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:

Acids, alkalies, salts, glucosids, and toxin diffuse into 0.9 per cent. watery NaCl solution more quickly than into a similar solution containing agar-agar and gelatin. This reduction in rapidity of diffusion increases with increase in concentration of the jelly. Ten per cent. gelatin exerts a greater inhibition than two per cent. agar-agar, and 25 per cent. gelatin exerts greater restraint than 10 per cent. gelatin. The ratio between the rate of diffusion and the concentration of the colloidal suspension is, in the case of gelatin, nearly inversely proportional to the square root of the concentration of the colloid. In the case of agar-agar, with which the possibility of varying the concentration is far less than with gelatin, the inhibitory influence is less marked and does not conform to this rule. Voigtländer's results are applicable to the special case of agar-agar jelly.

The influence of colloids upon the injurious effects produced by bile salts upon the pancreas is due, apparently, to a modification by reduction of the diffusibility of the bile salts, which result diminishes the concentration of the salts brought in contact with the pancreatic tissues in a unit of time.

Seventeenth meeting.[1]

Laboratory of the Department of Health, of New York (East 16th St.). May 23, 1906. President Flexner in the chair.

43 (135). **"Analogies between the phosphorized fats obtained from the brain and kidney,"** with exhibition of products: **EDWARD K. DUNHAM.**

So much attention has been directed to the protein constituents of protoplasm that it has become usual to regard proteins as the physical basis of life. Relatively recent investigations have, however, indicated that all cells contain complex substances of a fatty or lipoid nature, in which phosphorus and nitrogen are conspicuous elements. Many of these lipoids possess remarkable physical properties. In contact with water or alkaline liquids, they pass into colloidal solution after imbibing large quantities of water with the production of "myelin forms." They also differ from neutral fats in doubly refracting light. Such physical characters and the complex molecular constitution of these lipoids appear to justify the assumption that they, as well as proteins, are essential con-

[1] *Science*, 1906, xxiii, p. 979; *American Medicine*, 1906, i (N. S.), p. 155.