The normal aqueous humor contains no arsenic. Only a trace of arsenic penetrates in the anterior chamber of the eye during the first few hours after intravenous injection of large doses of neo-arsphenamine, and only the smallest measurable amount after 24 hours, representing such a slight increase over the first few hours that it seems of no significance. Paracentesis definitely increases the permeability of the eye to arsenic, even though it be done a half hour *before* injection of the drug. It was found that the amount of arsenic in the aqueous humor of subsequent tappings was less than that in the previous determination. The bulk of arsenic which accumulates after paracentesis apparently disappears within a few hours.

[1] Robertson, G. R., *J. R. Am. Chem. Soc.*, 1921, xliv, 182.

[2] Allen, W. S., and Palmer, R. M., General Chemical Company.

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Determination of Albumin and Globulin in Urine.

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Albumin and globulin are separated by precipitating the latter with sodium sulfate, as in Howe's[1] technique for plasma protein separation. The separated proteins are determined by the colorimetric method of Autenrieth,[2] which can be made practical for general colorimetry by introducing pure biuret as a standard. One mg. of biuret gives a color equal to that of 0.924 mg. of urinary proteins treated with alkali and copper sulfate, as described by Autenrieth.[2]

The standard solution is made by dissolving 0.4 gm. of biuret in water and diluting to 150 cc. Five cc., containing 13.33 mg. of biuret, is colorimetrically equivalent to 12.3 mg. of urinary proteins.

For total protein, enough urine to contain 8 to 20 mg. is precipitated with an equal volume of 10 per cent trichloroacetic acid. The precipitate is redissolved in 3 per cent NaOH, treated at 10 cc. volume with 0.25 cc. of 20 per cent $CuSO_4 \cdot 5H_2O$, and compared with 1 cc. of the biuret standard similarly treated.

Globulins are precipitated by treating the urine at 38° with an equal volume of 44 per cent Na_2SO_4. In the filtrate, the albumin is precipitated with trichloroacetic acid, and determined as described

for total proteins. Globulins are calculated as (total protein)—(albumin).

[1] Howe, P. E., *J. Biol. Chem.*, 1921, xlix, 93, 109.

[2] Autenrieth, W., and Mink, F., *Münch. med. Woch.*, 1915, lxii, 1417; Autenrieth, W., *Münch. med. Woch.*, 1917, lxiv, 241.

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The Cause of Temporary Ventricular Alternation Following a Long Diastolic Pause.*

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A condition of temporary alternation, such as can be induced in dogs' hearts which are normal, according to every criterion we are able to apply, was studied by apparatus recording pressure and volume curves by optical projection.

It was found that temporary alternation induced by the application of premature stimuli to a ventricle or an auricle, by temporary vagus inhibition or by a temporary a-v block, invariably involves both ventricles but does not affect the auricles. Neither the permanence nor duration of the alternation is affected by the volume of venous return or the height of the arterial pressure. Alternation appears to be conditioned entirely by the rate of beat, and cannot be induced in the normal dog's heart when beating at rates below a critical level of about 140 per minute.

The alternating beats resemble those of a more permanent nature induced in other ways. In both cases they differ from the normal, not only in their amplitude of contraction and volume of systolic discharge, but also in the contour of contraction and relaxation and in the duration of their phases. Thus, in the smaller beats the pressure rises more gradually, the isometric contraction phase is prolonged, while systolic ejection and total systole are abbreviated. The isometric relaxation also occurs more slowly so that the interval between the end of systole and the beginning of ventricular inflow is prolonged.

The alternate beats begin with different diastolic volumes and as a

* A detailed report of this research will appear in the Warthin Anniversary Volume, George Wahr, Ann Arbor, 1927.