

activity, although the chronaxie was shortened. In terms of the quantity of energy required to excite the tissue, activity here decreased the excitability. This again illustrates a point previously stressed,<sup>3</sup> *i. e.*, that the chronaxie is not necessarily a measure of excitability.

That the observed changes in excitability were not an effect of the local action of the stimulating current was proved by the appearance of similar changes when activity was induced by induction shocks applied to another region of the ventricle.

### 5835

#### Specificity of Pathogenic Infections of the Kidney.

H. T. BEACHAM. (Introduced by Alton Ochsner.)

*From the Department of Surgery, Tulane University School of Medicine.*

From 4 to 6 twenty-four-hour agar slant cultures of colon bacillus and *Staphylococcus aureus* suspended in 3 cc. normal saline were injected transperitoneally into the left renal artery in 21 dogs. According to the length of time the animals survived 6 different groups were recognized as follows: Group 1, two animals survived from 5½ to 6 hours; Group 2, six survived 14 to 18½ hours; Group 3, four survived from 22 to 29 hours; Group 4, two survived 42 to 72 hours; Group 5, four survived 10 to 14 days; Group 6, three survived 16 to 21 days.

A daily record of the temperature and the examination of catheterized specimens of urine was kept. On account of the ease of obtaining sterile urine, multiparous, young animals were used. All animals were autopsied immediately after death to exclude post-mortem changes. Sections were preserved in Zenker's solution, and stained with hematoxylin-eosin.

The presence of both organisms in the glomerular capillaries, Bowman's capsule, disproved Crabtree's theory that cocci are secreted by the glomeruli and bacilli by the tubules. All evidence pointed to the fact that blood stream infections produced cortical abscesses while lymphatic infections produced medullary abscesses.

*Conclusion.* (1) Colon bacilli and staphylococci are commonly present in the urine of so-called normal dogs. (2) Organisms are

---

<sup>3</sup> Ashman, R., and Garrey, W. E., *Am. J. Physiol.*, 1931, **98**, 109.

very easily demonstrated in the glomerular capillaries, Bowman's capsule, and the tubules within the first 36 hours after injection of the renal artery with 24-hour cultures. (3) Areas in the kidney are found, following injection of the renal artery, in which there is complete necrosis of the tubules, but normal glomeruli and interstitial tissue are present showing that the tubules derive their main blood supply from the efferent vessel of the glomerulus. (4) The injection of one renal artery in this investigation produced no lesions in the contralateral kidney. (5) *Staphylococcus aureus* produced cortical abscesses after 22 hours, whereas the colon bacillus seldom produced abscesses, but resulted in degeneration of the distal tubules when from 4 to 6 agar slants were introduced into the renal artery. (6) Acute glomerulo-nephritis can be produced by injections of *Staphylococcus aureus* and colon bacillus into the renal artery. (7) Chronic interstitial nephritis can be produced within a period of 3 weeks, especially following injection of colon bacilli.