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.

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Protein Fractions of the Timothy Grass Bacillus.*

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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] Heidelberger, M., and Kendall, F. E., *J. Exp. Med.*, 1931, **54**, 513.

Fresh cultures were frozen and dried,† extracted in the cold with acetone and purified ether during 48 hours, ground in a ball mill until intact organisms were no longer visible, and again extracted in the cold with acetone and ether during several hours. The cell residues were then stirred for about 6 hours each in the cold with buffer at pH 4 (C), 6.5 (D, D'), water containing enough *N* NH_4OH to keep the pH at 8.3-8.5 (E), water made alkaline to about pH 9 (F), and water made alkaline to about pH 11 (G). The residual material was shaken with 0.5% NaOH at room temperature (K). The properties of the fractions obtained by acidifying the extracts are given below, D' differing from D only in the necessity for the use of acetone in precipitating it from the opalescent supernatant from D.

TABLE I.

	$[\alpha]_D$ degrees	N %	P %	Basic Ash %	Precipitin reaction of 1:1000 solution with anti-human strain serum†	Precipitin reaction of 1:1000 solution with anti-timothy serum†
D	+14	15.2	3.2	0.9	+	+
D'	+22	16.0	3.8	1.4	+	±
E	—34	17.1	1.6	0.8	+±	+
F	—51	15.8	0.6	—	+	±
G	—47	14.4	0.7	0.5	+	+
K	—38	13.0	0.4	0.4	+	+

It is thus seen that a close parallel exists with the corresponding fractions of the hemolytic streptococcus. In general levorotation increases and nitrogen and phosphorus decrease with increasing alkalinity of the solution used for extraction. The lability of the D fraction is not as great in the case of the Timothy grass bacillus, only 20% N and 60% P being split off in 0.02 *N* NaOH at 25° for 24 hours. Fraction D corresponds to some extent with the "water-soluble protein", K, with the "alkali-soluble protein" obtained according to Johnson's scheme.[2] The reactivity of the fractions toward antihuman type serum is surprising in view of the specificity of the tuberculin proteins.[3]

The work is being continued and the proteins of the human type of tubercle bacillus are now being studied in the same way.

† Through the courtesy of the H. K. Mulford Biological Laboratories, Glenolden, Pa.

[2] Johnson, T. B., *Am. Rev. Tuberc.*, 1926, **14**, 169.

[3] Seibert, F. B., *Am. Rev. Tuberc.*, 1930, **21**, 370.