

the peritoneum and abdomen sewn up. The bladder was then emptied and the animals placed in metabolism cages. The clamp was applied in series of animals for ten, twenty, thirty, forty and sixty minutes. Repeated studies of renal function were made. Finally, the animals were killed, submitted to autopsy and the kidneys examined histologically after formaldehyd fixation, celloidin imbedding and hematoxylin and eosin staining.

TECHNIC OF TESTS OF RENAL FUNCTION

A short description of the various tests used for renal function, with their technic, is given.

The phthalein test was made according to the original technic of Rowntree and Geraghty.¹¹ One cubic centimeter of a phenolsulphonephthalein solution containing accurately 6 milligrams was injected aseptically into the leg muscles of the rabbits or lumbar muscles of the dogs, which were then placed in metabolism cages. The bladders were expressed or catheterized at the end of an hour and ten minutes, and the total urine for this time collected. The urine was made distinctly alkaline, diluted to 1 liter, and the amount of drug determined by the use of Rowntree and Geraghty's¹² modification of the Autenrieth-Königsberger colorimeter. In control animals it has been determined that the normal output in this time is 60 per cent. or more.

The lactose, potassium iodid, salt and water tests which have received a thorough study at the hands of Schlayer¹³ and his co-workers and which we have used in relation to the renal function in experimental and clinical nephritides, were applied to this study.

From our previous work we feel that the mechanism of the excretion of lactose differs essentially from that of phthalein, salt and iodid. Throughout this investigation we have used it as an index of the condition of the vascular function¹⁴ of the kidney, admitting that we need much more information concerning the manner and significance of its excretion.

The technic for the lactose test in rabbits has been identical with Schlayer's. One gram of lactose dissolved in 10 c.c. of distilled water was injected into the ear vein. The animals were placed in metabolism cages, the bladder expressed at the end of four hours and every hour thereafter up to eight hours. In dogs, according to our previous technic, 2 gm. were dissolved in 20 c.c. of water, and injected into the lumbar muscles.

Since the time necessary for total elimination has been considered by Schlayer of greater importance than the absolute amount recovered, and since our previous observations with lactose excretion agree with this, we have observed this exclusively. The presence of lactose in the urine was determined by Nylander's test, using similar amounts of urine, reagent and length of boiling time.

In rabbits under these conditions, the time necessary for the complete elimination of lactose is normally six hours or less and in dogs from four to six hours.

11. Rowntree and Geraghty: *Jour. Phar. and Exper. Therap.*, 1910, i, 579.

12. Rowntree and Geraghty: *THE ARCHIVES INT. MED.*, 1912, ix, 284.

13. Schlayer: *Deutsch. Arch. f. klin. Med.*, 1911, cii, 311; Schlayer and Takayasu: *Deutsch. Arch. f. klin. Med.*, 1891, xcvi, 17; 1910, ci, 333.

14. For a review of the literature on this test and the others described below, see our previous paper. We have shown in a previous publication, however, that lactose is not excreted solely by the glomeruli.