During this time I have seen 10 cases where assurance was given the physician, by cultures and by examination of the other children in the family, that the streptococcus was the etiological factor. Four of these were intubed. There were no fatalities.

Inasmuch as there was nothing more extraordinary about the 11 cases with 5 deaths in the first series as contrasted with the 10 cases and no deaths, there may have been a something extraordinary that the second class did have done for them. Therein I believe lies the possibility of saving lives. Instead of being given antitoxin and relying on that to relieve the condition they were treated with sedatives and vaporizations. In other words, knowing a case to be laryngeal diphtheria, we rely on antitoxin for combating toxicity and intube with the knowledge that only at a certain time is relief of obstruction necessary. The streptococcal infections are characterized by a much more rapid course. In waiting for the same degree of obstruction the case is more immediately lost. Earlier interference from a more acute edematous process with more constant medical treatment has apparently given absence of fatalities. It is so definitely so to me that I feel sure that a similar study of these negative culture cases of primary laryngitis if studied both sporadically as well as during grippe prevalence, when they may be truly epidemic, in metropolitan cities will aid in cutting down the death rate.

Recognition of these cases is secondly of the greatest importance from the public health standpoint in preventing further illnesses in the following manner. It being the custom of cities to culture all family contacts and diagnosing carriers from the cultures, it would be found that no carriers existed in the house or neighborhood should they seek further than the house. There would be free for future neighborhood and family contact these streptococcal nasal carriers. The secondary and return cases in families and in the neighborhood are varying grades of septic sore throat as well, and any connection with the previous case is not realized. Less frequently I have found that the bronchopneumonias of infants in the family follow the appearance of the carrier. I have previously shown that the streptococcal nasal carrier leaves behind him a train of victims of major and minor illnesses which is unbelievable until the detective finally trails him to his lair. There is no exaggeration in saying that Pandora's box was hardly a circumstance. The illnesses and debilities caused by such a carrier in contradistinction to a diphtheria carrier, extend beyond the field of contact of children. It is so common to find among the working members of the family coincident "malaria," "grippe," "sore throats" and obscure minor complaints that there is need of much more field work to show that they are not dependent on the same factor.

SUMMARY.

It is important to recognize that membranous croup may not be a primary laryngeal diphtheria; that it is probable that many cases treated as such would not be fatal cases were they so recognized and more rationally treated.

Recognition of sporadic and epidemic streptococcal laryngitis opens up a wide field in preventive public health work from appreciation of true carriers. This field apparently extends beyond the disabilities and illnesses of childhood and is worthy of examination as to its extent as a measure of health insurance for the wage-earners.

Though less frequent, similar study should be made of the pneumococcal type as offering analogous preventive measures and reduction of mortality.

"Croup" is as undesirable a term as "membranous croup." Equally pernicious, both should be so listed and the reader referred to "laryngitis," with the query as to what the infecting organism was.

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- ¹ Streptococcal Infection Simulating Diphtheria. BOSTON MEDICAL AND SURGICAL JOURNAL, June 8, 1916.
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SOME EFFECTS OF MASSAGE ON THE COLON.*

BY FRANKLIN W. WHITE, M.D., BOSTON,

Instructor in Medicine, Harvard University; Visiting Physician, Boston City Hospital.

ABDOMINAL massage is a method freely advised and used in intestinal stasis both general and local. We have felt uncertain about the actual results obtained and wished to verify them by actual observation. Cannon's method of direct examination of the bowel with the röntgen ray was used in studying the human colon at intervals after vigorous abdominal massage (especially of the colon).

The persons examined were vigorous, and without any important disease of the digestive or other organs. They came with a well-filled colon about twenty-four hours after a barium meal, were massaged, and the colon watched at intervals with the röntgen ray and fluorescent screen to see what happened. Deep abdominal massage was given for five to twenty minutes, especially over the course of the colon, transversely, both to mash up the contents, and to push them along, if possible.

There was great variation in different persons in the accessibility of parts of the colon to

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massage. For example, we especially wished to empty the cecum "the human drain trap," but we found the cecum in all sorts of positions, from deep in the true pelvis (and entirely out of reach) or in the hollow of the ileum and easily accessible, to positions above the iliac crest with only a soft background. Unless one *knew* where the individual cecum was, much effort to massage it directly would be wasted. The transverse colon hung at quite different levels and the splenic flexure was often, and the hepatic flexure at times, well under the edge of the ribs and very hard to reach. The pelvic colon was practically inaccessible.

We see difficulties for the patient in following Sahli's advice to perform auto massage with a cannon ball "along the probable course of the colon."

We found that vigorous abdominal massage usually mashed up the contents of the colon but had little or no immediate effect in moving the solid contents forward; Case¹ and Hertz² report similar results. This was true of massage of any sort whether transverse, or stripping along the course of the colon. Strong pressure will not move the contents of the ascending colon into the transverse colon or the contents of the transverse into the descending colon. The haustrae, by gripping the contents in many places, held it firmly.

If the colon is distended with gas a small lump of contents may occasionally be moved a short distance forward. If the abdominal walls are well relaxed and the bowel forcibly compressed with the fingers in a favorable place like the iliac fossa, where there is a firm background, a little movement may result. When a full cecum felt as if it were being emptied at once, it was found that gas had moved forward, and solid contents merely flattened out in both directions.

We found when the cecum was low, or below the brim of the pelvis, that massage often pushed the tip of the cecum still lower into the pelvis and pushed material further down into the cecum, filling it fuller than before. This is unfortunate as these are just the cases where mechanical help in emptying the cecum is most needed.

These results contrast sharply with the easy statements often found in text-books that "massage pushes along the contents of accessible portions of the stomach and bowel."

It is evident that any favorable effect of massage must be due to increasing the tone of the colon, not by directly squeezing its contents along.

In watching the later results of massage of the colon at intervals of several hours, it was found that massage sometimes delayed, but usually hastened, the passage of colon contents evidently by stimulation of slow peristalsis. For example we found that massage at 2 p. m. would quite often cause an extra stool at 8 or 9 p. m., in addition to the usual morning stool.

The occasional delay after massage was probably due to muscular spasm.

The effect of massage was small in comparison with the stimulus of taking food. That is, the well-known forward movement in the colon after a meal was much greater than we could produce in the same time following vigorous massage of the colon.

A rapid onward "mass movement" of a large portion of colon contents was seen very rarely (twice) after massage. That is, a part of the colon suddenly loses its haustral markings, forming a sausage-shaped mass which travels rapidly from one part of the colon to another. These large movements had no direct relation to the force of massage; for example, deep massage in one case would give no result, and light palpation would cause a marked mass movement in another. The massage was not a mechanical stripping process, but the stimulus to a reflex mechanism.

SUMMARY.

Cannon's method of direct examination of the bowel with the röntgen ray was used in studying the human colon at intervals after giving abdominal massage (especially of the colon.)

There was great variation in different persons in the accessibility of parts of the colon to massage.

Vigorous massage usually mashed up the contents of the colon, but had little or no immediate effect in moving the contents forward. When a full cecum was apparently emptied at once, it was found that gas had moved forward and solid contents merely flattened out in both directions.

Massage sometimes delayed, but usually hastened the passage of colon contents at the end of several hours, evidently by stimulation of slow peristalsis. The effect of this stimulus was small in comparison with the stimulus of taking food.

A rapid onward "mass movement" of a large portion of colon contents was seen very rarely (twice) after massage. These large movements had no direct relation to the force of massage, but followed gentle palpation.

Prompt emptying of any part of the colon by massage is a fallacy. This is especially true of the low cecum, which is usually inaccessible and is often pushed lower and filled fuller than before. The good effects of massage are found in a mashing up of the intestinal contents and a stimulation of muscular tone and slow peristalsis, which usually drive the contents slowly forward for several hours.

I wish to acknowledge my indebtedness to Prof. Walter B. Cannon of Boston for valuable help and suggestions.

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¹ Case: *Journal of the Iowa State Med. Soc.*, vi, 1916.

² Hertz: *Constipation and Allied Intestinal Disorders*, London, 1909.