

THE MEASUREMENT OF RENAL SECRETION (DEMONSTRATION).—BY OWEN S. GIBBS, M. B., CH. B., Pharmacology Dept., Dalhousie University, Halifax, N. S.

(Presented 13 December 1926)

In the course of a series of experiments on the kidney function of the fowl occasion arose to record graphically certain changes, namely the amount of urine secreted, and the secretion pressure. Owing to varying nature of the fowl's urine the available drop recorders proved quite unsatisfactory for secretion records, in consequence a special method was adopted. The urine is allowed to flow into a fine rubber condom which is fastened in a glass cylinder, and surrounded by salt solution. As the urine enters the condom it displaces an equal amount of fluid from the cylinder. The fluid being constant in character readily allows of measurement, which in these experiments was accomplished by means of a simple type of electrolytic recorder¹. Secretion pressure is measured graphically by means of a piston recorder attached to a manometric tube, to which is arranged a special method of filling, this being for the purpose of recording any inflow that may take place.

The purpose of these experiments is an attempt to elucidate the cause of secretion pressure. This may be due to vital secretion or filtration, these being positive, and reabsorption a negative factor, or any possible combination of these factors.

Ureteral movements, which are recorded very well by the above apparatus, are apt to complicate the tracing and in consequence some attention has been paid to the factors which control these. These experiments are as yet not completed, but so far only drugs acting on the sympathetic system appear to act definitely on the ureters, and even these somewhat inconstantly. Asphyxial changes cause a definite increase of movement, followed rapidly by a cessation.

¹ The details of this apparatus are to be published in the *Jour. of Lab. & Clin. Med.*

Changes in secretion pressure have been brought about by means of blood-pressure alteration, either due to peripherally acting drugs, cardiac inhibition, or asphyxial changes, and further experiments of this type are in progress. Generally speaking a drop of blood-pressure, if of sufficient duration, causes a decrease of secretion pressure, the contrary however does not hold. The interpretation of the results of the above experiments are at present impossible since no data is available regarding the actual blood-flow through the kidney. This very difficult problem is now being considered.