

the irradiation of animals³ with ultraviolet and other radiation from a mercury arc in quartz. A protective influence of serum in the irradiation of a bacteria phage,⁴ and protection of amylase by proteins from heat inactivation⁵ have been observed.

Further work is planned to investigate the nature of such protection as well as its potentiality in other animals of the same and different species.

5952

Influence of Splanchnic Nerves on Gastric Secretion.

STEWART G. BAXTER. (Introduced by B. P. Babkin.)

From the Department of Physiology, McGill University.

Very little is known about the influence of the sympathetic nervous system on the gastric glands (Volborth and Kudryavzeff¹), and the data concerning the effect of epinephrine on the gastric secretion are rather confusing (Lim,² Ivy and McIlvain,³ Sirotinin,⁴ Hess and Hundlach⁵).

Experiments were performed on dogs and cats anesthetized with a mixture of chloralose and urethane. The splanchnic nerves were isolated below the diaphragm and placed on shield electrodes. The vagi were either cut at the neck or tied around the oesophagus below the diaphragm. The pylorus was ligated and a fistula placed in the posterior wall of the stomach and brought out in the left flank through a stab wound.

Rhythmic stimulation of the splanchnics was carried out in this fashion for periods of 8 to 10 hours. In most of the experiments a secretion of thick alkaline mucoid fluid began during the first hour of stimulation and continued at a steady rate throughout the experiment. In dogs of average weight (8 to 10 kg.) the hourly amount was from 3 to 5 cc., and in cats 1 to 2 cc. Occasionally when the stomach

³ Koldayer, B. M., and Altschuller, M. M., *Z. Physiol. Chem.*, 1930, **186**, 223.

⁴ McKinley, E. B., Fisher, R., and Holden, M., *PROC. SOC. EXP. BIOL. AND MED.*, 1926, **23**, 408.

⁵ Nakamura, H., *J. Soc. Chem. Ind. Japan*, 1930, **33**, 521, 523, 524.

¹ Volborth, G. W., and Kudryavzeff, N. N., *Am. J. Physiol.*, 1927, **81**, 154.

² Lim, R. K. S., *Quart. J. Exp. Physiol.*, 1922, **13**, 79.

³ Ivy, A. C., and McIlvain, G. B., *Am. J. Physiol.*, 1923, **67**, 124.

⁴ Sirotinin, G. W., *Z. f. d. ges. exp. Med.*, 1924, **40**, 90.

⁵ Hess, W. R., and Hundlach, R., *Pfűger's Arch.*, 1920, **185**, 122.

reaction was acid at the beginning of the experiment, the samples of mucus during the first few hours remained faintly acid, but the acidity rapidly diminished and ultimately the reaction became alkaline. When the secretion was acidified (Metts' method) it showed a moderate peptic power (75 to 200 units). The chloride content was lower than that of gastric juice, viz., 380 to 450 mg. Cl.

In some experiments the pylorus was divided from the body and fundus, and the secretion was collected separately from both parts. This showed that the secretion was not exclusively from the pyloric glands.* The content of total solids and organic material in the secretion diminished progressively, as observed in other glandular structures, indicating that it was a true secretion and not merely an expulsion of surface mucus. Atropin did not abolish the secretion.

In other experiments repeated injections of epinephrine were made (0.5 cc. of a 1/10,000% solution every 5 minutes). The same type of secretion was observed in these experiments and the secretion exhibited the same properties.

These experiments indicate that the sympathetic nervous system has a definite relation to the mucoid elements of the gastric mucosa. Further experimentation is necessary to demonstrate whether the sympathetic nervous system has any relationship to the peptic glands.

5953

Protein Fractions of the Timothy Grass Bacillus.*

MICHAEL HEIDELBERGER AND A. E. O. MENZEL.

From the Department of Medicine, College of Physicians and Surgeons, Columbia University, and the Presbyterian Hospital, New York.

The procedure described recently for the isolation of protein fractions from a scarlatinal strain of *Streptococcus hemolyticus*¹ has been applied with slight modification to the Timothy grass bacillus, *Mycobacterium phlei*.

* In a personal communication to Dr. B. P. Babkin, Professor B. A. McSwiney of Leeds, England, stated that stimulation of the sympathetic nerve produced a very scant mucoid secretion from the pyloric part of the stomach in decerebrated cats.

* Carried out under a grant from the National Tuberculosis Association and with the aid of the Harkness Research Fund, Presbyterian Hospital, New York.

¹ Heidelberg, M., and Kendall, F. E., *J. Exp. Med.*, 1931, **54**, 513.