itis means a great deal to the patient, and there are cases where there are no lesions found except some evidence of a diffuse peritonitis, and here it seems to me the drainage would be a great help.

Dr. Einhorn said that the first case he saw had been diagnosed "acute indigestion." Of course, indigestion is the thing by which the average person, and a great many doctors, account for any trouble. I recently saw a case in which the physician had made a diagnosis of "acute indigestion." The abdomen was very much distended and it was not possible for me to tell what was in the abdomen. I suggested immediate operation. The patient's temperature was 103°, there was a rapid pulse, pain and vomiting. At the operation a ruptured gall-bladder was found.

I submit that the word meteorism does not exactly cover the symptoms. Idiopathic peritonitis possibly might account for more of them.

Dr. A. L. Levin, New Orleans, La.—I saw last year during the epidemic of influenza at the Base Hospital, Camp Beauregard, a good many cases of the type which Dr. Einhorn mentions. The true cause of meteorism was proven at autopsies on several of those patients and it was found to be a septic peritonitis. A most unusual complication which occurred in one of my ward cases, namely, rupture of the transverse colon, evidently as a result of that marked meteorism, and which was reported in the *American Journal of Medical Science*, was found at the autopsy to be due to a plastic peritonitis. In this particular case, as well as in the others which went to the autopsy room, the same type of pneumococcus which was found in the sputum and blood was also obtained from the peritoneal fluid. This would prove that infectious meteorism is not a disease *per se*, but a complication in the course of systemic infection, whatever it may be. It was, indeed, a serious complication in those cases of influenza, especially with pneumonic involvement. Our *modus operandi* was to give pituitrin subcutaneously or intravenously sometimes, and frequent irrigation of the lower bowel. As little food as possible was introduced into the gastro-intestinal tract for a period of thirty-six to forty-eight hours.

Dr. J. C. Johnson, Atlanta, Ga.—I wish to ask Dr. Einhorn in closing to state whether or not there had been any pre-operative experience in either of these cases. Had there been operation of any kind about the abdominal cavity?

Dr. Einhorn (closing).—These people had never had any operation at all.

In closing I would like to mention one case which Dr. Vincent, of the Post-Graduate Hospital, reported, indicating the connection between that type of disease and the gripe. He diagnosed it as appendicitis. The abdomen was full, but there was no leucocytosis, and upon examination there was great tenderness over the appendix region, and he took it as the regular type of appendicitis. He operated and found there was nothing in the appendix, but he took it out, anyway, as any surgeon would have done. He also found that the coils were distended

without obstruction. That patient died a few days later. He reported that at one of our meetings (he did not know of my paper) and he himself thought there must be some kind of paralysis of the bowel, and he thought it might have been the gripe which did it. I am convinced it was the gripe, because I had a number in my ward with gripe with similar symptoms, disturbance in the abdomen, vomiting and meteorism, although we did not secure any autopsies.

AN IMPROVED STOMACH TUBE*

BY GEO. C. MIZELL, M.D.,
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Some years ago it became apparent that the stomach tubes then in use failed to give accurate information as to the amount of residue in the stomach, and often failed to obtain a specimen sufficient for examination. Also, there was, in some patients, great difficulty in emptying the stomach of mucus and food residue by lavage with either of the standard tubes of that day, such as those designed by Ewald, Boaz, and Einhorn.

The shape and position of the stomach are so variable in different individuals, and, indeed, in the same individual, that the tubes with openings in the first inch or two of the distal end prove inadequate, and all of the difficulties can not be overcome even if we add to the discomfort of the patient by changing the depth of the tube.

I have found much satisfaction in the use of a tube which has six openings. These openings are placed, three each on opposite sides of the tube, and extend 17 cm. up from the distal end. They are of equal size, 4 x 10 mm., and placed 20 mm. apart. The tube should be 80 cm. in length or more in order to reach the most dependent portion of any stomach.

Tubes of this modification have been in use by the author and others some fourteen years, but their true value was not appreciated by me until I undertook to use the issue tubes furnished by the Army. The difficulties were so great that I have thought it of sufficient interest to present the design here for such use as you may

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care to make of it. In my work I have found it indispensable. It is the only means of checking the x-ray findings which go far in determining the emptying time of the stomach. But it can be shown that the emptying time of a stomach filled with a barium or bismuth meal does not always accord with that of one filled with normal mixed food.

The character of the contents as regards fluidity, viscosity and chemical constituents, including acidity, have much to do with the emptying time, or amount of residue at a stated time; and until a meal is used in radiography that more nearly approaches the normal, this method will not give perfect information. It is well, therefore, to have some means of checking these findings. Many instances of error, due to inadequate apparatus, have been uncovered in the author's observations, which changed the whole aspect of the cases. In this connection and illustrating the point, one case which is of record may be of interest.

It was to the interest of this patient to pass a good physical examination, and he denied disability. My findings included 360 cc. of residue after an Ewald test breakfast and 180 cc. of residue in the a. m., fasting. The roentgenologist reported barium meal passing out of the stomach rapidly; stomach empty in four hours.

The findings were hard to reconcile, and this could be done only by taking into consideration: first, the fact that the roentgenologist as a routine gave the patient a liquid diet the day before examination; and, second, the nature of the meal given before the x-ray examination.

It has been found advisable to feed patients who are to have an operation for gastro-enterostomy or a resection of the stomach up to within a few hours of going to the operating room. This would not be safe without a sure means of emptying the stomach just before beginning the operation. This plan has been followed in cases and the stomach found entirely empty, when opened, in every instance.

One caution in using this tube is necessary, i. e., on withdrawing it the tube should be left open until it has been withdrawn about 20 cm. This permits any material in the lower end to empty back into the stomach and avoids its escape into the mouth and throat, which occurs when the first opening passes the teeth.

DISCUSSION

Dr. Seale Harris, Birmingham, Ala.—I have not had any experience with the stomach tube Dr. Mizell has devised. It is certainly an ingenious method, but the question occurs to me whether this would be better in removing the contents of the stomach than the ordinary tube. Of course the principle of the stomach tube is siphonage, and the tube must be full of fluid in order to siphon the contents from the stomach. Now with the opening extending so high up it occurs to me that unless there was a good deal of fluid in the stomach it could not be handled by the siphon principle. In other words, if some of the holes high up would be above the level of the fluid it would not be possible to secure the siphonage effect. However, with an aspirator it might be siphoned out. There is a question as to the importance of residual fluid in the stomach. Of course it is important to get it all out for purposes of diagnosis, but where there is marked stasis it does not do any harm if a little fluid is left in the stomach. It will all pass out in a short time through the duodenum and the stomach will be empty. I can see how this would be of value in some cases, but it is a question whether it is of advantage over the ordinary tube for most cases.

Dr. J. B. Fitts, Atlanta, Ga.—We have been using the tube which Dr. Mizell has described for several years in our work and we find it decidedly the most efficient tube on the market. There are three desirable features about the tube which occur to me. One is the fact that it is flexible at the distal end which makes for ease of introduction. A very stiff distal end frequently causes gagging and discomfort. Another point of value, I think, is that it is of slightly smaller calibre than the average tube found on the market. Sometimes the calibre of a stomach tube is larger than necessary, particularly for the evacuation of say an Ewald meal. Of course that does not obtain with the majority of meals. The three perforations in the last six inches of the distal end are particularly valuable in facilitating the complete evacuation of contents. We have used this tube almost exclusively and find it in our experience of considerable advantage over the old style.

Dr. Mizell (closing).—I wish to thank Dr. Pitts for calling attention to the advantages of this tube and mentioning those properties not alluded to in my paper. His observations are based upon experience and I value them very highly.

Replying to Dr. Harris, I wish to say that this tube has all the advantages of other tubes and that the additional openings do not interfere with siphonage at all and may be depended upon to empty the stomach entirely.

In ordinary lavage where it is immaterial whether or not there are three or four ounces left in the stomach, any tube will serve, but where it is of value to know the amount of residue and when it is important that the stomach be completely emptied, the tube here shown, as stated above, may be depended upon.