Histology. — "*A method of cold injection of organs for histological purposes*". By Prof. H. J. HAMBURGER.

For a considerable time the want has been felt of replacing at injections for histological purposes the warm substance, for which as a rule stained gelatine was taken, by a cold one; not only because when using a warm mass the technical difficulties, which are great already, are rendered more complicated still, owing to the care necessary to keep organ and mass at bodily temperature, but also because in a warm waterbath the structure of the tissues is frequently impaired. Therefore TAGUCHI proposed in 1888 [1]) to use for this purpose a suspension of Japanese Indian ink in water, but GROSSER [2]) pointed out as a drawback that on further treatment of the sections the isolated grains not seldom drop, if not out of the smaller yet out of the larger vessels; whilst already at the cutting they are not seldom dispersed over the surface of the section. He therefore tried to find a fluid which could easily be solidified after the injection and found that the white of a hen's egg cut and afterwards filtrated answered this purpose very well.

When we too wished to apply this method the difficulty made itself felt, that in this manner we could not obtain the mass in a sufficiently fluid state. When according to the prescription we rubbed the piece of Indian ink over the plate of ground glass a membrane was always formed. Moreover it was found that the suspension thus prepared, when kept in a bottle, had become a solid mass after 24 hours, although evaporation was out of the question.

Probably this had to be attributed to the Indian ink of which, as is wellknown, many kinds are found in the trade. But we did not succeed in getting a better one.

We then tried to obviate this difficulty by mixing the egg white solution with *liquid Indian ink* as is to be obtained in the trade under the name of GÜNTHER-WAGNER'sche flüssige Perltusche, in the volumetric proportion of 1 to 1. The result was a thin liquid mass, which, when examined under the microscope, contained only extremely small particles, which were in BROWN's molecular motion.

After injection with this fluid the organ was fixed in sublimate-formol by which the injected egg white could be precipitated. After the usual washing with water containing iodine, pieces of the organs were stained with alumcochineal, and afterwards embedded in paraffin

[1]) Archiv. f. Mikrosk. Anatomie, **31**, p. 565, 1888.

[2]) Zeitschr. f. Wissenschaftliche Mikroskopie, **17**, p. 187, 1900.

in the usual manner. On microscopic examination the blood-vessel were found to be filled now *with a perfectly homogeneous black mass*

This method has an advantage over that of GROSSER in the fac that we need not fear the injection-fluid becoming solidified befor the injection; besides the preparation of the suspension requires *muc less time.*

In another direction too we have simplified the method, viz. by substituting blood-serum for egg white. A mixture of 3 parts o blood-serum with 2 parts of the above named Indian ink gave ex cellent results.

The blood-serum need not be derived from the same species o animal. For injections of caviae or rabbits we got good results by using horse-serum or cow-serum, fluids that are easily obtained.

Here too fixation was brought about by means of sublimate-formol.

As yet kidneys and liver were microscopically examined. But the injection fluid also penetrated skin, muscles and brain.

An attempt to prepare suspensions of carmine grains in serum suggested itself now, but these experiments failed as the carmine particles conglomerated. Perhaps, however, mixtures of dissolved carmine or of colloidal fluids may be prepared with serum, giving good results.

The above mentioned experiments were made in cooperation with Mr. A. F. DE BOER and Mr. G. A. KALVERKAMP, medical students.

Groningen, March 1908.

Mathematics. — "*The sections of the net of measure-polytopes* M_n *of space* Sp_n *with a space* Sp_{n-1} *normal to a diagonal.*" By Prof. P. H. SCHOUTE.

1. In the first part of a communication on fourdimensional nets and their sections by spaces (*Proceedings*, Febr. 1908) we have i.a. transformed the net (C_8) into a net (C_{16}) and a net (C_{24}); so here the regular simplex, the fivecell C_5, was not considered. Whereas the regular simplex of Sp_2, the equilateral triangle, furnishes a plane-filling all by itself as well as in connection with some other regular polygons, and the regular simplex of Sp_3, the tetrahedron, can fill the space in combination with the octahedron, it is impossible, as was shown in the quoted paper, to find for the regular simplex C_5 of Sp_4 other regular cells, which can together fill the space of Sp_4.

This leads us gradually to the question, whether it is not possible