In the course of work which we have been doing during the past two years, a method has been developed which permits us to obtain a fairly uniform distribution of a chemical substance throughout the intestinal tract.

Gentian Violet has been used in most of our experiments. Gelatin capsules were filled with a mixture composed of the dye and sodium chloride or a buffer, and then coated with 3 per cent collodion. In our preliminary work we found that Gentian Violet will not dialyze through such a membrane, so a minute hole was made in one end of the capsule with a No. 12 cambric needle. The sodium chloride and buffer mixtures were used to raise the osmotic pressure and to neutralize any acids or alkalies which might be present. Following the entrance of fluid into the capsule the gelatin dissolves, leaving the thin collodion layer which collapses from the pressure of the intestinal contents. This aids in causing the expulsion of the dye. Capsules recovered from the feces are intact and usually empty.

When capsules prepared in this manner are administered to animals or human beings, the feces are uniformly colored with the Gentian Violet. We have had two autopsies on individuals who had been receiving the capsules, and in both instances the contents of the gastro-intestinal tract from the mouth to the anus were stained a deep violet. The mucosa throughout was also stained.

234 (2757)

Experimental production of intra-ocular hypertension.

By THEODORE KOPPÁNYI and THOMAS DYER ALLEN. (Introduced by A. J. Carlson).

[*From the Hull Physiological Laboratory of the University of Chicago, Chicago, Ill.*]

It is commonly believed that the intra-ocular tension is sustained by the blood pressure in the intra-ocular blood vessels, especially by those in the iris; and that it may be lowered either by fall of the general blood pressure, or by constriction of the vessels locally. Results achieved following administration of drugs have not been uniform; for instance, after cocaine, the intra-

ocular tension may remain unchanged or may be raised or lowered.

We measured the intra-ocular tension with the Souter-tonometer and later with the mercury manometer, by insertion of a needle subconjunctivally into the anterior chamber. All drugs were injected into the common carotid artery. The experiments were made on dogs under ether anesthesia.

After injection into the carotid artery of 5 minims or more of chloroform, we several times noticed forced position of the eyes, (a) enophthalmos, (b) exophthalmos, (c) deviation of the globe. At the same time there was an hemolysis, edema of the retina, retinal and iridic hemorrhages, and increase in the intra-ocular tension to plus 3.

Following this administration of chloroform the general blood pressure falls, and a local vasoconstriction occurs in the retina, the two factors, which it is believed, ordinarily are followed by a lowering of the intra-ocular pressure. We found, however, without exception, that the intra-ocular tension rose from a normal of 15 to 23 mm. Hg. to 70 or more mm. of Hg. in the eye on the side of the injection, returning to 40 mm. of Hg. in 20 minutes, and gradually decreasing to normal. There was no change in the depth of the anterior chamber.

Ether.—2 cc. was followed similarly by immediate blanching of the retinal vessels and increase in tension. There were these differences: (a) increase in tension is not quite as rapid as with chloroform (tension rose to 70+ mm., however); (b) there are not as marked changes in the eye, although hemorrhages were occasionally seen.

Concentrated sugar solutions produced an increase in tension to 50 mm. Hg.

Adrenalin produced a slight increase in the intra-ocular tension.

Alcohol 40 per cent—4 cc. produced a lowering of the tension from 15 to 23 down to 10 mm. or less.

Quinine-urea-hydrochloride, calcium chloride, saturated saline solution, tap water, hot and cold, did not produce any appreciable changes in the intra-ocular pressure.