When 5 grams of thymol were administered *per os* to a medium sized dog, the urine excreted during the succeeding 24 hours showed the familiar brownish yellow color. On standing it gradually became black. Heller's test was positive but, as the resultant precipitate had the same color as the urine, the exact significance of the result was uncertain. Thereupon different metabolic derivatives of thymol — thymo-sulfuric, thymo-hydrochinon sulfuric and thymo-glucuronic acids were isolated from the urine in the form of their chlorin substitution products. A small quantity of each of these substances was then individually added to *normal* urine, which in turn was subjected to Heller's test and invariably showed a positive reaction.

Agitation of such treated urine with petroleum ether in the manner above indicated did *not* extract thymol-glycuronic acid. This fact is of some importance; for while petroleum ether readily extracts thymol from urine to which thymol has been added as a preservative, it does not quantitatively extract from urine thymol that has been given internally and which is excreted in combined forms through the kidneys.

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A clamp for direct transfusion of blood.

A demonstration.

By **ISAAC LEVIN.**

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The clamp is similar in its construction to an artery forceps without the grooves. At the tip of each blade there is attached a small cannula with a smooth bore. At the inner edge of each cannula four small pin points are attached, and on the outer surface of the cannula four grooves are cut. When the clamp is closed, the pins of one cannula lie in the grooves of the other. The pins are bent outward and therefore the cannulas have a pyramidal form, so that each pin can lie snugly in its groove. At the beginning of the operation, both halves of the clamp are separated. The vein is pushed through one cannula and its wall is hooked on the pins. The same is done with the artery and the other half of the

clamp. Then both halves of the clamp are united and clamped. I believe that when we deal with small blood vessels it is easier to hook the walls on the pins than to turn them back like a cuff as is done in Crile's cannula. When the clamp is closed, both blood vessels are connected with the endothelial surfaces.

I have performed several operations on dogs, uniting the femoral or cervical vein of one dog to the femoral artery of another. The transfusion was kept up for over half an hour, until the donor was practically exsanguinated. There was no clotting, leakage, or any other defect in the clamp.

6 (344)

The further separation of antitoxin from its associated proteins in horse serum.

By **EDWIN J. BANZHAF.**

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The literature concerning means of purification of anti-bodies and their chemical characteristics has been thoroughly reviewed by Gibson,[1] Ledingham,[2] Banzhaf and Gibson,[3] and Brieger and Kraus.[4]

Stark[5] was the first to report that by heating for one hour at 56° C., ovalbumin could be converted into a body, which, because of its precipitation and solution reactions, and also its composition, was obviously a globulin. Later Noll[6] showed the same to be true of albumin in rabbit, dog and horse serum.

My experiments were to ascertain the resulting conditions after heating antitoxic horse serum, citrated plasma, and Gibson's concentrated and partially purified antitoxic globulin solution.

An antitoxic serum by the Gibson method[1] gave the following: An elimination of 23 per cent. protein and an increase of antitoxic units per gram protein of 30 per cent. over the native serum. A

[1] *Journal of Biolog. Chem.*, I, p. 161, 1906.
[2] *Journal of Hyg.*, vii, p. 65, 1907.
[3] *Journal of Biolog. Chem.*, iii, p. 253, 1907.
[4] *Berl. klin. Woch.*, xliv, p. 946, 1907.
[5] *Zeitschr. f. Biol.*, xl, p. 494, 1900 (new series, vol. 22).
[6] *Hofmeister's Beiträge*, iv, p. 563, 1904.