esterase activity after 4 hr staining was 51%. Incubation of the tissue for 4 hr in pH 6.4 phosphate buffer caused no loss of activity, whereas incubation for a similar period in the staining medium containing either no copper-glycine or no acetylthiocholine resulted in a 13% and 25 % decrease of the median cholinesterase activity respectively.

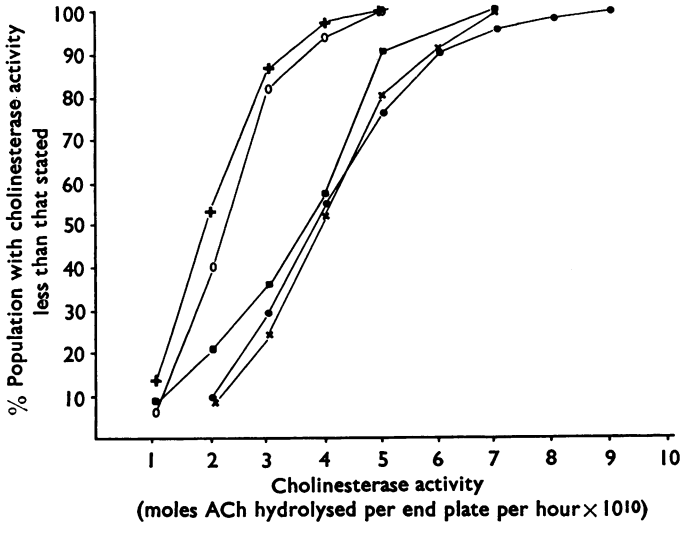

FIG. 1. Cholinesterase activity of single motor end-plates stained by a thiocholine method initially for 15 min (●) and for further periods to give a total of ½ hr (×), 1 hr (■), 2 hr (○) and 4 hr (+).

From this investigation involving the study of 500 individual end-plates it is concluded that staining with the thiocholine method may cause a marked decrease of the measured cholinesterase activity. The absence of either copper-glycine or acetylthiocholine causes only a slight decrease so it is likely that the precipitate of copper thiocholine is responsible for the marked decrease after staining for 4 hr.

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Measurement of gastric acid secretion by conductivity

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Ghosh & Schild (1958) developed a method for the assay of stimulants and inhibitors of gastric secretion, in which the acid output was measured by pH determination in a continuous flow system. Rosenoer & Schild (1962) perfused a buffer

to enhance the linearity of the response and the total acid output was determined from the area under the curve of pH plotted against time.

An integrated response is obtained if the acid is accumulated in the measuring chamber and the total output is then given by linear measurement from the pH versus time curve. In the present experiments this was achieved by recirculating the effluent through the stomach in a closed perfusion system.

Acid concentration can be determined by titration or by pH measurement, but we have found it more convenient to use a conductimetric system. The equivalent conductances of the ions found in the stomach are H^+ 350, Cl^- 70, Na^+ 50.9, K^+ 74.5 and HCO_3^- 50 approximately. Changes in conductivity will therefore be due predominantly to HCl secretion, as neutral salts will give relatively small effects. Figure 1 shows the results obtained in such a system when isotonic glucose

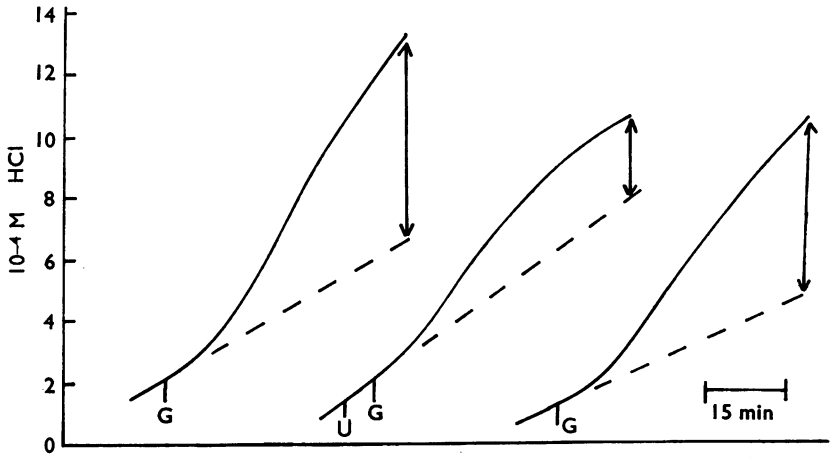

FIG. 1. Reperfusion of urethanized rat stomach. Conductivity changes due to three successive injections (at 1–2 hr intervals) of 0·1 μg gastrin II (G). Middle tracing: inhibitory effect of a dose of urogastrone (U) extracted from 200 ml. of human urine. Ordinate: conductivity in terms of equivalent concentration of HCl; abscissa: time; — — —, basal secretion.

solution was reperfused through the stomach of an anaesthetized rat. The conductivity meter (designed in conjunction with T. Sales) gave a linear output over the acid concentration range 0–10^{-3}M HCl. The effects of 100 ng of gastrin II and the inhibitory effect of a dose of urogastrone extracted from human urine, are shown.

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The storage and binding of gastrin

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The distribution of gastrin in subcellular fractions prepared by differential centrifugation of sucrose homogenates from antral mucosa of guinea-pig was studied. The fractions were characterized by estimation of RNA, DNA, succinic dehydro-