Glycogen.

Some interesting observations on the chemistry and physiology of glycogen are contributed to the *Wiener Med. Jahrbuch* by Dr. ABELES. In order to ascertain the amount of glycogen in muscle, it is necessary to digest it with caustic potash and separate the albuminous bodies by means of a large quantity of a solution of iodide of potassium and mercury. Abeles proposes to separate them, instead, by chloride of zinc, the solution having previouly been rendered almost neutral by hydrochloric acid. If it be boiled for from twenty to thirty minutes with the zinc, the albumen is precipitated in a dense mass, and the solution is readily filtered. The glycogen may then be precipitated by alcohol. No formation of sugar from the glycogen occurs during the boiling with chloride of zinc.

Glycogen can also be precipitated, it is found, by baryta. If a saturated solution of baryta be added to a solution of glycogen, an abundant white precipitate is formed, which sinks to the bottom of the vessel on standing. When collected and dried in vacuo at a temperature of 212° F., it was found to have the following composition: $C_{18}H_{30}O_{16}Ba$. The same precipitate occurred when baryta-water was added to a liver decoction, and from it the glycogen could be liberated by dilute sulphuric acid; but this method is found to be not very convenient, because the barytic sulphate separates from the solution of glycogen slowly and with difficulty.

It is well known that curara produces glycosuria, but the mechanism of the production of the sugar is a point which has been much discussed and is still uncertain. Bernard thought that it was by the influence of the poison on the nerves of the liver. Abeles has found that the sugar in the blood of a dog which had fasted for five days was .046 per cent., and that an hour after poisoning with curara it had risen to .13 per cent. He believed that so considerable an increase in the amount of sugar in the blood could not possibly arise from a transformation of the glycogen which remained in the liver after five days' fasting. He accordingly investigated the amount of glycogen in the muscles before and after poisoning by curara. The animal having been narcotized, a piece of muscle was excised from one leg; curara was injected, artificial respiration maintained for (in different cases) from twenty-five minutes to an hour and three-quarters, and then a similar piece of muscle removed from the other leg. In all cases the amount of glycogen in the muscle after the curara was larger than before the injection; the anticipated diminution in the glycogen could not in any case be found. The experiments thus appear to support Bernard. They show, at any rate, that the sugar which passes into the blood is not derived from the glycogen of muscle.

Glycogen, in large quantities, appears to be an active blood-poison. Böhm and Hoffmann have injected it into the jugular vein of cats, and found that after the injection of from three to ten grammes, the urine contained hæmatin. Hence it appears that glycogen is one of those substances which can dissolve the blood-corpuscles. The urine contained albumen, and, when this was separated, rotated polarized light to the right, and reduced oxide of copper, but the reduction was far less than corresponded to the amount of action on polarized light. This dextro-rotatory substance could be separated by the addition of six or eight volumes of alcohol, and it was then found to be soluble in water without opalescence, to give no colour with iodine, to have no power of reducing Fehling's solution, but to be transformed into grape sugar by sufficient boiling with acids. The average rotating power on light was found to be 194.3°, a lower power than glycogen, which was determined, on an average of seven observations, to be 226.7°. Hence the substance corresponds to the achroodextrin of Brücke.—*Lancet*, July 13, 1878.