Home! for the night wind signals, "Get thee home";
Home, hardy admiral of the rolling deep;
Home from the foray! Home! That silenced song
Love's endless echoes keep.

For more than one cause then, Dr. Mitchell, whose achievements kept him in the forefront of a large band of distinguished men throughout a big and brimming half century, and made him almost as well known as the city with which he was so intimately identified, deserves to be remembered as a great man, and one filled abundantly with the wine of the intellect and of the spirit. Always eager, always virtually working even when nominally resting, warmly sympathetic, and in the best sense self-forgetting, his eighty-five laborious years were spent in the courageous service of the truth as he saw it, and in the constant presence of ideals and visions, of which his books and poems, his estimate of Phillips Brooks and of his own invalid sister, and the admiring voices of his friends, give willing evidence. Very different though his life was, in its external features, from that of the Canadian poet, William Henry Drummond, in memory of whom he wrote some charming and warm-hearted lines, published in 1910, these lines well describe a side of himself that was perhaps not the one most widely known, and with them this slight sketch may close:

IN MEMORY OF WILLIAM HENRY DRUMMOND.

Peace to his poet soul. Full well he knew
To sing for those who know not how to praise
The woodsman's life, the farmer's patient toll,
The peaceful drama of laborious days.

He made his own the thoughts of simple men,
And with the touch that makes the world akin,
A welcome guest of lonely cabin homes,
Found, too, no heart he could not enter in.

The toll-worn doctor, women, children, men,
The humble heroes of the lumber drives,
Love, laugh, or weep along his peopled verse,
Blithe mid the pathos of their meagre lives.

While thus the poet-love interpreted,
He left us pictures no one may forget—
Courteau, Baptiste, Camille mon frère, and, best,
The good, brave curé, he of Calumette.

With nature as with man at home, he loved
The silent forest and the birches' flight
Down the white peril of the rapids' rush,
And the cold glamour of the Northern night.

Some mystery of genius haunts his page,
Some wonder-secret of the poet's spell
Died with this master of the peasant thought.
Peace to this Northland singer, and farewell!

[Since this hasty sketch was written, Dr. Mitchell's exceedingly interesting Chicago address has been published (*Journal of the American Medical Association*, May 9, 1914), telling of the work of the Medical Department of the United States Army during the Civil War, and something more of his own labors and those of his personal colleagues than was within my knowledge. In many respects this warm and

able essay, written hardly more than a year before Dr. Mitchell's death, helps to place vividly before us the personality of its intensely human, life- and labor-loving writer.]

Original Articles.

REMARKS ON DIAGNOSIS AND TREATMENT OF DISEASE OF THE STOMACH.*

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

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I WILL speak first of some new methods of diagnosis and some old methods which have new values. The history has always been the most important factor in diagnosis and still is, in spite of the development of new methods. The history holds first place and the x-ray and the chemical tests divide the second and third places between them. No one symptom is distinctive however. Moynihan's statement, that "hyperacidity is ulcer" is not strictly true. Hyperacidity is one of the most common conditions of the stomach, due to a variety of causes and as seen in our Out-Patient Department and in private work most cases recover under careful treatment and show no signs of ulcer. There is always a small group which do not yield to medical treatment and which are sent to the surgeon. These are the most severe and trying cases and the only ones which the surgeon ordinarily sees. Here the per cent. of ulcer is high and prompts the statement which Moynihan has made. We must remember, however, that cases are carefully sifted before reaching the surgeon and surgical statistics are only of value for the class of cases seen by the surgeon.

TESTS OF SECRETION.

The stomach tube still holds its own as a means of testing gastric secretion. The Desmoid test, Einhorn's bead test, the string test of secretion, are comparatively unreliable and are little used. Chemical tests were formerly far too highly valued and now have been put in their proper place. The old days when a physician sent a specimen of stomach contents to a laboratory or consultant for complete diagnosis have passed, never to return. We are no more able to make a complete diagnosis from the stomach contents alone than we are from the examination of the urine. The tests have much value and we could not do without them, but they rarely make an in-

* Read at the Boston City Hospital, Clinical Meeting, Feb. 12, 1914.

dependent diagnosis and in some cases like duodenal ulcer they show surprisingly little.

There has been little change in the tests used in the last ten or fifteen years with the single exception of tests for blood. Here we may say that too much activity has been shown. Starting with the old Guaiac test, new tests have been brought out each more delicate than the last, such as the Benzidin, Phenolphthalein and Toluidin tests. Extreme delicacy is not desirable in these blood tests, any more than in a test for lactic acid or for mucus. It is possible to find blood so frequently with a very delicate test that it has no value in diagnosis. Blood tests are used everywhere nowadays to detect and rule out gastro intestinal ulceration and the ideal test should be simple and easy and not too delicate or too coarse.

In my opinion the ordinary Guaiac test is a rough test, not delicate enough for clinical purposes. Since it will not show blood in the feces with an ordinary meat diet, how can we expect it to show traces of blood which come from an ulcer? A recent report from the Mayo Clinic shows that the Guaiac test did not detect blood in the stomach contents in more than half the cases of gastric cancer. In my opinion the Benzidin test is the best test. It is recommended by all the recent text books; I have used it for years and found it simpler and easier and far more reliable than the Guaiac test for detecting traces of blood. Pure reagents clean glassware, and a proper technique are necessary for satisfactory results.

This test like most others which are used for blood can be made too delicate for clinical work. I think Schlesinger and Holst's modification of the test is the best, using two drops of gastric contents or two drops of a mixture of feces and water for making the test. The technique has been fully described by the author in previous papers.¹

This test has been slow in reaching Boston for some reason, but I am glad to see it in routine use here at the hospital at the present time. I have given both the Phenolphthalein and Toluidin tests a thorough trial and find them less satisfactory for clinical work.

TESTS OF MOTILITY.

This is the most important gastric function or at least the one which makes the most trouble if deranged. The stomach tube has been our reliance in making this test by finding fasting residue in the morning, of a test supper given 12 hours before, but now the tube comes in for its share of criticism. The x-ray shows that the tube may coil up in the stomach and avoid the residue and make the test useless and misleading; in other words, the radiologist says,² "When we pass the tube in the morning to recover fasting contents and find none, we do not know whether none is there or whether we have sim-

ply missed it." Such a poor result may occur without doubt, but I believe it may be avoided by proper technique. In the first place the stomach tube should be a straight one, kept straight by being hung up by the tail. It is often kept coiled by the maker and often kept coiled by the physician who uses it. This is a mistake. The coiled tube is much more likely to kink and curl up in the stomach while the straight tube has little tendency to do so. In the second place it is very desirable to use gentle aspiration in obtaining fasting contents and not to trust to syphonage or expression through the tube. It is obviously impossible to start a syphon with only a few teaspoons of stomach contents. A soft Pollitzer bag of the type made by the Davol Rubber Co., easily detachable is the best aspirator and will, if the stomach tube is moved back and forth during aspiration, recover even small traces of fasting residue. Finally if the stomach is washed out at the end of this process with a bulb full of water I think we are practically sure to detect traces of food if they are present in the stomach. This test of the stomach motility with the tube is in my opinion a very reliable one and not easily replaced by any other method.

Tests of motility made with the stomach tube and by the x-ray after a bismuth meal are not exactly comparable. They run parallel to one another in a general way, but the natural meal may leave the stomach either earlier or later than the bismuth meal. The cause for this we do not know. It may be that sometimes the bismuth acts as a foreign body and hastens emptying of the stomach or that in other cases it sticks to the wall and remains longer than food. The time of passage of natural meals is what we really wish to know.

In diagnosis of the motor power of the stomach the tests probably have equal value. The difference is that for many years, thousands of men all over the world have used the tube test. We have had enormous experience with it and know how to interpret its results; we have had much less experience with the x-ray method at the present time.

THE X-RAY.

The x-ray has been a very great help in diagnosis of diseases of the stomach. It shows the position, size and shape of the stomach as no other method will do, and most important of all it shows constant deformities in outline, due to ulcer, tumor or adhesions. It has been a great help in separating the medical from the surgical stomach cases. So much new data about the stomach has been obtained by the x-ray that at present it is in a somewhat undigested state and rather confusing. Some men use chiefly plates and give us one set of results, other men use chiefly the screen and give another set of results. The bismuth meals used are quite different in both

size and quantity. Different amounts and kinds of foods are used and different salts of bismuth and barium so that the results obtained by different men are not comparable. It seems as if a standard bismuth meal just as we have a standard Ewald-Boas test breakfast would be a great advantage.

In addition the x-ray men are not entirely in accord among themselves on important points of technique and diagnosis. To speak of one or two specific instances: Some men lay great stress on the importance of diagnosing a six hour bismuth residue in the stomach. Holzkecht has developed an elaborate scheme based on such observations as, "Atony never gives a six hour residue," "Gastric ulcer always gives a six hour residue." This is too dogmatic and is not true with the bismuth meals generally used. Atony may give an eight or ten hour residue and in fully half the gastric ulcers the stomach may empty in six hours. Other x-ray men consider a six hour residue the least important factor in diagnosis, merely a symptom depending on a great variety of causes.

Spasm of portions of the stomach has been a great source of error in diagnosis. They come from too many causes outside the stomach such as the gall-bladder, appendix, renal calculus, tabs and drugs, to be of much value in the diagnosis of gastric ulcer.

The x-ray appears to be somewhat in the position of the chemical tests ten or fifteen years ago, when it was said "lactic acid means cancer," "free HCl and a trace of blood means ulcer." These things have not proved to be true; there is a danger in being too dogmatic with too little experience.

On the other hand direct evidence of constant deformities has great value, as for example in duodenal ulcer. In a modest series of private cases in which an x-ray diagnosis of duodenal ulcer was made, the cases which came to operation proved the x-ray diagnosis to be correct in every instance. (I must admit that all these cases were typical and a definite diagnosis was made by older methods before sending them to the radiologist for confirmation.) Whether the reverse is true, or not, that is, whether a negative x-ray examination means no ulcer, I cannot say. My experience does not go so far. It is not easy to prove since the cases are less likely to be operated upon.

With adhesions about the pylorus it does not seem fair to expect the x-ray to show the cause, such as a previous ulcer, or gall bladder inflammation, but simply to show their presence by the deformity they produce, and let other clinical methods decide about their origin.

There is some doubt whether or not the x-ray can make a diagnosis of cancer of the stomach earlier than other methods, except in an occasional case. It certainly seems possible that it may detect mechanical changes in the wall of the stomach due to cancer of the fundus, or away from the pylorus, before changes in secre-

tion have occurred or any considerable disturbance of the general health. I am sorry to say that I have had little experience with early cancer as most of the cases that are sent to me for diagnosis have already passed the early stage.

The x-ray is not an independent method of diagnosis. It should be used with the history and the chemical tests to get the best results in difficult cases. One x-ray man of this city said to me recently, "I have to urge men to make the chemical tests in the stomach cases which they send to me for diagnosis. They apparently feel that if an x-ray examination is made, nothing more is necessary." This attitude is wrong and shows that the pendulum is swinging too far toward the new method.

SYPHILIS.

The relation of syphilis to ulcer of the stomach is important. Syphilis has been always considered one of the rarest diseases of the stomach. We may have to change our opinion about this. The Wassermann reaction has detected an enormous amount of latent syphilis in heart, vascular and renal cases and may perhaps do the same with regard to the stomach. My attention was called to the importance of syphilis by having several successive cases of peptic ulcer this fall with a triple positive Wassermann reaction. This may be simply a coincidence, but it may be more than this. Any patient who has syphilis may develop a peptic ulcer as an independent disease, but it is also possible that some of our chronic ulcers are syphilitic in origin. Two of the patients referred to were given anti-syphilitic treatment and treatment of the stomach combined and made an excellent recovery. The cases are too recent to know about recurrence and are not conclusive.

It would be much more definite if we find we can take such cases which have resisted ordinary thorough medical treatment and promptly cure them by giving the ulcer anti-syphilitic treatment. I think the subject is so important that it is worth while to try the Wassermann reaction in every chronic peptic ulcer. We may save some from the necessity of operation. I can see no reason to expect the x-ray to help us to distinguish a syphilitic ulcer from other ulcers of the stomach.

CANCER FROM ULCER.

The question of the development of cancer from chronic ulcer of the stomach is important and there is much conflicting opinion about its frequency. The old figures gave us six or seven per cent. of cancer developing from previous ulcer. Moynihan and the Mayo clinic place the figures about ten times as high, namely they believe that 60 to 70% of gastric cancer de-

velops from previous ulcer. It is difficult to reconcile these high figures with our clinical experience. I recently looked over my records of 100 cases of cancer for evidence on this point and found that a large majority of the cancer cases had a short history of digestive trouble; that less than one quarter of the cases had had any previous digestive trouble, and that less than one-tenth presented real evidence of preceding ulcer. Furthermore in a small group of ulcer cases followed for years without operation, the development of cancer is a great rarity.

While this clinical evidence is not absolutely conclusive it leads me to believe that the above figures, 60 to 70% are really far too high to represent the average run of cases of cancer of the stomach; that while they may be true for the carefully sifted and selected material of these surgical clinics, they do not represent the conditions met with in every day practice. My own impression is that less than one quarter of the cancers of the stomach develop from previous ulcer and perhaps the actual figures are much lower than this. Bearing these things in mind it certainly is not desirable to send every ulcer case to the surgeon as soon as the diagnosis is made, neither is it desirable for the surgeon to resect every accessible ulcer of the stomach.

TREATMENT.

I will speak briefly of a few of the newer drugs. Hydrogen peroxide, used internally by Petri in 1908, has a great power of lowering the acid of the stomach. This was first thought due to depression of the acid secretion, and later to neutralizing it by the alkaline product of the stimulated surface epithelium. I have found doses of two to four teaspoonfuls in a glass of water after meals very useful for temporary relief in hyperacidity of all sorts. Big doses such as Petri used (nearly two oz.) are likely to irritate the stomach and cause nausea. I have used it in conjunction with alkalis and oils and a proper diet.

Some new drugs have appeared for increasing the acid in the stomach. Acidol tablets which equal 12 drops of dilute HCl and are taken in a tumbler of water, have no advantage over the old acid preparation except convenience in carrying about, and cost much more. Oxyntin, which only increases the *combined* not the *free* HCl in the stomach can have little effect on peptic digestion.

Pankreon a preparation of pancreatin, much advertised and used on the continent, is claimed to be unaffected by the gastric fluids and to reach the bowel in an active state. The Council of Pharmacy of the A.M.A. found that it was promptly digested by pepsin in acid solution and thus rendered inert in the stomach before reaching the bowel.

Hormonal the peristaltic hormone of Zuelzer given with the object of physiologically stimulating peristalsis has proved so toxic and dan-

gerous in occasional cases that it seems unwise to use it.

Anesthesin, an insoluble local anesthetic similar to Orthoform in its action, has proved useful in sensitive stomachs in nervous people. The modern method in all nervous dyspepsias, however, is to treat the patient more and the stomach less. We really depend on rest, hygiene, sedatives feeding up and encouragement, while most of the "special apparatus," intra-gastric douches, and electrodes, powder blowers, gyro-meles, etc., which lumbered up the older textbooks on diseases of the stomach are rarely seen or used today.

Even lavage in spite of all the ingenious apparatus devised, is much less used than formerly, one reason being that the patient whose stomach persistently refuses to empty without help, wisely seeks a surgeon.

On the other hand not every patient with fasting residue in the stomach needs a surgeon. The stomach like the heart may have its periods of dilatation and decompensation and in some cases of atony and ptosis may fail miserably of emptying itself now and then. Here lavage with rest and diet may work wonders. I have seen within a week two patients of this type in whose fasting stomachs I found a half a pint of coarse food residue ten or fifteen years ago. Medical treatment gave prompt relief and they have been well for years.

Duodenal intubation is a new method used by Einhorn for treatment of peptic ulcer. A small soft rubber tube is passed into the duodenum and left in place continuously for ten or twelve days and food is poured through it directly into the bowel. The object is to free the ulcer from the irritation of food and gastric secretion and heal it quickly. A few men have used the method and reported good results, but it has not come into general use. I have tried it in a few cases with poor success. The constant presence of the tube was usually trying and the feeding often caused distress. I must confess that the continuous presence of an indigestible foreign body is not my idea of "giving the stomach a complete rest." The method is still on trial.

I have said nothing about diet in this brief review, not because it lacks importance, but because I have discovered nothing really new within the past year or two.

In surgery I notice less tendency to operate on non-obstructive peptic ulcers, evidently because the results have not been as good as in the obstructive cases. The x-ray clearly shows that in the former the food continues to pass out through the open pylorus instead of by the new surgical opening. The food continues to irritate the ulcer and the new opening tends to close and conditions are left as before operation. This makes the surgeon less eager to operate on some border line non-obstructive cases, and where operation is clearly indicated by reason of failure of medical treatment, inclines him to

close the pylorus at the time gastro-enterostomy is done.

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SIGNIFICANCE OF MINIMAL MACROSCOPIC GASTRIC STASIS.

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VON NOORDEN long ago called attention to the fact that while the stomach was subject to abnormalities of secretion and motility, the latter, particularly when they produced retention, were the only ones to actually cause a change in the metabolism of the body, because much of the nutritive value of the food is destroyed by fermentative and putrefactive processes. True, the hypersecretions by producing pain induce the patient to eat less food, and emaciation follows, but if the patient can be assured that a generous, well selected diet is beneficial to his condition rather than otherwise, and is the very best means of controlling the suffering, an equilibrium can soon be established; this cannot be done where stasis exists dependent on pyloric narrowing, since almost every effort to increase the amount of nourishment is overcome by the periodical onset of vomiting or the increased distress of the victim. Hence it behooves us to detect the very earliest manifestations of retention in order to forestall the subsequent malnutrition. At just this point we come upon two causes of delay of gastric contents in the viscus, as unlike as the two regions are described to be where we are supposed to pass our future life. Unfortunately, too, the clinical signs in the early stages differ from each other only in degree and that largely of time. When retention or delay arises from gastric myasthenia, a meal of a beefsteak, four tablespoons of mashed potato and bread and butter should leave the stomach in eight hours while, if due to pyloric narrowing, it may not leave for fourteen hours. As can be seen, there is no hard and fixed line of division, yet everything depends on this decision for the following reasons: a gastric myasthenia is either associated with a general weakness of the whole muscular system so commonly seen in the Stiller type with narrow chest and acute substernal angle, concave epigastrium and protruding region about the navel, often congenital or is the result of a general enteroptosis following repeated child bearing, hernia, or the weakening of abdominal muscles by laparotomy scars. Here

operation other than a shortening of the gastro-hepatic ligament, whose value has not been fully demonstrated, is of no avail, and only roborant measures can be employed. The other condition, true pyloric narrowing, is dependent on scar tissue from ulcer, cancer or adhesions from cholecystitis. Intermittent spasmodic narrowing due to gastric hypersecretion is maintained, but at least it cannot be common, and there must be periods when free egress of the contents occurs and retention of any considerable degree ceases. For stasis due to pyloric narrowing, only gastro-jejunostomy gives any permanent relief, while this operation does not aid myasthenia in the slightest degree. Thus we are driven to employ our greatest ingenuity in separating these conditions so essentially unlike, but with such similar manifestations. Nor is it permissible to wait until visible peristalsis and gastric rigidity make the differentiation so evident that "He who runs may read." Then the stomach has become distinctly dilated and as a result of the fermentation and vomiting the patient has become more or less emaciated, adding greatly to the danger and prolongation of the convalescence from the operation which must follow. An illustration of this is shown in the following case.

CASE 1. A man, 42 years of age of excellent habits who had had "stomach trouble" not clearly defined for a long period (two or three years, as near as he could recall), began three months ago to suffer more severely. He had epigastric pain after every meal, but it was more severe when he ate heartily, for his appetite remained good. There were eructations of sour fluid 3-4 hours after the food and once in two days, particularly at night, vomiting of large quantities of sour tasting fluid containing recognizable food fragments without any particular association of pain other than the distress mentioned. He had lost 20 pounds in weight though he was eating well and his movements were irregular and induced largely by laxatives.

The physical examination showed excellent teeth, no cachexia, no glandular involvement, while the heart and lungs were without significance.

The stomach was found to fill the whole abdomen; spurring could be felt and heard over the pylorus, but there was no mass, no resistance, but little tenderness, and no gastric waves could be distinguished. The fasting stomach washings, 18 hours after food, contained all forms of food fragments with numerous sarcinae and free hydrochloric acid. The gastric contents six hours after a chicken sandwich amounted to 400 c.c., had a musty odor with many bubbles, and the solid portion was one-third of the whole. Free hydrochloric acid was present and the acidities were 33 and 98. Sarcinae were abundant, but there were no Boas-Oppler bacilli. The clinical diagnosis was pyloric stenosis due to ulcer. The surgeon's report was duodenal adhesions, scar of an old duodenal ulcer, constriction of the ascending portion of the intestine and collapse beyond. The stomach was enormously dilated but no glands were found anywhere.

Of course every effort should be made to make a much earlier diagnosis than was made in this