their epithelium, as is constantly witnessed in the sore throat and diarrhoea in the last stages of phthisis, and also in the mucous membrane of the stomach. Lehmann denies that fat is ever stored up nutriment; without, however, as far as I can see, sufficient reason. Upon his own admission, it disappears under circumstances of starvation, and if, as he allows, it discharges an essential operation in nutrition, I cannot discover any discordancy in ascribing to it the sustenance of the body when the supply of other nutriment is withheld. The chief obstacle in his way to receiving the fact is the difficulty of understanding how a vesicular membrane like adipose tissue can be amplified or resorbed; but whatever may be the mode by which this happens, there can be no question that it is accomplished, and it is equally certain that variations in the amplitude occur synchronously with excessive and defective feeding. A further impediment to him was to understand how the resistance to the exit of oil from the cells caused by the moisture which surrounds the walls could be averted; but this has been latterly removed by Matteucci, who has shown that olea-