

Protein is a class of substance characterised by the presence in its composition of nitrogen to the amount of about 16 per cent. Like the carbohydrates and the fats it contains carbon, hydrogen and oxygen, but it stands apart from these two on account of its nitrogen content. Carbohydrates consist of those substances like sugars, starch and fibre, which are composed of carbon, hydrogen and oxygen united in such a way that the relation of the latter to the former is in the ratio of one atom of the latter to two atoms of the former, as in water.

Fat is a substance composed of exactly the same elements as the carbohydrates, but whose atoms are arranged differently in the molecule. The atoms of hydrogen to those of oxygen are not in the same proportion. It contains no nitrogen and is thus quite distinct from protein.

Now do you believe that fat as it is found in the animal body is a simple compound of always exactly the same definite composition? If so, allow me to inform you that you are mistaken. Fat is not a simple compound, but a mixture of three, sometimes more compounds of analogous nature. The three principal compounds are stearin, palmitin and olein. The first two are solid at ordinary temperature and the latter is a liquid. The amount of olein is always more or less in excess of the other two, and it with the help of the heat of the living body keeps them in the liquid form. Olein really acts as a solvent towards stearin and palmitin. You must have noticed that in the living body fat exists in the liquid state. As soon as death occurs there is a gradual falling off in the temperature of the body, *rigor mortis* sets in, and the fat becomes solidified. The mixture of those three substances is more or less firm according to the smaller or greater amount of olein it contains.

I told you that fat is one of the component parts of food. You are perhaps anxious to know what part it plays in the nutrition of the body, and what transformations it undergoes previous to becoming an integral part of the same.

Fat is one of the best producers of heat, in fact, it is the most powerful heat producer of all the food stuffs. A glance at its composition will convince you as to the truth of this assertion. The composition of one of the fats (olein) is expressed by the