

On the other hand, sera from 5 tested cases of encephalitis in an outbreak in Paris, Illinois, occurring in the summer of 1932 and described by Conklin,⁵ did show protective properties. And finally, serum from 1 case of acute encephalitis, September, 1933, in Dr. L. F. Frissell's service at St. Luke's Hospital, New York, thought by him to resemble clinically the St. Louis type, and from 1 case of acute encephalitis, September, 1933, seen by Dr. H. T. Chickering in New York, showed protective properties against the virus.

The results indicate, first, that the filterable virus obtained from fatal cases of encephalitis in St. Louis and Kansas City is the specific agent responsible for the encephalitis epidemics in St. Louis and Kansas City during the summer of 1933 and the epidemic in Paris, Illinois, during the previous summer; second, that the cases of meningoencephalopathy in Indianapolis were probably different from the encephalitis in St. Louis; third, that cases of the St. Louis type of encephalitis occurred in New York during September, 1933; and finally, that chronic cases of so-called epidemic encephalitis thus far tested do not show protective properties in their sera against this encephalitis virus.

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On the Motility of the Colon of the Dog.

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A new technique was devised, for the purpose of studying separately the movements of the 2 coats of the intestine of the unanesthetized dog. The results obtained necessitate a revised statement of the "Law of the Intestine", at least for the colon of the dog.

A section of the colon about 10 cm. long was exteriorized; opened along its anti-mesenteric border, and grafted onto the subcutaneous tissue of the anterior abdominal wall. The mucosal surface now presents outward, so that stimuli may be applied to it in imitation of intra-colonic conditions. The motility of the coats of the graft is recorded by modified enterograph levers. The principle involved is that of recording the change in distance between two clips attached to the mucosa, either longitudinally or transversely to the graft.

⁵ Conklin, W. E., personal communication.

The stimulus which was used in the present study was a stroke applied to the mucosa by means of a blunt metal teaser. The experiments were performed on non-anesthetized animals, after they had recovered from the operation, and had been trained to lie quietly on their sides.

Longitudinal irritation of the mucosa of the colon graft elicited contraction of the longitudinal muscle, with little or no response from the circular muscle. Irritation of the mucosa transversely elicits a response from both coats of the colon. The longitudinal muscle contracts *first*, and is *followed* by contraction of the circular muscle. The biological significance of this order of contraction is made evident by the following observations.

When the transverse stroke stimulus is applied to the mucosa cephalad to the recording clips, the longitudinal muscle contracts at and *below* the area of stimulation; there is no contraction above the stimulus. The circular muscle contracts at and *above* the area of stimulation; there is no contraction below. The longitudinal contraction *below* the stimulus precedes the circular contraction *above* the stimulus by 3 to 5 seconds. The "myenteric reflex" is abolished by atropine given systemically, and by cocaine applied to the mucosa of the graft at the area of stimulation.

Contraction of the longitudinal muscle, acting alone, enlarges the lumen of the gut. When this occurs *below* the point of stimulation, the downward passage of the bolus is facilitated.

Contraction of the circular muscle, acting alone, narrows the lumen of the gut. When this occurs *above* the stimulus, the passage of the bolus orad is prevented. Occurring after the gut lumen is enlarged below the bolus, it promotes the downward passage of the bolus. As the bolus passes downward, a new area is stimulated, and new reflexes are initiated. Such a sequence of reflex responses may give the appearance of peristalsis.

The "law of the intestine" or "myenteric reflex" may be restated as follows: In the colon of the unanesthetized dog, *stimuli applied to the mucosa elicit first a contraction of the longitudinal muscle at and below the point of stimulation; this is followed by contraction of the circular muscle at and above the site of stimulation.*