animals gain weight more rapidly than do the controls. If, after a long-continued period of injections, when the alkaline extract injected animals have gained a great amount in weight, the fluid intake be suddenly stopped, their weights will drop to near the average weight of the control animals in a period of 24 to 48 hours. This result was so peculiar that it was deemed wise to analyze the content of the tissues of the experimental animals. For this purpose, each group was ground and thoroughly mixed separately, and was then dehydrated and ashed. It was found that the animals receiving the alkaline extract under unlimited fluid intake conditions had from 6% to 8% more water than did either the controls or the ammonium sulphate injected animals, the latter two groups of which were very close together in their analyses. It was also found that the ash content of the alkaline extract injected animals was about 3% less than the ammonium sulphate injected, or the control animals.

It is believed that these results indicate the presence of a water balance principle in the alkaline extractive of the anterior lobe of the pituitary.

## 4604

## The Presence of Nerve Fibres in the Dentinal Tubules of Mammalian Teeth.

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(Introduced by Raymond Hussey.)

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For these studies, a number of different forms and methods of preparation were employed. The teeth used were from human, dog, cat, and rodent. Methods utilized included supra- and intra-vital methylene blue, various modifications of the Cajal technique, and iron hematoxylin preparations, following in large part the various studies on this subject by other workers. By only one method was it possible to stain the structures in such a way as to make the evidence incontrovertible. By means of pyridine fixation, the Cajal technique of silver impregnation, and very careful grinding instead of decalcification, it was possible to so prepare the mammalian tooth as to show adequate evidence that the dentinal tubules contained definite, unmyelinated fibers. These could be traced in separate portions of the same preparation from their arborizations around the odontoblast, extending thence into the dentinal tubules, following these

tubes to the dento-enamel junction, where they apparently dichotomize between the dentin and enamel. By careful grinding technique, it was found to be possible to prepare sections by this method sufficiently thin that the oil immersion lens with very high power magnification could be used.

## 4605

### High Frequency Current Burns in Rats.

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In a recent paper[1] attention was called to destructive histologic results produced in the small intestine of adult albino rats through the agency of high frequency currents. Certain comparisons were possible between these results and the type of duodenal ulceration observed in man and thought at one time to be a sequence of cutaneous burns.[2] The ulceration produced by high frequency currents was more extensive, however, and not restricted to the duodenum. Yet, Stengel[3] has called attention to the occasional presence of ulceration in the stomach and elsewhere in the intestine, complicating burns of the skin in man.

Certain experiments upon adult albino rats were repeated, utilizing high frequency current as detailed in the previous paper. Particular attention was given, however, to the problem of mucosal regeneration of the intestine. Repeated heatings on alternate days with the rats parallel to and between the plate electrodes, which were spaced 19 cm., gave the most constant histologic changes. The amperage remained 0.2 and the voltage 2000. The rat temperatures reached 41°C. after exposure of from one-half to 2 hours of raying.

The apices of the villi demonstrated the first pathologic change. This was of the nature of a coagulation necrosis and was most marked, first, in the epithelial lining cells but involved the stroma cells ultimately. Exfoliation of the epithelial cells was the rule, while vascular dilatation, leucocytosis, hemorrhages into the villi,

[1] Baldwin, W. M., and Nelson, W. C., PROC. SOC. EXP. BIOL. AND MED., 1929, xxvi, 588.

[2] Novak, E., *Am. J. Med. Sc.*, 1925, clxix, 119.

[3] Stengel, A., *Osler's Modern Medicine*, Lea & Febiger, Philadelphia and New York, 1908, v, 389.