

The band was slipped under the isolated vessel and grasped on the other side with forceps. By careful manipulation it was allowed to curl back into its original shape, enclosing the vessel within its lumen. Heavy silk ligatures were then tied about it, in the center and at either end, holding it firmly in place. The degree of congestion produced was controlled by the caliber of the band utilized, by one-sided nephrectomy, and by ligating or leaving untouched the vessels concerned in the collateral circulation of the kidney. The dog was then allowed to recover from the anesthesia and was placed in an appropriate metabolism cage for immediate observation.

After a series of functional studies the animal was turned loose until such a time as another series was wanted. Repeated observations at periods of days or weeks were made on the urine and on the renal functional capacity. Finally the dogs were killed and the kidneys studied from a pathological point of view.

We have in this manner attempted to create conditions simulating as nearly as possible those existing in cases of cardiac decompensation. In clinical cases there is stasis which undoubtedly interferes with the free flow of blood from the kidney. Since the heart action in cases of decompensation is weakened, there must exist a disproportion between the driving force on the arterial side and the outflow on the venous side. And while our experiments have been conducted on animals with normal hearts, the constriction of the vein leads here also to a disproportion between the inflow and the outflow. Therefore, we may assume that the conditions of our experiments actually resemble the conditions encountered clinically<sup>20</sup> as closely as experiments with animals with normal hearts will permit.

The functional tests used in this connection were essentially five, e. g., phenolsulphonephthalein, lactose, salt, potassium iodid and water. In our earlier studies the excretion of certain other dye substances was studied in certain cases as was also the glycosuria following the injection of phloridzin. It became apparent early that nothing was to be gained from the continued use of indigo carmin and carbol fuchsin (rosanilin) in this connection,<sup>21</sup> inasmuch as they were excreted roughly in propor-

20. We are aware that in certain respects differences do exist. Although the pressure exerted a similar relative disproportion exists in the two conditions, naturally where the *vis a tergo* is normal the absolute pressure may be greater. Furthermore, there is a possibility that the insufficient oxygenation of blood generally, in broken compensation, plays a rôle in determining renal function. We do not think so much in this connection about the diminished oxygen supply to the kidney as of the possible toxicity of the waste products of other organs which suffer from lack of oxygen, affecting renal function.

21. Personal observations to be published later. For discussion of these tests, see also publication of Rowntree and Geraghty, *Jour. Pharm. and Exper. Therap.*, 1910, i, 579.