irrigated with six-tenths of 1% salt solution. Its walls appeared so little changed from normal that, feeling sure that all the stones were removed, I decided to close the wound in the gall bladder with silk Lembert sutures. This being accomplished I closed the abdominal wound in layers, continuous cumol catgut in peritoneum, chromicized gut in fascia, and subcuticular silver wire in skin.

Sept. 6, ten days after operation. Silver wire stitch removed; primary union. The highest temperature was the day following operation, 99°; normal ever since.

Sept. 13, seventeen days after operation. Patient returned to her home with a good appetite and happy countenance.

Nov. 20. I learned she has been quite well since leaving hospital.

CASE VIII. R. G., female, 27 years, married, entered St. Joseph's Hospital Oct. 14, 1901.

Cholelithiasis: Cholecystostomy; removal of stone. Recovery.

During the past 6 years, with intervals from 3 to 6 months, she has had attacks of pain in the right hypochondrium, radiating to back. These attacks lasted about 3 days and were relieved by morphin. First noticed jaundice 2 years ago during an attack with clay-colored stools. At that time she remained 2 months in a hospital in Fall River.

Diagnosis.—Gallstones.

Operation advised but patient declined. She has frequently had chills followed by profuse perspiration. She entered St. Joseph's Hospital for repair of lacerated cervix and perineum and relief from a retroverted uterus. While being prepared for operation she was taken with severe biliary colic, the pain being so intense that she lost consciousness on two occasions and had convulsive twitchings. There is localized tenderness over gall bladder area; pain radiates to back.

Oct. 22. Operation: Ether; incision 3½ inches long at outer border of right rectus muscle. Gall bladder deeply seated, very much atrophied, about two inches long. Stone filling cystic duct. Gall bladder incised and stone removed in fragments. It was impossible to stitch gall bladder to parietal peritoneum, so abdominal cavity was walled off with gauze and an iodoform gauze wick placed in bladder and cystic duct. Peritoneum was partially closed with cumol catgut; the fascia with chromicized gut and skin with subcuticular silver wire suture. The next day bile appeared in the wound.

Oct. 24. Walling-off gauze removed.

Oct. 25. Gauze wick removed and replaced by smaller wick.

Oct. 27. Bile appeared in stool.

Nov. 1. Bile ceased discharging from wound.

Nov. 18. Biliary fistula closed. Has had no recurrence of symptoms. Disposition much more cheerful.

Nov. 19. Operation: Ether; curettage; amputation of cervix; perineorrhaphy and Alexander's operation.

Nov. 25. Patient doing well. Temperature and pulse normal.

Since this paper was read, I have operated on 6 cases of cholecystitis, with recovery in every case.

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ON THE VALUE OF MODERN METHODS OF DIAGNOSIS AND TREATMENT IN GASTRO-INTESTINAL DISEASES.

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Much of the recent journal literature on subjects pertaining to the stomach has been of a somewhat scientific nature, of principal interest to those who are concerned in the modern methods of diagnosis and treatment of gastro-intestinal diseases. A great deal of it has perhaps been beyond the comprehension of the general physician. Very likely it has to him seemed characterized by reports of endless chemical analyses and by elaborate technical methods of examination of the stomach. As a result, I believe many physicians have come to the conclusion that these methods are practical in the laboratory only, and that the results obtained are hardly worth the time devoted to them. This belief has recently been strengthened by skeptical remarks made to me on the subject by fellow practitioners. Moreover, the adverse attitude maintained by some of the members of the medical staff of the Boston Dis-

pensary, towards the establishment of a gastro-intestinal clinic, has led me to an appreciation of the true disposition of the general physician regarding these methods at the present time. There may be other good and sufficient reasons for this disposition; I attribute it to a lack of familiarity with the subject.

Physicians as a rule have not yet become familiar with these methods, and as a natural consequence do not appreciate their value. Many very likely have not had an opportunity to learn them, and doubtless there are others who have scarcely had their attention called to them, but certainly there are some who before this should have acquainted themselves with these new and valuable methods.

It is now three years since I began the use of these newer methods, in private and dispensary practice, and I believe sufficient time has elapsed to allow a "cooling off" of any undue enthusiasm which is so liable to take possession of the novice. Therefore let me ask you not to attribute the motive of the following remarks to overenthusiasm, but rather to a desire to make more generally known some of the beneficial results which may be derived from the employment of these methods in gastric diseases.

Before further considering the newer methods let us for a moment review the older ones. By these older methods our diagnosis is made almost entirely from the subjective symptoms of the patient. If he has a pain in the epigastrium we guess it may be due to the presence of gas, not knowing whether the conditions of the gastric contents are such as to cause its formation or not. Or, if our attention is called to vomiting, nine times out of ten we cannot tell positively whether it is due to conditions associated with a dilatation of the stomach or if its origin is a neurosis. In fact, diagnosis by these older methods is scarcely more than a mere matter of guess-work. Our treatment, it must be admitted, has been mainly empirical. That we have dosed our patients with alkalis after meals when they have been suffering from a deficiency of hydrochloric acid, and that we have frequently prescribed hydrochloric acid when the patients' stomachs were being gnawed by the pains resulting from an excess of this acid, are facts which these modern methods disclose.

In fact, the revelations made by the use of these methods, I can well compare to those made by the x-rays in surgery.

But what about these newer methods? I have lately been asked if they really aid one in practical results? If they are of more than mere scientific value? My answer is that they aid one very much in the diagnosis and treatment of gastric disorders; but I must add, that thus far they have not enabled us to diagnose or cure all gastric diseases. These methods are still new, and doubtless we are not yet sufficiently familiar with them to correctly interpret all the results that they disclose. It is also very probable, judging from the present rapid advance in this line, that in the near future other tests will be instituted which will help us to

clear up many of the mysteries of gastric affections now existing.

That these methods will prove of such great value that they will be generally employed in the clinics of all of our larger hospitals and dispensaries, I do not hesitate to predict. That they will soon be taught in all of our better medical schools, I firmly believe.

From the large amount of experience necessary to their successful employment, the finer details of these methods will probably never be used by the general practitioner, but I have no doubt he will gather from the mass a sufficient number of valuable tests to enable him to more rationally treat his ordinary gastric cases and to aid him in recognizing those cases beyond his skill.

New works on this subject are constantly appearing, and to them I must refer you for the details and technique of these methods; suffice it for me to show in a small way some of the advantages which may be derived therefrom. I feel that I can best do this by briefly reporting two cases which lately came under my observation on the same day at the Boston Dispensary. How well these cases serve the following purposes I will allow you to decide: (1) They are to show that very similar subjective symptoms may be produced by entirely different gastric conditions; (2) that the employment of these newer methods is absolutely necessary in determining the true conditions of the stomach and its secretions, and in directing proper treatment.

CASE I. Oct. 22, 1901. Man, age 40, trader. Has had gastric disturbance past 10 or 12 years; the last two months it has been more severe. The chief symptom is a diffused pain in the epigastrium, sharp in character, occurring $1\frac{1}{2}$ to 3 hours after eating, and continuing until he eats again; as a consequence, of late, he has eaten 5 to 7 meals a day. The pain frequently occurs at night. In the daytime it is so severe that it often prevents him from attending to business. Tenderness in the epigastrium accompanies the pain. The appetite is good; there has been no loss of flesh. The bowels are regular. Slight gaseous eructations usually occur 15 to 20 minutes after eating. Slight nausea precedes attacks of vomiting, which lately have occurred once a week. The sensation of a lump in the stomach is constantly present. Flatulence is considerable. There has never been hematemesis nor colic. He uses neither alcoholic liquors nor coffee, but drinks 2 cups of tea a day and smokes 4 cigars. He believes vegetables disagree with him. The breath is not offensive. The teeth are in good condition except the molars. The tongue is slightly coated. Palpation reveals no tumor and but moderate tenderness in midepigastrium; no succussion sounds elicited. Inflation and percussion gives the greater curvature at $1\frac{1}{2}$ inches above the navel. Resonance in xiphoid-umbilical line $5\frac{1}{2}$ inches. Stomach lung resonance extends to midaxillary line and up to fifth rib. Fasting contents for 13 hours were 30 cc., one-third of which was food particles; there was considerable

mucus and a few bloody particles. Test meal contents, 45 cc.; free HCl, .4 per M.; total acidity, 30 per C.; lactic acid, none. Lavage with sodii bicarb. was done, and an alkali before meals prescribed. A semiliquid diet was ordered, meals three a day.

Oct. 25. Reports practically no pain since last visit. Fasting contents for 15 hours, 25 cc. They contained no food particles, but considerable mucus and a little blood. Test meal contents, 12 cc.; free HCl, .2 per M.; total acidity, 26 per C. Treatment the same.

Oct. 30. Reports no pain thus far worth mentioning.

Nov. 7. Some days he has very slight pain 4 to 5 hours after eating his noon meal. Test meal contents, 30 cc.; free HCl, .1 per M.; total acidity, 50 per C. Patient considers himself practically cured, and for this reason it is difficult to induce him to continue treatment. A more liberal diet is allowed, observation to be continued.

CASE II. Oct. 22, 1901. Man, age 24, carpenter. Has had stomach trouble past 6 months. During this time he has lost 12 pounds of flesh. The chief symptom is pain in the epigastrium, diffused, dull in character, occurring 2 to 4 hours after eating and lasting until he eats again. The pain at night is not sufficient to awaken him, but in the daytime it frequently prevents him from working. Gaseous eructations are slight, there is no pyrosis. Slight nausea precedes attacks of vomiting, which have occurred several times during the past 6 months. The sensation of a lump in the stomach is constantly present. The appetite is fairly good, but on account of a feeling of fullness in the stomach, at times he does not eat his regular meals. The bowels are moderately constipated. There has never been any flatulence nor colic. No hematemesis. He knows of no particular foods that disagree with him. He drinks 3 or 4 cups of tea a day and one of coffee. Does not use alcoholic liquors nor tobacco. The breath is not offensive, teeth fairly good condition, tongue slightly coated. Palpation gives moderate tenderness in epigastrium, no tumor. Succussion sounds are elicited from the stomach after 12 hours fasting. Inflation and percussion gives the greater curvature at level of navel. Stomach lung resonance extends to midaxillary line and up to sixth rib. Resonance in xiphumbilical line not recorded. Stomach contents after 12 hours fasting amounted to 130 cc., slightly turbid but without food particles or mucus; free HCl, .7 per M.; total acidity, 42 per C. One hour later test meal contents, 110 cc.; free HCl, 2.4 per M.; total acidity, 84 per C.; lactic acid, none. Lavage with silver nitrate solution, 1 per M., was done and repeated on alternate days. Antacid tablets equivalent to sodii bicarb., 10 gr., 2 to 6 after meals were ordered; also a nitrogenous diet. Cascara sagrada was given for the bowels. After 8 days' treatment the patient was obliged to leave the state. On the day of his departure he reported that he had had no pain of consequence for the past 3 days. With the aid of a

stomach tube and a supply of medicines he was to continue treatment as best he could.

The appended tables give the amounts of fasting and test meal contents, also the amounts of free HCl and total acidity for the 6 occasions on which I saw him.

Date.	Hours Fasting.	Amount.	Free HCl.	Total HCl.	Total Acidity.
Oct. 22.	12	130 CC.	.7 per M.	—	42 per C.
" 23.	16	160 "	1.3 " "	1.9	64 " "
" 24.	16	205 "	1.4 " "	—	60 " "
" 26.	15	80 "	1. " "	—	58 " "
" 28.	14	100 "	1. " "	—	54 " "
" 29.	19	95 "	1.4 " "	—	69 " "
Dec. 14.	12	35 "	.2 " "	—	24 " "

Date.	Test Meal Contents.	Free HCl.	Total Acidity.
Oct. 22.	110 CC.	2.4 per M.	84 per C.
" 23.	80 "	2.3 " "	64 " "
" 24.	70 "	2.4 " "	82 " "
" 26.	30 "	2.4 " "	84 " "
" 28.	70 "	1.9 " "	74 " "
Dec. 14.	40 "	1.8 " "	61 " "

NOTE.—It will be remembered that normally free HCl is present in about 1.5 to 2. per M. one hour after a test meal, and that the total acidity should be 40 to 60 per C.

Of the marked similarity of the subjective of these two cases I believe there can be no question. I also believe that ordinarily these cases would have received the same diagnosis and treatment. Yet how different are the conditions found to exist.

In Case I we have grossly (1) a low acidity, (2) a large amount of mucus, and (3) a large, but not dilated, stomach.

In Case II the most notable features are (1) a secretion of gastric juice as late as 19 hours after last meal, and with an acidity nearly as high as is usually found one hour after a test meal, (2) an acidity after test meal abnormally high, and (3) a moderately dilated stomach. How else but by these modern methods could these conditions be ascertained? And is not the knowledge of them absolutely necessary to rational treatment?

Medical Progress.

RECENT RESEARCH IN PHYSIOLOGICAL CHEMISTRY AND PHARMACOLOGY.

BY M. VEJUX-TYRDE, M.D., BOSTON.

MOST of the following extracts are from articles published during the last six or seven months. Some were published at a slightly earlier period.

K. Hedbom¹ (Upsala, Sweden) performed pharmacological experiments with antiarin, the active principle of antiars. He obtained convulsions in warm-blooded animals and increase in the systolic contraction of the frog's heart. He

¹ Arch. f. Exp. Path. u. Pharm., April, 1901, No. 45. p. 317.