way as in the preceding experiment. Six female guinea pigs, ranging in weight between 180 and 195 gm., were injected intraperitoneally for 5 consecutive days; 2 receiving the urine from the first day's collection; 2, the urine from the second day's collection; and 2, the urine from the third day's collection. No definite hypertrophy in the thyroids of these 6 animals resulted from these injections.

We may therefore conclude that even when present in the body in large amounts at least only a very small fraction of the hormone contained in the acid extract of cattle anterior pituitary which causes hypertrophy of the thyroid gland is excreted in the urine of guinea pigs. Perhaps this hormone, in contrast to the pituitary-like hormone of pregnant women, which is excreted in the urine in large amounts, is bound to such organs as the thyroid and ovary and then changed in some way before its excretion. The failure to demonstrate such a substance in the urine of patients suffering from Graves disease is, therefore, not inconsistent with a possible increase of pituitary function in this disease.

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Distribution of Vagus and Sacral Nerves to the Large Intestine.

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There still remains considerable disagreement regarding the distribution of vagus and sacral nerves to the large intestine. According to Klee[1] vagus fibers do not reach the large intestine. Carlson[2] has recently reported experiments in which stimulation of the sacral nerves in the dog caused contraction of the circular and longitudinal muscle of the entire colon.

The present experimental anatomical investigation was carried out on cats and dogs. The vagus and sacral nerves respectively were sectioned in 2 groups of animals. Three weeks after operation the animals were killed and the large intestines were removed and studied both macro- and microscopically. Pyridine silver sections were made from 3 levels; viz., the ascending colon, the distal half of the transverse colon, and the middle portion of the descending colon.

[1] Klee, P., *P. A.*, **145**, 594.

[2] Carlson, J. A., *J. Am. Med. Assn.*, **94**, 78.

Pyridine silver sections from the corresponding levels of the normally innervated large intestine reveal longitudinal nerve fiber bundles in the serous layer, which increase in size and number toward the distal end.

Pyridine silver sections from the large intestine of animals in which the vagi were sectioned just below the diaphragm showed degenerated nerve fiber bundles in the ascending and transverse portions of the colon. These obviously are vagus fibers. They are less numerous in the transverse than in the ascending colon. No evidence of degenerated nerve fibers was observed in sections of the descending colon. These results indicate that vagus fibers are distributed to the large intestine at least as far as the distal portion of the transverse colon.

A study of the pyridine silver sections from the same levels of the large intestine of animals in which all the sacral nerves were sectioned, revealed degenerative changes throughout the entire large intestine. These changes were less marked in the sections of the ascending and transverse portions of the colon than in those of the descending colon. In the latter, all the fibers in the bundles which traverse the serosa had undergone degeneration. The fibers of the myenteric plexus also were considerably reduced. The presence of degenerated nerve fiber bundles throughout the entire large intestine obviously indicates that sacral fibers are distributed to the entire colon. These fibers, however, become progressively fewer from the distal end of the transverse colon towards the proximal end of the ascending colon. These experimental microanatomical findings are in full accord with the physiological findings reported by Carlson.

Macroscopic study of the large intestine deprived of its sacral nerves suggests a marked diminution in the tonus, particularly of the descending colon.