nodes histologically examined when the tumors were approximately 180 days old. Very little melanotic pigment was found in the lungs and none in the kidney, heart and brain.

The author wishes to acknowledge his indebtedness to Dr. R. S. Ferguson for his suggestion of this problem.

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Effect of Divinyl Oxide on Isolated Intestinal Muscle.

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In the careful studies of Miller[1] on the effects of general anesthesia on the muscular activity of the gastro-enteric tract, it was shown that the relatively light anesthesia usually maintained with ethylene causes no marked changes in the tone or amplitude of contraction of intestinal muscles. On the other hand during the surgical stage of anesthesia with ether there is marked loss of tonus and almost complete inhibition of rhythmic and peristaltic contractions in stomach, small intestine, and colon. Divinyl oxide has been shown to have pharmacological properties resembling ethylene and ether, to which it is related chemically.[2] Its general physiological effects are less severe than those of ether, although it is a more powerful anesthetic agent. Since the action of divinyl oxide on intestinal movement has not yet been reported upon, it became of interest to determine what its relation might be to ether and ethylene in this regard.

Segments about 2 cm. long from the jejunum of a freshly killed rabbit were suspended by the Magnus method from a muscle lever, in oxygenated Locke's solution at 37.5° C. The drugs were added to the solution to saturation. Repeated trials were made with each drug in varying sequences of application on intestinal segments of 8 different rabbits.

Ether was always found to cause an immediate and marked loss of tone and inhibition of movement of such a muscle preparation

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[1] Miller, G. H., *J. Pharm. Exp. Therap.*, 1926, **27**, 41.

[2] Leake, C. D., Knoefel, P. K., and Guedel, A. E., *J. Pharm. Exp. Therap.*, 1933, **47**, 5.

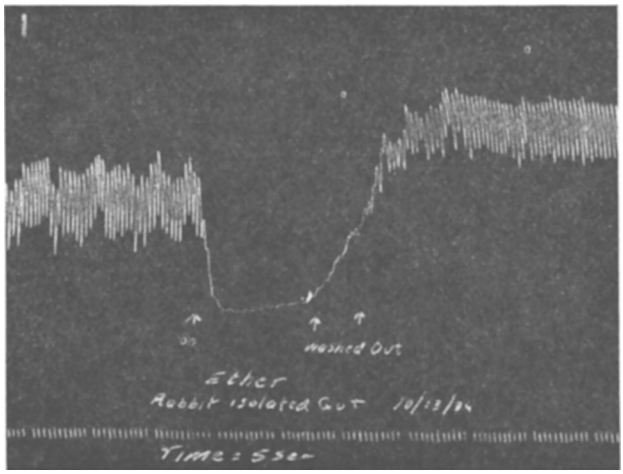

FIG. 1.
Effect of ether on isolated intestinal muscle.

(Fig. 1). Upon washing the ether out of the bath, normal tone and contractibility are promptly recovered. Ethylene bubbled to saturation in the bath was noted to cause a slight and transitory loss of the tone of the muscle, with occasional increase in amplitude of contraction (Fig. 2). Divinyl oxide added to saturation in the bath was observed uniformly to increase the tonicity of the intestinal segment. Sometimes this might be preceded by a slight loss of muscular tonus as in the case of ethylene (Fig. 3). If the muscle

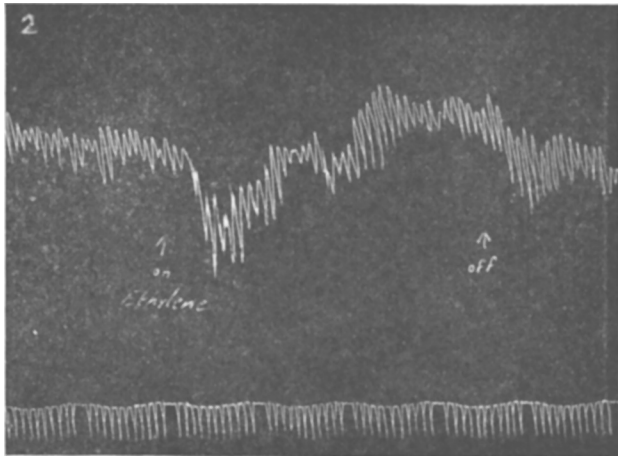

FIG. 2.
Effect of ethylene on isolated intestinal muscle.

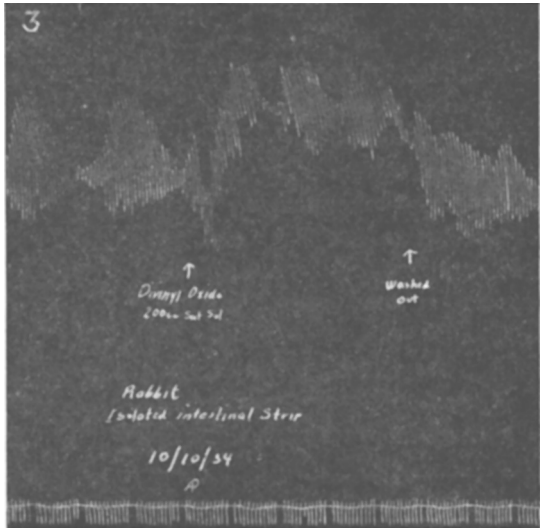

FIG. 3.
Effect of divinyl oxide on isolated intestinal muscle.

tonicity is greatly augmented by the addition of divinyl oxide, the amplitude of contraction is usually reduced, and the increased tonicity is gradually lost as the oxygen bubbling in the bath removes the volatile agent.

Clinically ethylene anesthesia is felt to produce much less disturbing gastro-enteric symptoms than ether. The incidence of post-operative intestinal stasis and gas pain seems to be less after ethylene than after ether. This is in accord with the direct observation of Luckhardt and Lewis[3] that more active peristalsis is noted by surgeons during abdominal operations under ethylene than under ether. It is also in accord with Miller's findings,[1] and those reported here. Our observations on the action of divinyl oxide on isolated intestinal muscle indicate that in this respect as in other phases of its pharmacology, it has properties resembling ethylene more than ether. Indeed, since it definitely increases intestinal muscle tonus, it may be expected to be followed by even less post-operative intestinal stasis when used clinically than ethylene, which is reputedly so much better in this desideratum than ether.

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