there were such common tissues as cartilage, skeletal muscle, dermis, epidermis and feather germs. Thyroid occurred in grafts from either the right or left quadrant but not as yet from both quadrants of the same donor.

Similarly, right and left posterior quadrants appear to be essentially equipotent. The parts of the neural tube found in grafts from these regions were hind-brain and spinal cord. A well-formed tube or vesicle occurred less frequently than in the anterior halves and the nervous tissue was often disorganized. Notochord was associated with the nervous tissue in 53% of the cases. Heart, liver, mesonephros and the common tissues mentioned above were also found. Occasionally suprarenal gland occurred in grafts of one quadrant or the other.

In contrast to the equipotency of the right and left sides, there is a dissimilarity in the potencies of the anterior and posterior halves of Hensen's node. When either the 2 right or the 2 left quadrants were grafted on the chorio-allantoic membrane, it was found that the anterior quadrants had the capacity to form such structures as brain, eye, epiphysis and hypophysis; whereas the posterior ones gave rise to spinal cord (and possibly hind-brain), mesonephros and suprarenal gland. All 4 quadrants produced notochord and the usual tissues. It is believed that heart and liver may also be formed in all 4 areas but thus far they have been found in only 3 of the quadrants from the same donor.

In conclusion, it is evident that right and left anterior quadrants are equipotent, that the same holds true for right and left posterior quadrants but that the anterior and posterior halves of Hensen's node differ in their capacities.

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Changes in the Composition of the Red Blood Corpuscle During Fat Absorption.

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The composition of the red blood corpuscle may be altered physiologically by the simple expedient of feeding a fat, such as olive oil. The changes thus produced have been studied by Bloor,[1]

[1] Bloor, W. R., *Physiol. Rev.*, 1922, **2**, 92.

Knudson[2] and others and it has been determined that during fat absorption there is an increase in the lecithin content of the blood which runs more or less parallel to the change in total fatty acids, the increase being more marked in the corpuscles than in the plasma. As regards cholesterol, Knudson has shown that the esters of this substance increase in amount during fat absorption, particularly in the corpuscles, where normally little or no cholesterol is present in the ester form.

These changes have been considered of significance chiefly from the standpoint of fat transport and metabolism and the suggestion has been made that the red blood cells absorb the fat from the

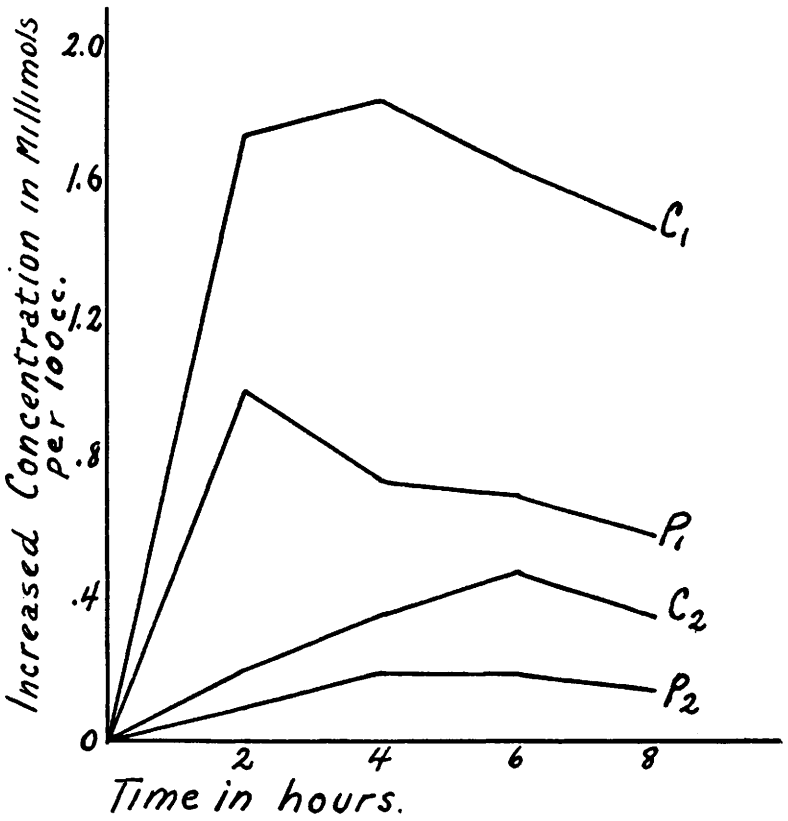

FIG. 1.

Effect of ingestion of olive oil in increasing the concentration of total fatty acids and of fatty acids in combination as phosphatide and cholesterol esters. C_1 = total fatty acid increase in the corpuscles; P_1 = total fatty acid increase in the plasma; C_2 = increased concentration of lecithin and cholesterol esters in the corpuscles; P_2 = increased concentration of lecithin and cholesterol esters in the plasma.

[2] Knudson, A., *J. Biol. Chem.*, 1917, **32**, 337.

plasma, transform it into lecithin and that thus the red blood corpuscles play a part in the transportation and metabolism of fat. Our interest in the problem has been in relation to the alterations in permeability of the red blood corpuscle accompanying changes in the composition of its lipid constituents. The frequently cited data of Knudson obtained in his study of fat absorption of dogs are of unquestioned accuracy, but their physiological significance may be made more apparent if represented in terms of molecular equivalents. At any time during absorption, the millimolar increase of cholesterol, present as esters, plus 2 x the millimolar increase of lecithin, obviously represent the increase, in millimols, of the fatty acid present in combination with cholesterol and as phosphatide. The remainder may be supposed to exist almost entirely as neutral fat and soap.

Figure 1 represents the data, based on these calculations, obtained in an experiment on a dog, weighing 7.5 kg., following the administration of 50 g. of olive oil. Knudson's data have been recalculated on the same basis and show close agreement to our own results. It therefore does not seem necessary to present all of our data in detail.

Conclusions.—During the absorption of fat the maximum increase in total fatty acid in the red blood corpuscle is usually observed at the end of 2 to 4 hours. The increase of the combined fatty acids is somewhat delayed, the maximum being noted usually at the end of 6 hours.

Though occasionally the increase in cholesterol esters and lecithin in the corpuscle is more marked, as a rule it represents less than 20% of the total increase in fatty acids.

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Distribution of Unsaturated Fatty Acids in the Blood During Fat Absorption.

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This paper considers the effect of the ingestion of olive oil on the distribution of unsaturated fatty acids in the plasma and corpuscles. Dogs were used as the experimental animals. After a 12 hour period of fasting, a specimen of blood was taken for analysis. A