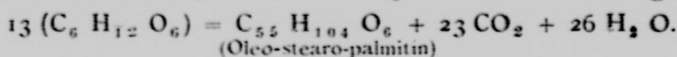


During this period (59 days) the amount of protein digested was sufficient to form at the most 17.1 lbs. of fat, and the fat in the food which was assimilated amounted to only 3.3 lbs., so that the total possible amount of fat from protein and ready formed fat was 20.4 lbs. The milk from the cow during that period contained 38.8 lbs. of fat, so that at least 18.4 lbs. of fat must necessarily have been derived from carbohydrates.

Strange it seems, does it not, that I should be proving to you that fat *must* be derived from carbohydrates without having first told you whether it is *possible* for carbohydrates to be transformed into fat.

In this I have followed the empirical method which first establishes a fact and then endeavours to explain it.

The observations of Hanriot and Richet, two French scientists of wide reputation, furnish indirect proofs of the transformation of the carbohydrates into fat. These observers found that with the administration of the carbohydrate food there is a greatly increased output of  $\text{CO}_2$  without a corresponding increase of oxygen intake. This fact Hanriot explained by a transformation of carbohydrates into fats in conformity with such an equation as the following:—



Fat therefore *can* and *is* derived from the three distinct classes of compounds absorbed for the purpose of nourishing the body. We can satisfactorily explain how the fat of the food can be transformed into the fat of the body, but how this formation occurs from protein and carbohydrates is still a problem unsolved. It is one of those secrets which the Creator has not yet revealed to any human being. May we not hope that, as there are at present so many scientific investigations in the field of physiological chemistry in various parts of the civilized world, there may be worked out ere long a satisfactory solution of these complex problems?