test animals killed during the first few days there was a marked mitotic proliferation and enlargement of the mononuclear cells in the marginal zones of the Malpighian bodies. The nuclei became greatly enlarged and the cells developed an abundant basophilic cytoplasm and became identical in appearance with the specific large mononuclear cells of the acute splenic tumor of infection. There was no suggestion of a transformation of these cells into granulocytes in any of the animals. A precisely similar change constitutes the early stage of the acute splenic tumor occurring in bacterial infections. As the process advances, the specific mononuclear cells spread out into the pulp of the spleen of the antibody-forming rabbits precisely as in the acute splenic tumor of infection, and the histological picture becomes quite like that in a well developed acute splenic tumor.

Details of further studies dealing with the nature and characteristics of the specific cells as revealed by vital stains and motion pictures of tissue cultures, with the relation between the antibody titre and the degree of proliferation of these cells, with the lack of correlation between this reaction and granulocyte production in the spleen, and with a similar mononuclear cell reaction occurring in lymph nodes during infection and antibody formation will be presented in a separate report, together with a consideration of the literature. Here it is desired to point out only that the stimulus of foreign protein, uncomplicated by bacterial infection or bacterial substances or products, suffices to incite the specific mononuclear cell reaction characteristic of acute splenic tumor.

8091 P

Glycogen Formation After Various Fatty Acids.

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The transformation of the even-chained fatty acids into the acetone bodies has been demonstrated to be a quantitative one.[1] It was shown that such odd-chained fatty acids as propionic, valeric and heptoic did not give rise to appreciable amounts of the acetone

[1] Butts, J. S., Cutler, C. H., Hallman, Lois, and Deuel, H. J., Jr., *J. Biol. Chem.*, 1935, **109**, 597.

bodies. With the exception of the experiments of Ringer[2] on phlorhizinized dogs and the negative results of Eckstein[3] on glycogen formation in the white rat, no experimental evidence is on record regarding the glycogenic ability of the various fatty acids.

In the present tests the sodium salts of propionic, diacetic, butyric, valeric, caproic, heptoic, caprylic and nonylic acids were fed, by stomach tube, to rats previously fasted for 48 hours in doses equivalent to 1 mg. (calculated as acetone) per sq. cm. of body surface. In series 1 the rats were killed 6 hours after the administration of fatty acids: in series 2, seven hours after such administration. The average results on liver glycogen in series 1 are as follows: Control, (10 animals) 0.27% (Range 0.11-0.71); Propionic (9) 1.36% (0.21-1.86); Valeric (10) 0.69% (0.51-1.06); Diacetic (10) 0.18% (0.12-0.22); Butyric (9) 0.30% (0.20-0.46); and Caproic (10) 0.16% (0.09-0.22). In series 2 the results were as follows: Control (9) 0.18% (0.07-0.35); Valeric (10) 0.64% (0.27-1.16); Heptoic (10) 1.02% (0.63-1.54); Nonylic (10) 0.83% (0.43-1.50); Caprylic (10) 0.25% (0.13-0.45).

It is apparent that the odd-chained fatty acids, valeric, heptoic and nonylic, give rise to approximately the same amount of glycogen in the liver as propionic acid. This indicates that the process of beta-oxidation of the odd-chained fatty acids is fairly quantitative. On the other hand, the even-chained fatty acids such as diacetic, butyric, caproic and caprylic are unable to form appreciable amounts of glycogen.

8092 C

Extraction of Estrin from Female Urine After Acidification with Various Acids.

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In devising a method for the assay of any hormone, practicability and accuracy are the two important factors to be considered. It is more practicable to make assays of estrin from urine than from blood. Estrin assays were made by the method of Mazer and Gold-

[2] Ringer, A. I., *J. Biol. Chem.*, 1912, **12**, 511; 1913, **14**, 43.

[3] Eckstein, H. C., *J. Biol. Chem.*, 1933, **102**, 591.