HCl upon the tongue of a lightly anesthetized dog, or by the gag reflex in an unanesthetized animal. After the intravenous administration of 4 mg. of atropine, epinephrine injections still called forth a very weak response in 2 of the 4 dogs observed in the majority of experiments. For comparison, direct faradic stimulation of the cervical sympathetic trunk in the neck was performed on all 4 dogs under morphine and ether anesthesia and produced in these animals partial or complete unilateral mucous glandular secretion both before and after the intravenous administration of 4 mg. of atropine.

Conclusion. The responses of the oral and pharyngeal mucous glands to injections of pilocarpine, atropine, and morphine and of the oral glands to epinephrine, resemble those of the salivary glands, an observation which can be explained on the basis of the similar dual innervation of both groups of glands through the cranial autonomic and sympathetic systems.

7373 P

Effect of Simple Duodenal Obstruction upon the Combined Gastric, Pancreatic, Biliary and Duodenal Secretions.*

M. LAURENCE MONTGOMERY AND JOSEPH M. SWINDT. (Introduced by C. D. Leake.)

From the Department of Surgery, University of California Medical School, San Francisco.

Dragstedt and Dragstedt[1] found in anesthetized animals prepared for the simultaneous collection of gastric, pancreatic and duodenal secretions that the intravenous injection of sublethal doses of fluid obtained from an obstructed duodenum or a closed intestinal loop produced "a striking increase in all of the secretions . . . . " Ivy *et al.*[2] later reported that in 7 animals with Pavlov pouches of the stomach the production of a pyloric stenosis decreased at first the secretion of the pouch in response to a test meal. Later 4 of the 7 animals showed a moderate "hypersecretion". Dragstedt, Mont-

* This work was conducted under grants from the Christine Breon Fund for Medical Research and the Melville Luther Montgomery Fund for Medical Research of the University of California.

1 Dragstedt, L. R., and Dragstedt, C. A., *J. Am. Med. Assn.*, 1922, **79**, 612.

2 Ivy, A. C., Droegemueller, E. H., and Meyer, J. L., *Arch. Int. Med.*, 1927, **40**, 434.

gomery, Ellis and Matthews[3] stated that the experiments referred to above[1] "suggest that under conditions similar to those existing in acute dilatation of the stomach, there occurs an absorption of toxic substances from the duodenum which have a pronounced secretogogue action". Recently Sungchin Kim[4] observed an increase in the amount of gastric juice in dogs with a duodenal obstruction.

These experiments differ from the conditions seen in patients with acute intestinal obstruction in so far as the use of anesthesia and the intravenous injection of loop fluid[1] are abnormal and the influence of distention as a possible factor in secretion is absent in the Pavlov pouch experiments. We have, therefore, reexamined the subject under conditions which somewhat more naturally simulate the disorder.

In 7 healthy dogs weighing between 10 and 18 kg. the duodenum was divided below the lower pancreatic duct. A Dragstedt type of intestinal cannula was placed in the duodenum proximal to the division. From this cannula the combined gastric, pancreatic, biliary, and duodenal secretions were allowed to run freely into a clean rubber bag. Collections were made every one to 5 hours. The animals were muzzled or their salivary ducts were ligated in order to reduce or eliminate saliva as a factor. No food was given. Two of the animals were discarded because the ingestion of gauze and other materials caused a premature blocking of the cannula. The other 5 may be divided into 2 groups.

Two dogs belong to the first group. In these the drained secretions were discarded and replacement was made by the subcutaneous or intravenous injection of Ringer's or 5% glucose solution. After a level of secretion was well established duodenal obstruction was produced by dividing the duodenum between the lower pancreatic duct and the drainage cannula. This left an isolated, draining duodenal loop 5½ and 6 cm. long respectively. The obstruction was allowed to continue for 4 and 7 days. Then the animals were sacrificed. The vomitus and the secretion from the isolated duodenal loops were measured and prorated over the period of the obstruction. It was found that the secretion during obstruction as thus measured was somewhat higher than during the control period.

Three animals belong to the second group. In them the secretions were returned during the control period through a cannula placed in

[3] Dragstedt, L. R., Montgomery, M. L., Ellis, J. C., and Matthews, W. B., *Surg., Gynec. and Obstet.*, 1931, **52**, 1075.

[4] Kim, Sungchin, *Korean Med. J.*, 1932, **2**, 86; *Abstr.: Chem. Abstrs.*, 1933, **27**, 1675.

the bowel below the division of the duodenum. Duodenal obstruction was produced by capping the cannula and preventing leakage about it, after which replacement was made by the subcutaneous injection of Ringer's or sodium chloride solutions. Following periods of obstruction of 71½ to 93½ hours the animals were either sacrificed or the duodenal cannula was opened and the accumulated fluid allowed to drain for a period of time. This fluid plus the vomitus was then prorated over the period of the obstruction. In all 3 animals the average secretion during the period of obstruction was slightly less than that found during the control period (Table I).

TABLE I.

Dog No.	Before Obstruction		After Obstruction	
	cc. per hr.	Total hrs.	cc. per hr.	Total hrs.
39	36.5	59	34	71.5
17	34.4	72	30.7	93
46	45.25	36	43	93.5

In certain other experiments we observed that during periods of free drainage, the secretion is greater when the juices are returned than when they are discarded and replacements are made by salt solution. We feel, therefore, that the second group reflects more exactly the usual condition, and that we must assume therefrom that simple duodenal obstruction does not result in a significant increase of the combined secretion of digestive juices above the fasting level.

7374 C

Psittacosis in the Native Australian Budgerigars.

K. F. MEYER AND B. EDDIE.

From the George Williams Hooper Foundation, University of California, San Francisco, California.

Soon after the discovery of latent psittacosis in the breeding establishments of California the sanitation of the aviaries became a paramount problem. A proposal was made to destroy the flocks which were proven to be infected and to resume breeding in the disinfected pens with a native stock imported from Australia. Such a plan might be feasible only provided the native birds should be free from disease. According to reliable reports no psittacosis has been observed or reported from the Australian continent. It was thus