

acids. With phenolphthalein the reaction was invariably acid all the way, whilst it was alkaline to methyl orange, thus showing that the acid reaction was due to a very weak organic acid probably to dissolved acids set free from fats. The alkaline reaction indicated by methyl orange can only be due to weak organic acids combined with alkalies *i.e.* in all probability to dissolved soaps. Such a weak acid would not decompose the soap, and so the objection to the theory falls to the ground.

Another objection is that the amount of the alkali required for the saponification would simply be enormous. Munk reckons that to so combine with the fatty acids of 200 grammes of fat about 40 grammes of sodium carbonate would be required. Now a dog weighing 25 kilogrammes can easily digest from 200 to 350 grammes of fat in twenty-four hours. Supposing only 200 grammes are digested and that all this is absorbed as soap and glycerine, about 40 grammes of sodium carbonate will be required for the purpose; now the total blood only contains, in such an animal, alkali equivalent to 6 grammes of Na_2CO_3 . If the other fluids of the body be supposed to contain an amount of alkali equivalent to another 6 grammes, the total alkalinity is equal to 12 grammes of Na_2CO_3 .

In this objection Munk loses sight of the fact that during the process of absorption of fat as soap and glycerine and its subsequent synthesis in the epithelial cells, the alkali combined in the first portions of the soap absorbed is again set free immediately after absorption, and what is to prevent that alkali from being, in some way, in the natural course of circulation, brought back to the intestine there to unite again with some more fatty acid to form soap and thus keep up the continuous action of composition and decomposition!

Whatever may take place the consensus of opinion seems in favour of the theory that fats are absorbed as soaps and glycerine and reformed by synthesis in the epithelial cells and then deposited in the cells of the adipose tissue.

Another problem about fat which has puzzled many a physiologist is its origin. From which class of food compounds is fat derived?