interfere with the methylene blue assay), and re-recipitating twice with alcohol.

Preparations so made were assayed by the Thünberg technique.[2] Tests were made in a total volume of 10 cc. of phosphate buffer of pH 7.6, containing 10 mg. of enzyme powder, 1 cc. of 1% sodium lactate or its molecular equivalent of another appropriate substrate and 1:10,000 methylene blue. This was placed in a water bath at 36°C. for 6 hours and compared during this period with a series of methylene blue standards ranging from 1:10,000 to 1:150,000 which is almost colorless. The time required for the color to pale to the next lower standard was recorded. By adopting a suitable standard one may adjust samples of varying activity as determined by assay to a uniform degree of effectiveness per unit quantity.

All enzymes tested were inactivated by heating for 15 minutes at 60°C. They were not inhibited by HCN. It is interesting to note that formic dehydrogenase was found to be the most active dehydrogenase tested in the seeds of the 4 species.

8341 C

Effect of Cyclopropane on Isolated Intestinal Muscle.

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It has been shown[1] that the *in vitro* effects of ether and ethylene on isolated intestinal muscle agree substantially with experimental evidence *in vivo*[2] and with clinical observations[3] that ether causes marked loss of intestinal tone and contractility while ethylene does not. It was also shown[1] that divinyl oxide, possessing a chemical structure combining characteristic features of both, is more like ethylene than ether in this respect as in other physiological actions. No reports so far seem to have been made regarding the effect of cyclopropane on intestinal muscle, although Waters and Schmidt[4]

2 Thünberg, T., *Quart. Rev. Biol.*, 1930, **5**, 318.

* Merck Fellow in Pharmacology.

1 Peoples, S. A., and Phatak, N. M., PROC. SOC. EXP. BIOL. AND MED., 1934, **32**, 378.

2 Miller, G. H., *J. Pharm. Exp. Therap.*, 1926, **27**, 41.

3 Luckhardt, A. B., and Lewis, D., *J. Am. Med. Assn.*, 1923, **81**, 1851.

4 Waters, R. M., and Schmidt, E. R., *J. Am. Med. Assn.*, 1934, **103**, 975.

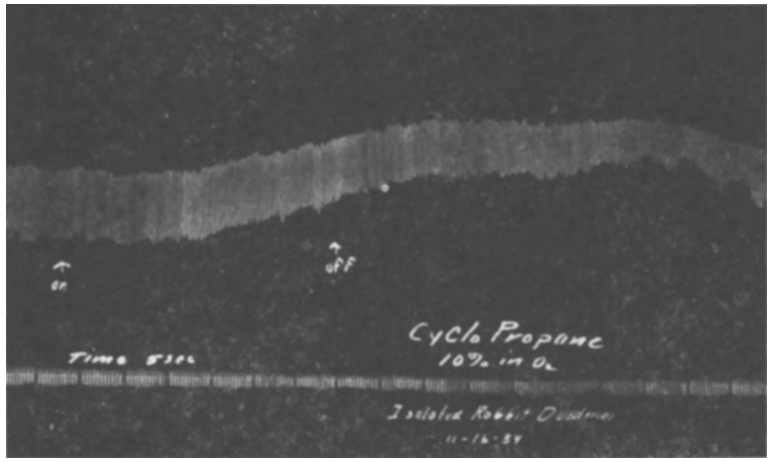

FIG. 1.
Effect of 10% cyclopropane in oxygen on intestinal muscle.

found slightly less post-operative intestinal distension after abdominal surgery with cyclopropane than with ether.

Segments of intestinal muscle about 2 cm. in length from the jejunum of a newly killed rabbit were suspended by the Magnus method from a muscle lever, in oxygenated Locke's solution at 37.5°C. Cyclopropane in concentrations in oxygen employed clin-

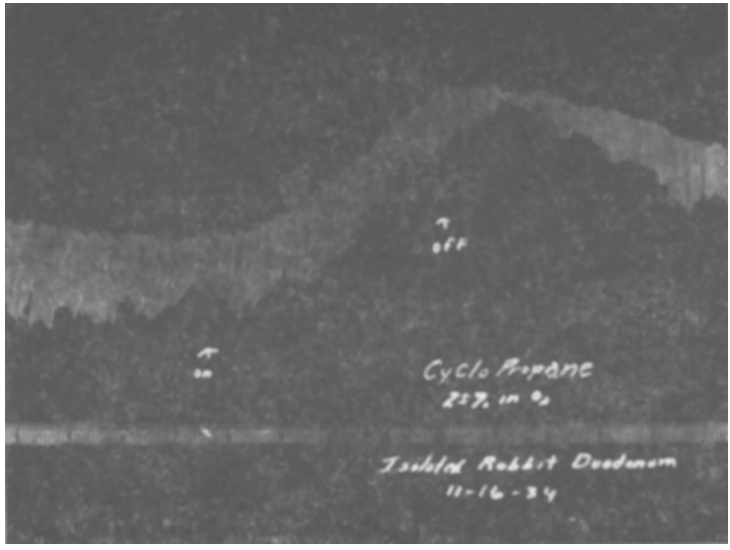

FIG. 2.
Effect of 25% cyclopropane in oxygen on intestinal muscle.

ically was bubbled through the solution in such a way as to bring it in equilibrium with the gaseous mixture as quickly as possible.

Thirty segments from 6 rabbits were tested for reactivity with acetylcholine and epinephrine in appropriate concentrations and washed carefully before applying the cyclopropane. In each case after bubbling into the bath concentrations of 10% to 25% cyclopropane in oxygen there was an increase in tone of the intestinal muscle with a decrease in amplitude of contraction (Figs. 1 and 2). Upon washing the cyclopropane from the bath there was a gradual return of the segment to its normal activity. The degree of gut stimulation was found to be roughly proportional to the concentration of cyclopropane up to 25% in oxygen at which maximum effect seemed to be obtained. In concentrations higher than this there was progressively less increase in tone. These observations indicate that less post-operative intestinal stasis and resulting distension should occur after the clinical use of cyclopropane than after ether.

8342 C

Cumulative Toxicity of Emetine Hydrochloride in Guinea Pigs.

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The minimum lethal dose of emetine hydrochloride on subcutaneous injection of repeated small doses is practically the same as on single injection. Anderson and Leake[1] concluded from their own experiments and other observations reported in the literature that excretion of emetine after either oral or parenteral administration must be slow and also that little or no detoxication takes place in the tissues. Fischl and Schlossberger[2] summarize work indicating that the cumulative toxic effect of emetine hydrochloride may occur in many species. Nevertheless, there is some question as to the cumulative toxicity in the guinea pig in view of the single observation of Young and Tudhope[3] in which the total of divided doses of

1 Anderson, H. H., and Leake, C. D., *Am. J. Trop. Med.*, 1930, **10**, 249.

2 Fischl, V., and Schlossberger, H., *Handbook of Chemotherapy*, Baltimore, 1933.

3 Young, W. A., and Tudhope, G. R., *Trans. Roy. Soc. Trop. Med.*, 1927, **20**, 93.