41 (133). **"The Influence of Subcutaneous Injections of Dextrose upon Nitrogenous Metabolism"**: **FRANK P. UNDERHILL** and **OLIVER E. CLOSSON.** (Presented by **WILLIAM J. GIES.**)

It has been frequently assumed that the large quantity of sugar present in the body in the condition of diabetes is responsible in part for some of the characteristic symptoms noted. For example, it has been asserted that various acids or acid derivatives may be formed giving rise to the condition of acidosis, as indicated by the well-known increased output of ammonia by diabetics. What influence the large quantity of sugar may have upon the distribution of nitrogen in the urine has received but scanty attention, especially with accurate methods.

Recently Scott (J. Physiol., 18, p. 107) has attempted to imitate the condition which obtains in diabetes by injecting into dogs large quantities (seven grams per kilo) of dextrose subcutaneously, and has made a study of the distribution of the urea, non-urea, and ammonia nitrogen as compared with the distribution in the normal animal. He has shown that when the above mentioned quantity of dextrose is injected there is an increased protein metabolism. Further there is probably excreted an increased output of ammonia combined with an acid or acids derived from the decomposition of the dextrose. There is also a diminution in the proportion of nitrogen eliminated as urea and an increase in the output of the non-urea nitrogen.

It was the purpose of the present investigation to study the character of this non-urea nitrogen. Accordingly the total nitrogen, urea nitrogen, ammonia nitrogen, creatinin nitrogen, uric-acid nitrogen, and purin nitrogen have been determined under conditions similar to those of Scott's experiments. In harmony with Scott's results, the authors found an increase in the total output of nitrogen due to increased metabolism, together with an increased elimination of oxalic acid. In no case, however, did they observe a significant change in the proportions of the various forms of excreted nitrogen.

The discrepancies between the two series of results can be accounted for in part by the fact that most of Scott's dogs were suffering from severe cystitis due to catheterization. It is well known that cystitis is sufficient to give rise to an increased excre-

tion of ammonia at the expense of the urea. It is therefore concluded that subcutaneous injections of large quantities of dextrose do not give any evidence of toxic action, that is, of an acidosis, as advocated by Scott.

The experiments suggest that the subcutaneous injection of large quantities of dextrose may be useful as a method of parenteral feeding, since quantities up to seven grams per kilo in the dog and rabbit may be given without the appearance in the urine of more than the merest trace of the sugar.

42 (134). **"Diffusion into Colloids and a Biological Method for Testing the Rate of Diffusion": SIMON FLEXNER and HIDEYO NOGUCHI.**

Certain experiments on the destructive action of bile and bile salts upon the pancreas made by Flexner indicated that colloidal substances restrained the action of the salts. It was suggested that this restraint probably depended upon a reduction in the rapidity of diffusion of the salts into the tissues. The studies of Voigtländer on the influence of colloids (agar-agar) on the rate of diffusion of certain crystalloids tended to show that diffusion into agar-agar jelly takes place at about the same rate as into water. The experiments summarized in this communication were made with hemolytic substances suspended in isotonic saline solution and in agar-agar and gelatin jelly. The rate of diffusion could be measured by the depth and degree of hemolysis produced in a jelly containing in suspension susceptible red blood-corpuscles. The experiments were varied. The red corpuscles were suspended in the warm jelly which was permitted to congeal. The blood jelly was overlaid with the hemolyzing agent dissolved in saline solution, or this agent was also contained in a solidified jelly. The hemolyzer was made to diffuse either downwards or upwards according as the blood, or hemolyzer, jelly was above or below. Moreover, the hemolyzer was placed in the jelly and made to diffuse upwards into a watery solution, the amount of diffusion being measured by the degree of hemolysis caused by the fluid removed at given intervals. Two factors were always considered, extent or degree of hemolysis, and time.

The substances employed were mineral and organic acids, alkalies, sodium taurocholate, saponin, solanin, venom, and tetanolysin. The results can be stated in general terms as follows: