in many patients is due to a too perfunctory trial of medical treatment in the earlier attacks. The hospital accommodation in the country is too small to allow of the poorer classes receiving the rest and supervision that is necessary. The pressure on beds is too heavy. The ideal would be to keep the patient under treatment until an x-ray examination showed that the ulcer was healed.

B. Surgical Treatment.

When a chronic gastric ulcer has refused to heal, or has recurred, after medical treatment, surgical treatment is necessary. There is not yet any close agreement as to the procedure which is best adapted to the various types of cases, and there is not yet available a full record of the after-history of large groups of cases.

The operation of gastro-enterostomy is that which has been most frequently practised. Its success at first was wonderful, probably because only the cases of obstruction were then treated. Later its results appeared to be capricious. A small number of cases did well, a larger number were not satisfactory, some of the results were bad. The operation may be supposed to have two effects: a "mechanical" one, whereby the stomach is more readily drained, and a "physiological" one, as the result of which the gastric contents are alkalized by the escape into the stomach of the pancreatic juice and the bile.

If an ulcer lies near the pylorus, or is distal to the new opening created by the operation, the results are often good; food escapes more readily, and does not, in the same degree at least, come into contact with the ulcer; and the spasm excited by the ulcer disappears in many cases. But in some cases the ulcer will not heal, or if it heals breaks down again, and a further operation is needed. In such cases I have performed gastrectomy. In other cases the ulcer certainly becomes malignant after the lapse of two years or more. In one of my own cases, which I have formerly recorded, cancer occurred in the base of the ulcer treated by gastro-enterostomy thirteen years before. Gastro-enterostomy has also succeeded in cases in which the ulcer in the body of the stomach is of moderate size, and is free from any adhesion to neighbouring parts; but in many cases it has certainly failed. That this operation alone cannot be of complete value is shown by the fact that fresh ulcers can occur in the stomach after it has been performed for duodenal ulcer. I have operated upon two such cases. At the first operation in each the stomach was healthy. In both cases the ulcer was large and well away from the anastomotic opening.

There is a general agreement among those who have written upon the subject of the treatment of gastric ulcers that an important part of every method consists in counteracting the normal or the increased acidity of the gastric juice. If this effect is necessary, then the physiological effect of gastro-enterostomy must play some part in causing the good results that do certainly follow at times upon its performance. Whether the partial or complete neutralization of the acidity is necessary to healing is, however, by no means as certain as is supposed; for in cases both of gastric and duodenal ulcer hypoaclidity is sometimes found. According to Friedenwald a reduction of the acidity occurs in about one-fifth of the total number in cases of gastric ulcer, and in my experience in rather more than this proportion of cases of duodenal ulcer.

I have little faith in the "physiological" action of gastro-enterostomy. If the access of bile to the stomach with its alkalizing properties were proved to be of any value, it would surely be better to anastomose the gall bladder to the stomach, as I have many times done in cases of carcinoma of the pancreas causing obstruction to the common duct. The entrance of bile into the stomach in these cases causes no discomfort whatever. Those surgeons who rely on gastro-enterostomy alone in the treatment of gastric ulcers usually insist upon a protracted period of dietetic restriction, of rest, and of the administration of such drugs as the "triple carbonates." I am personally averse from the performance of gastro-enterostomy except in cases of existing or threatened obstruction—that is, in cases of duodenal ulcer, or, in special circumstances only, of prepyloric ulcer. The whole matter requires fuller investigation; the effects upon the healing of the ulcer and upon the spasm of the stomach, as judged by x rays, must

be studied and the late results of the operations carefully recorded.

Gastro-enterostomy may be combined with excision of the ulcer, or its cauterization (Balfour's operation); or the ulcer may be infolded in the manner practised after perforation occurs. Excision alone I have discarded, partly because the ulcers occasionally recurred, and partly because such a deformity of the stomach followed as not seldom necessitated a short-circuiting operation. Balfour's operation has many claims to favourable consideration. It destroys the ulcer crater completely; it gets rid, therefore, of the tissues in which carcinoma begins its development; it is simple in character, involves no great handling of parts nor any exposure; it adds little or nothing to the dangers of gastro-enterostomy alone. Local recurrence of the ulcer, so far as I am aware, has not taken place.

I saw the operation performed several times in Rochester, where the results were excellent. I have, however, practised it seldom, because I have felt that in the majority of cases of gastric ulcer it was better to perform partial gastrectomy. That appears to me the only way to make sure of curing the patient. There are, unhappily, certain cases in which gastrectomy cannot possibly be done—when, for example, in a patient who is ill and feeble and a "poor surgical risk," there is a large ulcer excavating the liver or the pancreas and extending up almost to the oesophageal opening. In such a case an almost complete gastrectomy would be necessary, and a fatal result would be probable. In some such cases also Balfour's operation may be practised. My own inclination is to perform gastro-enterostomy in "Y" and at the same time to introduce a tube into the proximal limb of the "Y," and through this jejunostomy opening to feed the patient exclusively for months or years until the ulcer is shown by a radiograph to be healed. As a rule I give nothing by the mouth; but perhaps bismuth and alkalis in large doses are helpful. In one case the patient took no food or drink by the mouth for thirty-three months. In this case the ulcer was the largest I have ever seen in any specimen, and the cure has been complete and permanent.

The advantages of gastrectomy over all other operations are that it does away, so far as our experience goes, with any chance of recurrence of the ulcer, that it results in a complete and immediate freedom from all gastric troubles, and that it banishes the danger—it may be large or small, but it certainly is real—of a cancerous change taking place in the base of the chronic ulcer. In the last forty specimens removed on account of simple gastric ulceration, three showed early evidence of carcinoma. It is true that in the majority of cases an accurate discrimination between simple and malignant ulcers may be made. But no one is competent always to judge rightly; and it is safer to decide by microscopical examination in a captured specimen than to learn of a mistake from the late issue of the case.

A Clinical Lecture

ON

HYPOCHLORHYDRIA AND AIR SWALLOWING.*

BY

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In a recent lecture I explained that for the true understanding of gastric and digestive disorders it was essential to begin their consideration from the functional side. I said that there were practically two types of functional disorder, and two only; that they were characterized by aberrations of gastric secretion, and that the chemical element at fault was the hydrochloric acid. The acid might be excessive, or it might be diminished in amount. I further explained the significance of the symptoms present in over-secretion or hyperchlorhydria; the results it often produced, such as atony, dilatation, ulceration, pyloric obstruction, and ptosis; while attached to it were such misleading terms as nervous dyspepsia, gastralgia,

* Summary of a clinical lecture delivered in the Royal Infirmary, summer term, 1919.

and such like. To-day I ask your attention to the antithesis to that condition, namely, hypochlorhydria or achylia.

This condition is, in my experience, less common than hyperchlorhydria; at all events, I see fewer cases, which may mean that they are more commonly corrected in the early stages than is the other class. However that may be, the result of treatment based on correct diagnosis is even more dramatic in some cases, as will presently be shown. It is only necessary to recall the essential part hydrochloric acid takes in digestion as the activator of pepsinogen to realize that with an insufficient secretion the digestion of protein is delayed until the stomach contents enter the duodenum, while the physical condition in which the food has been taken into the stomach may lead to its retention until removed by vomiting. Here, as in hyperchlorhydria, the individual equation has to be reckoned with. There are individuals with limited secretion whose digestion gives no trouble so long as the amount and kind of protein food is in accordance with the quantity of acid secreted, or who avoid foods experience has taught them lead to discomfort. Milk is one of the outstanding foods which perturb the meagre secreter; it gives rise to discomfort by the slow disintegration of the casein curd. Not only this, but the milk acts as an inhibitor of acid secretion, so this additional factor has to be remembered. Some individuals, for instance, who take an ordinary meat meal with impunity get indigestion if milk is added to it, whereas the hyperchlorhydric takes the combination with impunity, and can relieve or remove discomfort by drinking some.

CLINICAL INVESTIGATION.

Before passing to a consideration of the symptoms I would impress upon you the importance of subjective phenomena—that is to say, the patient's history of his experiences. This history is of first-rate importance in all cases of stomach disorder, but it has to be obtained and sifted with great care. It often requires tact, judgement, and skill to get an intelligible story, and sometimes the most expert skill as a sympathetic cross-examiner will be baulked. In the great majority of cases, however, you will succeed with patience, if the questions are put with the understanding that there are the two great types of digestive disturbance.

Symptoms.

The symptoms due to hypochlorhydria vary within considerable limits, as might be anticipated, in view of the fact that they result from delay or arrest of gastric digestion and the retention of food in the stomach. The presence of food which has not effectively stimulated secretion soon gives rise to "a feeling of heaviness," or of a "load," referred to the stomach. This discomfort is not a true pain, although to begin with the patient may so describe it. Later there is a feeling of distension also referred to the stomach, and due evidently to accumulation of air or gas, the eructation of which gives temporary relief. If any other part of the stomach contents is eructated there is usually an absence of complaint of sourness or acidity. In other cases the symptom is described as "a lump" or "ball" referred to "the pit of the stomach"—that is, to the epigastrium, or to behind the sternum. The feeling of heaviness and of distension or fullness usually comes on soon after food, but in other cases it is delayed; it may last for hours, and the sense of discomfort and oppression may only get relief by vomiting. When the condition has lasted for some time the tongue becomes furred, the appetite impaired, and the bowels irregular and usually constipated. There may be vomiting after every meal, but only in severe cases. In such cases, although there is much general discomfort, want of vigour, and of interest in all things, there is not the same degree of mental and physical inability as is met with in cases of hyperchlorhydria.

Symptoms Indefinite or Delayed.

In some cases the symptoms, while definitely digestive, are very indefinite. In this respect they may be in striking contrast to those of hyperchlorhydria. The times and duration of discomfort are not only indefinite, but the patient's statements are frequently so interlarded with views and explanations that the utmost patience and tact on the part of the physician may fail to elicit a history worthy or indeed capable of record; and yet the very

indefiniteness, and the entire absence of such a history as can usually be obtained from a patient suffering from hyperchlorhydria, will often lead to a provisional diagnosis of hypochlorhydria. In other instances the symptoms are delayed, or do not become intolerable until late in the day, and may continue and even become more severe after the patient has gone to bed.

The following cases, taken from many, illustrate the foregoing propositions.

CASE I.

This man was in the prime of life and looked well nourished. He complained of weakness in the legs and inability to walk any considerable distance, half a mile tiring him. He also complained of discomfort after taking food, and that recently he had vomited.

Symptoms and History.—On questioning him it was ascertained that the gastric symptoms consisted of a feeling of the food he took lying as a heavy load in the stomach; this continued all day. This discomfort led him to consult a medical man of good repute living near where he was spending a holiday on account of his health. The doctor put him on "light diet." Before that his diet had consisted of porridge and milk followed by tea for breakfast; fish for mid-day dinner three days a week, lentil soup and semolina the other days; a plain tea at night. He volunteered the information that he had not taken butcher meat for six months. A week after his first visit to the doctor he vomited about 8 p.m., having only taken breakfast and dinner. The vomit consisted of the bread and milk he had taken at 1 p.m. A fortnight later he vomited four times one day, the vomit consisting of the food he had taken. At this point he was sent to see meat at the infirmary. There was no history of flatulence, of eructations, or of constipation. The tongue was fairly clean and moist. He had lost 28 lb. in weight during the preceding six months. In spite of this loss he was still a big heavy man, rather soft looking, but not cachectic. Examination of the abdomen gave no evidence of gastric dilatation such as is present when there is pyloric obstruction from any cause. The stomach was indeed normal in size and position, the pylorus was not palpable, and nothing abnormal was to be felt in any part of the abdomen.

The leading points in this case were: (1) Food lying like "a load" in the stomach; (2) that he had dieted himself along certain popular lines without benefit; (3) that he had lost 2 st. in weight in six months; (4) that there had been vomiting; and (5) the absence of stomach dilatation.

The provisional diagnosis was (a) simple hypochlorhydria, or (b) malignant disease of the body of the stomach. The next step was the examination of the stomach contents. These were obtained the following morning after a test meal and showed an entire absence of free hydrochloric acid. From the history of the case the diagnosis was the former of the two alternatives. The patient got prompt and complete relief from his troubles.

CASE II.

Miss M., aged 50, was sent to me with a history of headache, constipation, depression, and a difficult neurotic. She herself dwelt much upon her digestive discomforts, and her strongly expressed opinion was that life would be quite pleasant if her digestive system could be put right. She had, as is common in digestive inefficiency, beliefs about her liver being sluggish and so forth. The symptoms, as dwelt on by her, pointed to stomach discomfort with heaviness and flatulence, which did not present the relationship to meals which hyperchlorhydria presents. The fundus of the stomach was enlarged. The next step was to get the stomach contents. A test meal was given, and showed no free hydrochloric acid. On a second occasion the stomach residuum was removed shortly before luncheon; it also showed entire absence of free acid.

This patient had been dieted on the lines commonly adopted whenever digestive trouble is complained of, but without benefit. She was now treated on the lines indicated later, and the bowels were regulated by means of a simple laxative. She improved rapidly, and lost all the neurotic manifestations which had been so pronounced. Her friends were surprised at the change in her appearance. In three weeks she left the nursing home satisfied as to the radical change in her condition. She continued to be well when last heard of.

CASE III.

M. M., aged 23, from the North of Scotland, was admitted to my ward at the request of a benevolent lady on whose property the girl lived. She had been an invalid for two years, and had been kept in bed most of the time. Her own statement was that she had an "ulcerated stomach." The stomach trouble had begun two years before, with pain or discomfort after food; later she began to vomit food, and she stated that sometimes there was blood in the vomit. There had been no blood for two months. She had been treated by various doctors, and she had been in a local hospital for two months, without apparent benefit. Her domestic surroundings were good; she helped her mother with the house work, and she used to walk and cycle a good deal. She was intelligent, animated, fairly well nourished, and not anaemic. The height was 5 ft. 2 in., and the weight 8 st. 6 lb. Appetite was good, but she was afraid to eat because

of the pain which followed. She lived largely on Benger's food and Allenbury's diet, an occasional cup of tea, and some toast. The pain was referred to the epigastrium; it was constant, but worse half an hour after taking food. Vomiting usually took place when the pain was most severe, and somewhat relieved it. Lately she had vomited more, especially if she deviated from her strict dietary. The vomit came up easily, and was not preceded by nausea. She suffered from constipation, for which she took compound liquorice powder every few days.

On careful inquiry after admission, the symptoms were not definite enough to warrant a diagnosis of gastric ulcer. With symptoms of this kind associated with constipation the first procedure we adopt is to have the colon thoroughly washed out by means of a douche can. She was given light diet, consisting of fish, farinaceous foods, and milk. The stomach discomforts continued but there was no vomiting. Examination of the abdomen revealed nothing abnormal; there was no gastric dilatation or ptosis, and not a suspicion of tenderness in the caecal region.

A test meal was then given, and on removal showed entire absence of free HCl. She was at once dieted and treated as a hypochlorhydric. The sudden improvement in her condition amazed her, and in a few days her discomforts and pains had wholly disappeared. She was allowed out of bed, and rapidly regained the health and vigour she had enjoyed before her two years of invalidism. After a short stay in hospital she returned home and has continued well.

CASE IV.

This case was one of special interest, as it occurred in a soldier during the war, the malady keeping him at home when he wished to be at the front. He may be designated Captain X., he was 30 years of age, and had been a civilian. The story he gave was that for years he had suffered from stomach trouble, and had to be very careful of his feeding. He had been dieted and treated by several doctors and physicians without benefit. The main symptom was discomfort and pain coming on about 10 p.m. and lasting until 2 a.m. He was fairly comfortable in the forenoon and the afternoon. There was no nausea or vomiting, but considerable gaseous eructation. The bowels were regular. He mixed up his symptoms with ideas about kinds of food, and the way in which his food was cooked. When he tried to live on army rations he got much worse, and the state of his digestion was such that he was not allowed to go overseas. He was kept at home as an instructor. He thought he suffered less when living in his own house and with his own cook to prepare his food. He complained bitterly of his condition hindering his work and limiting his activities. His bad nights made his day duties a burden which he often felt to be more than he could bear, and yet by sheer force of will he kept at it.

Examination.—He was poorly nourished, the cheeks were slightly hollowed, and there was a dusky shadow under the eyes. The abdominal wall was thin. The epigastric and abdominal reflexes were active. No peristalsis was visible. There was no tenderness on palpation in any region of the abdomen; but palpation promptly produced loud splashing over the stomach, which extended to the level of the umbilicus; its fundal end was enlarged, but the right border did not extend beyond the middle line. This was the condition three hours after the midday meal, which had consisted of cold chicken, farinaceous pudding made with milk, and a tumblerful of milk. By means of the stomach tube some ounces of stomach contents were withdrawn, which consisted of finely divided starch, curd of milk, and pieces of softened chicken; it showed complete absence of free hydrochloric acid.

Treatment.—The diet was regulated in accordance with this finding, and a prescription was given containing dilute hydrochloric acid, liquor strychninae hydrochlor., and compound infusion of gentian. This visit was on May 16th.

He came to see me again on June 1st. He looked much improved, and his own account was that the pain had disappeared, he had no discomfort after food, he was sleeping well, and was more energetic and lively. The weight was 9 st. 12 lb. He was seen two hours after his midday meal and the stomach splashed on palpation.

On June 6th I again saw him, at 1.15 p.m., before the midday meal, and found the stomach empty. His own statement was that he had not had "a touch of pain" since his first visit to me, and that he was sleeping well. On June 27th I saw him again. His weight was 10 st. 4½ lb., he was quite free of gastric or other discomfort, and was full of gratitude for increased vigour, and comfort in his work.

The history in this case pointed to hypochlorhydria, but the diagnosis from symptoms alone may be so unsatisfactory that it is unwise to be guided by them, especially as the means of attaining certainty are within easy reach when the stomach tube can be used. In this patient I used the stomach tube at our first interview, and a correct diagnosis was at once established, as malignant disease of the body of the viscus was not a reasonable proposition. The diet of white flesh, as chicken and fish, farinaceous puddings, and milk, which had been prescribed and conscientiously adhered to, under the manipulative skill of an expert cook, was departed from. The whole idea of bland and soothing nourishment was revolutionized; milk was stopped, farinaceous puddings were to be taken

with stewed fruit, all kinds of flesh were allowed, but they were to be minced and eaten with stimulating condiments and sauces. Acid and strychnine were also given to help and to encourage gastric secretion. By these measures stomach function and secretion were stimulated, and the result was complete removal of the symptoms which were making work a burden and life a struggle.

AIR SWALLOWING.

I next ask your attention to a condition I call "air swallowing," as it has important relations to the gastric disorders I have discussed with you. This is illustrated in the following records.

CASE V.

Mrs. B. was sent to me by a medical friend in the city, as he feared she had some serious disease of the stomach. Her complaint was stomach discomfort and pain. When closely questioned about the "pain" we were able to get the time of onset and the kind of discomfort defined. The time of onset was immediately after eating, it occurred after every meal, and she had suffered from it for months. The kind of discomfort was ascertained by making certain suggestions to her. When asked if the pain was severe the reply was negative, and when asked if it were pain or an uncomfortable feeling of tightness she readily replied that it was a great tightness and fullness. On this definition she became quite clear and decisive. As to the duration of the feeling she thought the time varied. Asked if she brought up much wind, the reply was that she brought up "a lot of wind," and she was quite sure that the bringing up of the wind gave her prompt relief. In other respects the digestive system presented no abnormal symptoms; but she was emphatic as to the discomfort, anxiety, and depression the stomach condition caused. Nothing abnormal was made out on examination of the abdomen; there was no stomach enlargement or ptosis, no tenderness at the caecum or elsewhere. The abdomen was lax and easily explored.

Such were the facts obtained by a carefully elicited history and from physical examination. Note specially the onset of the symptom of "pain," which was converted into "fullness and tightness," coming on with the taking of food, increasing as food was swallowed, until eating was stopped owing to the feeling of "fullness"—no more could be swallowed. The history in this case is quite different from the history obtainable in a case of gastric ulcer, which is the only condition with which it might be confused, if the history of the symptoms were not carefully and critically examined. The statement of the onset of pain "immediately after food" and of "flatulence," must not be accepted at their bare word value; not that a patient means to mislead, but because patients do not understand the physiology of digestion and use words loosely. A history has to be sifted in the light of the knowledge of normal digestion, of the aberrations to which digestion is liable, and of the clinical knowledge we have acquired of these disorders.

The phenomena presented by this patient are not very rare, and yet they are not widely recognized. I call the condition "air swallowing," as the air is swallowed when food is taken. The amount swallowed varies in individual instances, and consequently the degree of discomfort varies. In this patient the discomfort was great, because the amount swallowed was considerable. It sometimes gives rise to visible distension; it may lead to pronounced neurosis or neurasthenia; it may act reflexly on heart and vessels, leading to functional angina pectoris. This air swallowing when food is taken is different from "air gulping" or "air sucking." Air swallowing is mainly confined to the time food is being taken, although, to a much less degree, it may be continued during the period of discomfort. The "air gulper" swallows air at any time, and it may or may not be induced by an initial stomach discomfort. In animals the condition is known as "air sucking"; it occurs in cattle and horses, and in them is a very serious condition which may cause death. It is difficult to treat, and when once acquired the habit is difficult to break.

Air-swallowing occurs in both sexes and probably in children pretty frequently. It may not only be associated with, but apparently may even be caused by, abnormal gastric secretion, abnormal in the sense of the secretion containing too much or too little hydrochloric acid—that is either hyperchlorhydria or hypochlorhydria. Although I cannot give figures, it is in my experience more common in the latter than the former. I arranged to have this patient screened in the electrical department. If she were an air swallower to a considerable extent it would be seen that, as the bismuth passed into the dependent part of the

stomach, the fundus would become large and translucent. In some cases this is very marked and gives a striking picture; in other cases it is not so striking. Dr. Hope Fowler demonstrated the appearances in this case, but they were only fairly well marked.

The next case illustrates a combination of hypochlorhydria and air swallowing persisting after removal of the appendix.

CASE VI.

Mr. W. C., aged 34, a mercantile marine officer, had been at sea for fourteen years, and consulted me on September 6th. His complaints were obstinate constipation, the bowels never moving without a purgative, and frequent, almost daily, vomiting. The vomiting had become more frequent, and sometimes occurred two or three times a day. His appendix had been removed in Bombay eighteen months before I saw him, but without any relief to his symptoms.

On questioning him it was ascertained that he had a feeling of weight and heaviness half an hour after food—"a feeling like lead" in the lower half of the abdomen. There was no pain. He often felt sick before breakfast, and if he did he might vomit a quarter of an hour to half an hour after breakfast. The vomiting occurred especially if he took anything hot, cold not being so bad in this respect. He might vomit again after the midday meal. He never vomited after 4 p.m. The vomiting was preceded by some degree of nausea, but it did not appear to be great. The motions were dry and lumpy.

Examination.—He was rather pale and flabby looking, but stout. He had never had malaria or other fever in the East. The scar of the appendix operation was good. The fundus of the stomach was enlarged. The descending and pelvic colon were felt small and contracted. The urine contained neither sugar nor albumin. The brachial systolic pressure was 135 mm. Hg. The apex of the heart was slightly to the left of its normal position. From the foregoing facts it looked as if it were only necessary to find a suitable laxative to secure the removal of the symptoms. With this object in view I prescribed a pill containing 2 grains each of extract of cascara and extract of taraxacum with $\frac{1}{2}$ grain of extract of belladonna to be taken at night.

He returned to me on September 26th, when he informed me that half a pill gave him a free motion every day, but that there was no improvement in other symptoms; that he vomited daily, sometimes two or three times; and had much flatulence after taking food, feeling "blown up" with it, and that he got relief when he got it up. From the account he gave it seemed clear that he was an air swallower. He was examined by x rays and watched by the screen. The screen picture was not satisfactory, but the fact of air swallowing was established by his sense of distension after the bismuth was swallowed, and by the visible and marked projection of the stomach, the projection disappearing after he belched up wind. I asked him to return to see me the following day, September 27th, and to bring his vomit for examination. On September 28th he brought me another specimen. On both occasions the vomit consisted mainly of disintegrated cereal food, some milk curd, etc. On both occasions it contained no free acid. I prescribed dilute acid, strychnine, and gentian; stopped milk and farinaceous puddings; put him on meat and fish, to be eaten with savoury sauces, and stewed fruits. He reported himself on October 2nd. He stated that the first dose of the mixture I had prescribed had relieved him, that he had no more vomiting or nausea, and practically no flatulence. He felt quite well and stated that the bowels were regulated by one-fourth of the pill I had ordered for him. He was naturally much gratified at the complete removal of symptoms, which he had suffered from more or less for the fourteen years he had been at sea. An interesting and important observation made this day was that the brachial pressure instead of being 135 mm. was only 115 mm. Hg. I saw him again on October 8th and was assured that complete relief was maintained.

Remarks.

The points of special interest in this case were (1) the air swallowing, which stopped when the hypochlorhydria was successfully treated; (2) that it was not a case of "appendicular dyspepsia," which presumably was the diagnosis which led to the removal of the appendix; and (3) the fall of 20 mm. Hg when the gastric condition was rectified.

Many years ago I published my first paper on hypochlorhydria, and since then have lectured on it many times, and also dealt with it many times in the wards in the course of bedside teaching. This is the first time I have lectured on hypochlorhydria and air swallowing, although I have long taught these subjects in the wards; and I hope that I have aroused your interest in this other phase of gastric and digestive disturbance.

THE latest official statistics show that the total mortality from tuberculosis in Italy decreased from 1887 to 1914, but in varying degrees in different regions. On the other hand, in Sardinia it increased. For all tuberculous diseases the diminution was about one-third, but for pulmonary tuberculosis it was only one-fifth.

INDOLENT SORES ON THE FINGERS.

BY

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AN indolent sore on the finger of a nurse, a dental surgeon, or a doctor is all too often the precursor of a systemic spirochaetal infection, and, as time is a factor of paramount importance, the purpose of this note is to emphasize the necessity of having serum from such a sore examined early, and if need be often, for the micro organism of syphilis. The clinical appearances of a primary chancre at the seat of election are sufficiently well known. What is not so generally recognized is that the appearance of such a sore upon the fingers may present few if any of the accepted characteristics of a Hunterian chancre.

That unique clinical observer, Sir Jonathan Hutchinson, described the evolution of a syphilitic chancre as follows:

If the virus of syphilis in a pure form be inoculated, it rarely produces any irritation at first. A period of from three to five weeks will elapse before anything is observed. At the end of that time a little red spot will be noticed, which itches more or less, and which, extending from day to day, soon becomes a papule, and by the end of a week or ten days is probably a little indurated disc or button. The induration is usually very marked and its margins definite.

This is an accurate description of a primary sore in the usual site on the male patient. It differs markedly, it may differ by the whole width of heaven, from the usual appearance of a chancre on the finger, which rarely shows characteristic induration. As induration has come to be regarded as the one pathognomonic clinical feature of a primary sore, the absence of that cartilaginous resilient hardness which training leads one to expect may prove misleading, and lull the sufferer, if he be a medical man, into a false sense of security. It is because of the frequent absence of this hardness that so many doctors who have unfortunately been inoculated on the finger fail to seek treatment until a general systemic invasion has occurred.

Diagnosis.

There are no definite and inseparable characteristics appertaining to a chancre on the finger. It varies according as it is due to a specific infection superadded to an already existing simple sore, or is the result of a pure infection *de novo* through an abraded epidermis, or is due to an infection coincident with the implantation of one or other of the ordinary micro-organisms of suppuration. Within the compass of such a note as this it is impossible to describe the varying evolution and appearances of a specific sore arising under these three different conditions; but in my experience the chief features of a chancre on the finger are:

1. Its indolent character.
2. Its slow but progressive increase in area.
3. Its shallowness.
4. Its scanty discharge.
5. Its comparative painlessness.
6. The early involvement of the nearest lymphatic glands.

Any one or all of these features may be masked by some coincident infection. The one constant characteristic by which it can be recognized, and ought to be recognized at an early date, is the presence, revealed by microscopical examination, of the infecting spirochaete. At this stage a blood test is of little or no avail. Indeed it may give a sense of security which the subsequent progress of the disease shatters rudely. A positive Wassermann reaction is rarely if ever given before the seventeenth day of a chancre's existence. More than once I have been assured by a medical man that the sore on his finger could not be specific, because he had had a blood test done, with a negative result, while all the time the industrious spirochaete was multiplying abundantly in the sore, and only waiting to be revealed by dark-ground illumination, or by Burri's Indian-ink method.

Tubercle of the lungs is nowadays proven early by the discovery of the tubercle bacillus in the sputum, and the examination of the sputum is a routine procedure in every suspected case. It were well if a similar routine were followed in the case of all indolent sores on the fingers. All such sores should be regarded with grave suspicion.