renal arteries. The first part of the efferent vessel could not be seen, as it lay dorsal to the glomerulus. It could be seen, apparently just dorsal to the dorsal wall of the capsule, through the clear space that separated the capillary tuft from the capsule wall. The segment thus seen was about 150μ long and was narrower than the narrowest capillary in the glomerulus, being not more than 20μ wide. It could not be followed beyond the edge of the capsule. The fact that both vessels could be seen in this glomerulus is almost certainly due to the atypical arrangement.

It will be noted that the events described here are probably not the same as the alternation of glomerular flow described by Richards and Schmidt and by Bieter. In their experiments on the frog alternation of glomerular flow was a frequent spontaneous occurrence and there was no reason to believe that the vascular constriction involved anything central to the afferent vessel. In the observations reported here the afferent vessel constriction was secondary to that of the large artery from which it sprang; the phenomenon did not occur until initiated by mechanical stimulation, although after having been so initiated it recurred rhythmically.

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Use of the Interferometer for Serum Protein and Protein Fraction Determinations.

WILLIAM J. DIECKMANN. (Introduced by P. A. Shaffer.)

From the Department of Obstetrics and Gynecology of the Washington University School of Medicine.

Adams[1] stated that the interferometer was a precision instrument suitable for all sorts of determinations in which the refractometer has been used, with the additional advantage of being much less susceptible to temperature change and much more accurate. He states that with the refractometer one must regulate the change in temperature to 0.01° in order to secure an accuracy of one unit in the sixth place, but the interferometer requires no special regulation of temperature to secure an accuracy of one unit in the seventh place. In determining serum proteins, we found that a serum which read 454 at 15°, would read 452 at 30°, the difference being equivalent to 0.014% protein. Therefore, all readings have been made at room temperature.

[1] Adams, L. H., *J. Am. Chem. Soc.*, 1915, xxxvii, 1181.

The water interferometer is supplied with 5, 10, 20, and 40 mm. chambers. The 5 and 10 mm. chambers can be fitted with a 4 and 9 mm. insert, respectively, thus furnishing a chamber 1 mm. in depth with the advantage that it can be easily cleaned on removal of the insert. The scale of the instrument is divided into 3000 divisions or Trommelteil (T.T.), but we limit our readings to 1500 T.T., because it has been found that if the concentration of a solution is plotted against the T.T., the line becomes curved above this figure.

All interferometer chambers have to be standardized against known solutions. We used the method described by Robertson for preparing standard protein solutions, and found that a 1% solution of serum protein gave a reading in the 1 mm. chamber of 136.

Hirsch[2] described a method for determining serum proteins, and the method used by us is similar with the exception that we do not dilute the serum. The reading is obtained of the serum and also of the filtrate (electrolyte, urea, etc.), which has been obtained by heating one volume of serum and one volume of 0.04 normal acetic acid in a sealed tube. The difference between the two readings represents the coagulable protein and the percentage is derived by dividing the T.T. by 136. Serum protein can be determined quickly, accurately, and easily on 0.75 cc. serum. Furthermore, one can determine concentrations of protein of less than 0.1% in the 5 mm. chamber and of still greater dilution in the larger chamber.

Fibrin was obtained from 1 cc. of plasma, using Wu's method, and dissolved in 2 cc. of 0.05 normal NaOH. The solution was read in the 10 mm. chamber, and the difference between the fibrin reading and that of the NaOH, divided by 1090 (1% protein in the 10 mm. chamber), multiplied by 2, gives the percentage of fibrin in the sample.

The albumin globulin ratio was determined by precipitating the globulin from 1 cc. of serum by adding 1 cc. of a 44% solution of Na_2SO_4. The tube is stoppered, shaken, and allowed to stand in the incubator for 3 hours. It is filtered in the incubator and the filtrate is read against a standard similarly prepared with water and Na_2SO_4, using the same pipette that was used for the serum. The reading obtained multiplied by 2, is the interference produced by the albumin and non-protein elements. The difference between this figure and the reading of the serum is assumed to be globulin.

[2] Hirsch, P., *Handbuch der Biol. Arbeits.*, 1926, II, Part 2, Section 1, 737.