The materials used for the enzyme solutions were dry trypsin-free trypsinogen powders and acetone defatted duodenal mucosa. The protein substrate was 6% casein in 0.4% sodium carbonate. The amount of digestion was determined by observing the change in refractive index of isoelectric filtrates of the substrate at once and after 4 hours digestion at 37°C.

It has been found that below a change of R.I. of 5 scale divisions on a Bausch and Lomb immersion refractometer, the change is almost directly proportional to the concentration of the trypsin. By using trypsinogen equivalent to 4 times the amount of trypsin which will cause a refractive index change of 5, and adding variable amounts of enterokinase, it was found when the total resulting change in refractive index is less than 5 scale divisions, that this change is directly proportional to the concentration of enterokinase added.

$$\Delta \text{ R.I.} = k \times \text{mg. enterokinase.}$$

Also, if both trypsinogen and kinase are varied the product of the two, times a constant, gives the change of refractive index:

$$\Delta \text{ R.I.} = k \times \text{mg. trypsinogen} \times \text{mg. enterokinase.}$$

For practical work, however, it is simpler to plot a curve using a constant amount of trypsinogen and variable amounts of a known enterokinase preparation and to read subsequent values from this curve. This method is not free from errors, but is rapid and gives values more easily reproduced than other proposed methods.

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Action of Morphine on the Intestine in Peritonitis.

C. J. WILEN AND C. A. DRAGSTEDT.

From the Department of Physiology and Pharmacology, Northwestern University Medical School.

For many years the administration of morphine in peritonitis has been advocated by many surgical authorities. It has been advocated not only for the relief of pain and distress, but for the purpose of putting the intestine at rest in order to restrict or prevent the spreading of the infection that intestinal motility might produce. The well established observation that morphine tends to produce constipation was interpreted to mean that morphine did stop intestinal motility.

Plant and Miller[1] reported observations that both in the dog and man, morphine produces an increase in intestinal tone and an increased frequency of contractions, contradicting the current conception that morphine decreases intestinal activity.

Because of the relatively established position of the use of morphine in the treatment of peritonitis it was of interest to determine if the existence of a peritonitis modified the type of response to the usual therapeutic doses.

Peritonitis was produced in 10 dogs by the injection of fecal emulsions or by allowing a segment of intestine to drain into the peritoneal cavity. Intestinal motility was recorded from a balloon placed either in a Thiery-Vella fistula or in the intestinal tract. In every instance the subcutaneous injection of 10 mg. of morphine sulphate produced an augmentation of intestinal activity which was not antagonized by atropine sulphate, except in 2 instances in which during the 12 hours preceding death, spontaneous movements were absent and the intestine failed to respond to either morphine or physostigmine. Observations on 4 cases of peritonitis at the Cook County Hospital have all indicated increased intestinal motility after morphine sulphate, as determined by auscultation of the abdomen with a stethoscope before and after its administration. If it can be assumed that the general use of morphine in the treatment of peritonitis warrants the statement that its administration is beneficial, the interpretation of its beneficial action must be on some other basis than that of abolishing intestinal activity and putting the intestine at rest.

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Ultraviolet Point Radiation in the Production of Arrythmias in the Heart of the Chick Embryo.*

MARIE A. HINRICHS AND GEORGE WARRICK.

From the Department of Physiology, University of Chicago.

By means of apparatus previously described,[1] a point source of radiation could be directed on the desired spot on the developing

[1] Plant, O. H., and Miller, G. H., *J. Pharm. and Exp. Therap.*, 1926, **27**, 361.

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[1] Hinrichs, M. A., PROC. SOC. EXP. BIOL. AND MED., 1930, **27**, 354.