in mating within 12 hours after the second treatment. The animals were killed on the ninth or tenth day of pregnancy. The number of uterine implantations found on the ninth or tenth day was between 19 and 29. Recovery of normal fetuses at this time has not been constant, because of failure of fertilization or implantation in some cases. Another group of similarly treated animals will be permitted to go to term.

[1] Smith, P. E., PROC. SOC. EXP. BIOL. AND MED., 1926, xxiv, 131.
[2] Smith, P. E., and Engle, E. T., *Am. J. Anat.*, xxxiv, No. 2.

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Glycogen of the Edible Mussel, Mytilus Edulis, L.

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Whether or not all glycogens are identical has been investigated repeatedly,[1] but no general agreement has been reached. The report by Samec and Isajevic[2] that dog-liver glycogen contains 0.721% P_2O_5 suggests the possibility that the question of the identity of all glycogens may be solved by ascertaining their respective phosphorus contents. The purpose of the present investigation was to compare the phosphorus content of *Mytilus* glycogen with that of the glycogen examined by Samec and Isajevic.

Samec and Isajevic give no information concerning the method by which their glycogen was prepared. The *Mytilus* glycogen used in the present investigation was prepared by the method of Pflüger, as modified by Starkenstein and Henze.[3] In addition, it was repeatedly precipitated from slightly acidulated solutions. Difficulties were encountered in filtration so that the material was unavoidably exposed for a long time to strong KOH. The glycogen finally obtained had a P_2O_5 content of 0.1168% as determined by the method of Embden and an ash content of 0.25%. It was white and contained iron, calcium and phosphorus.

Certain investigators have obtained glycogen free from ash. The attempt was, therefore, made to remove the ash of *Mytilus* glycogen by electrodialysis with ultrafiltration in a Bechold-König apparatus, using a 10% acetic acid-collodion solution for the membranes. Dialysis was continued until the readings of the ammeter connected with

the apparatus were constant, which took 4 to 5 hours. The dialyzate contained phosphorus and calcium. Samec and Isajevic also electrodialyzed glycogen and found that it separated into a sol and a gel layer, the material in the sol containing more than five times as great a percentage of P_2O_5 as the material in the gel. *Mytilus* glycogen did not separate into two layers in this way, perhaps because during dialysis the direction of the current was frequently changed. The solutions obtained could not be precipitated with alcohol until after the addition of a few drops of a 1% ammonium acetate solution. Three samples were prepared from the same original glycogen preparation. One sample had an ash content of 0.0827% and a P_2O_5 content of 0.0343%; another an ash content of 0.0467% and a P_2O_5 content of 0.0368%. A third had a P_2O_5 content of 0.0361%. The ash gave a test for iron due probably, as Gatin-Gruzewska[4] suggested, to the prolonged treatment with KOH, since even the best KOH contains a certain amount of iron.

The difference in the P_2O_5 content and in the behavior of the phosphoric acid in electrodialysis of *Mytilus* glycogen and of the dog-liver glycogen of Samec and Isajevic is not necessarily significant. It remains to be investigated whether or not prolonged treatment with KOH removes P_2O_5 from glycogen or changes glycogen itself. Until that has been ascertained, it is uncertain whether the observations here presented indicate that, as seems probable, dog-liver and *Mytilus* glycogen are in fact different or merely that the differences herein recorded are artifacts due to differences in methods of preparation.

By the method of Embden, inorganic H_3PO_4 can be precipitated in the cold in presence of organic H_3PO_4. An attempt was therefore made to determine, if possible, how much of the phosphorus in undialyzed glycogen was organic and how much inorganic. No difficulty was anticipated, since phosphorus was readily detected by Embden's method in the dialyzate. Nevertheless, in solutions of undialyzed glycogen it was impossible to obtain any trace of strychnine phosphomolybdate precipitate, though 70% of the phosphorus present was capable of being removed by electrodialysis. The writer is not yet prepared to interpret this phenomenon.

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[1] Harden, A., and Young, J. W., *J. Chem. Soc.*, 1902, lxxi, 1224; Noris, R. V., *Biochem. J.*, 1913, vii, 26; Irvine, J. C., and Gilchrist, H., Food Investigation Board Report, Dept. Sci. Ind. Research, Gt. Brit., 1924, p. 63.

[2] Samec, M., and Isajevic, V., *Compt. rend.*, 1921, clxxii, 1079.

[3] Starkenstein, E., and Henze, M., *Z. physiol. Chem.*, 1912, lxxxii, 417.

[4] Gatin-Gruzewska, Z., *Arch. ges. Physiol.*, 1904, cii, 569.