

ing small spring clips to the cut ends of vessels, which contrivance led to the general use of the indispensable modern hemostatic forceps. These are a few illustrations of what has been accomplished by careful investigation and observation, even under the most trying circumstances, demonstrates conclusively the varied opportunities of the general practitioner in an inexhaustible and inviting field of labor and must be a stimulus to his pursuing a course of research that will ultimately reap similar results.

But in entering upon this work of research he dare not do so with the idea that a fortnight will disclose some wonderful hidden fact which ages have shielded from the searching eyes of investigators. Progress in medicine is slow. The grand march of medical science sweeps onward, upward through the solemn pathway of the ages, not with fickle, fitful movement, but slow, calm, majestic. Every appreciable advancement of the science marks a complete cycle of human thought whose exponent was a worker of antiquity. Every era has had its blind chimeras, its fanciful theories, its experimental investigations, its new discoveries, its ultimate absolute facts by which the science has been slowly evolved. Its elucidation must be gradual, and research must be followed out in a distinct line based on the investigations of previous years. Medical truths expounded at the present day are not the result of spontaneous thought. The same grand ideas have hovered over a vista of years. They warmed and fired the genius of medical philosophers from the early days of medicine, but the proving of them, the elaboration of the idea was left for the present investigating age. The field is inexhaustible and affords ample scope for all. Lord Bacon urged upon doctors the study of those diseases incurable, and it were well to profit by his advice.

There is practically no limitation to the various subjects which might be suggested as being especially adapted to the general practitioner's opportunity for observation and research at the present time. Hygiene or preventive medicine offers probably as large a scope as any and promises much for the future. The recognition of the fact that various diseases are preventable by instituting proper hygienic surroundings is a greater boon to humanity than all drugs discovered to date—a sweeping statement, indeed, yet nevertheless evident on careful reflection. The vast opportunity for extending the usefulness of this subject in the fruitful field offered by matters of drainage, the subject of ventilation, the disinfection of clothing, the disposal of sewage and the inspection of food and water supply is open more especially to the general practitioner. The effect of peculiar local causes upon the general health and constitutions of the inhabitants within the circumscribed limits of his practice, and their influences in exciting or modifying disease; the effect of hereditary tendencies and family diatheses in producing disease; the bearing which the mode of living of the inhabitants has upon sporadic cases or endemic diseases; the influence of neighborhood and houses in the propagation of certain diseases, as cancer, are but a few pertinent questions, the correct solution of which will have much weight on medicine of the future. Or the subject of dietetics might be presented, with the rôle it played in his treatment and to what extent and with what results it has superseded the general empirical administration of drugs. Or leading his investigations into another channel of the yet hidden secrets of the deep and comprehensive science, one might suggest the need of a safer and

more agreeable anesthetic, a shorter cure for syphilis, a more extensive application of serum therapy, a hypnotic which will not form a habit, a specific for phthisis—these are but a few of the mysteries that sphinx-like stand out in bold relief, defiantly challenging to be solved.

Great as have been the discoveries of the last quarter century, who will venture to say what the next decade has in store for us. We dare not stand, awed though we be, on the brink of the twentieth century with a deaf ear to its demands. Our interest in medicine as a science would not tolerate such unconcerned inactivity. All the world over men are engaged—thoughtful, active, energetic men, in fathoming the great unknown, in recovering to us what has been lost for ages, and with this as a working basis, with exulting hearts constantly giving to the world their new discoveries, the fresh victories over disease, the taking away of the load of human suffering. They are commingling the elements which will determine the inevitable future of medicine. Let your zeal and enthusiasm swell the current of this general impulse for investigation into the mysterious workings of nature and add the results of your research to the knowledge that has been chastened and purified in the crucible of centuries, that is gradually attaining the perfection of a finished science. And when the investigating energy now spent in the laboratory of nature shall turn toward the ideal and rush into literature and the clinical arena, then there will arise authors whose works shall equal the lofty strains and discriminating judgment of a Da Costa, surgeons whose cunning hand shall have the skill of a Gross.

ORIGINAL ARTICLES.

CANCER OF THE STOMACH.

A Clinical Lecture delivered in Rush Medical College.

BY HENRY M. LYMAN, A.M., M.D.

PROFESSOR OF THE PRINCIPLES AND PRACTICE OF MEDICINE.
CHICAGO, ILL.

The two patients whom I bring before you this morning are both advanced in life; one of them is 57 and the other is 76 years of age. Both are emaciated and pale; both are cachectic and enfeebled. There are, however, certain differences between them which will become apparent on closer examination. The younger man is simply pale and thin, without special discoloration of the skin. The left foot is somewhat edematous and the glands above the clavicle, on the left side of the neck, are considerably enlarged. The expression of his countenance is careworn and the face is furrowed with deep lines. The tongue is pale, covered with a gray coating, and rather reduced in size. The thoracic viscera seem to be healthy, though the cardiac beats are frequent and feeble. The liver is small and the spleen is hardly distinguishable. Placing the patient on his back and palpating the abdomen it is easy to discover an abnormal degree of epigastric tenderness on pressure. The stomach is filled with gas and extends downward as far as the navel; it is considerably dilated and there is tympanic resonance over a large part of the belly. The intestines are not correspondingly filled with gas. In the pyloric region a tumor, rather irregular in form and nearly the size of a fist, can be distinctly felt. It moves but little during respiratory efforts; it is sensitive to pressure, and percussion brings out over its

area a dull sound quite in contrast with the note that is returned from the cardiac portion of the stomach.

The patient, who has been a large and vigorous person in former years, tells us that he was leading an active life till one year ago. He had for many years been in the habit of taking whisky before each meal on account of indigestion. He gives a history of chronic gastritis which was perhaps caused, and was at any rate aggravated, by the alleged remedy.

Nearly twelve months ago he lost his appetite; began to lose weight and strength; complained of gaseous distention of the stomach; and about seven months ago began to vomit his food. It was often very acid and irritating to the fauces; it was accompanied by a copious discharge of gastric mucus, and lately by streaks of blood and a dark, granular looking substance, like coffee grounds. During the whole time the chronic uneasiness, with which he suffered for years, became intensified, so that he complains of deep-seated, gnawing, burning, boring sensations which are aggravated by taking food. For a considerable period of time there was no tumefaction of the stomach, but about four months ago the epigastric region became enlarged, and distinct evidence of a tumor was apparent at the pyloric end of the stomach.

The older patient also states that the greater portion of his life has been passed in the enjoyment of excellent health. He was a farm laborer, sober, industrious, married in early life, and always free from venereal disease, malarial cachexia and other maladies. After his sixty-fifth year he began to suffer during cold weather with various forms of neuralgia in different parts of the body and limbs. During one of the winters, five or six years ago, he frequently experienced attacks of gastralgia and enteralgia, which were usually relieved by a few doses of bismuth and magnesia, or by a hypodermic injection of morphin, when uncommonly severe. Two years ago he began to emaciate gradually and now you see that he is much reduced, having fallen in weight from 175 pounds to 123. I give you an opportunity to inspect the patient and you can observe the total loss of subcutaneous fat and the absence of elasticity in the skin, which only very slowly retracts when pinched into folds over the abdomen. Remark also the pallor and earthy color of the skin everywhere over the body and limbs. The thoracic viscera are healthy; the scanty urine is high colored and dense, but it contains neither albumin nor sugar; there is no distention of the stomach or intestines; the liver and spleen are not enlarged; there is some tenderness over the whole upper half of the abdomen; perhaps there is a slight increase of resistance to pressure upon the epigastrium just below the ensiform cartilage; but there is no defined tumor anywhere within the abdominal cavity. The symptoms so far are quite negative and are usually explained as the result of *senile marasmus*. But during his residence for two months in the hospital he has exhibited certain phenomena of a suspicious character. Occasionally he has vomited and the contents of the stomach have been acid, owing to the presence of lactic acid. Free hydrochloric acid has been invariably absent. Giving him a solution of potassium iodid to drink, it was an hour before the salt could be detected in the saliva, though as you are aware, in a healthy subject it should pass from the stomach through the salivary glands into the mouth in less than twenty minutes. Lately the inguinal glands and those on the left side of the neck have

begun to enlarge. In view of all these symptoms, though we can discover no palpable tumor, and though the patient does not exhibit any very acute or rapidly developing evidence of failing health, I am inclined to think that he too is a victim of gastric carcinoma.¹

Let us now consider the general symptoms of cancer in the stomach. It is worthy of note that the disease has a two-fold effect upon the health, since in addition to the cachexia that is developed as the neoplasm grows, the nutrition of the body is hindered by the local derangement of digestion that is caused by the presence of the tumor in the wall of the stomach. In this particular the effect is largely conditioned by the situation of the growth; when the pylorus is invaded, there will be obstruction to the exit of food from the stomach, and the viscus will undergo dilatation; if the esophageal portion of the organ be invaded there will be difficulty about the entrance of food from the esophagus, with consequent dilatation of that tube and shrinkage of the stomach itself. When the body of the organ itself is the seat of carcinoma, the consequent phenomena will depend considerably upon the destruction and perversion of function of the peptic glands in the mucosa. In many cases, of which the elder patient before you is a type, the symptoms are for the most part connected with chronic indigestion and progressive cachexia. No evidence of a neoplasm can be localized, and the cancer develops in an obscure and latent manner, to be discovered only after death. Consequently, the discovery of a tumor connected with the gastric wall affords one of the most reliable symptoms of the disease. But when such a tumor is in its earlier stage of growth, if it be situated at the pyloric end of the stomach, or upon its lesser curvature, it will be covered by the liver until it has enlarged to such a degree that the stomach is dragged downward by its weight. Then it may become possible to feel and to percuss the growth itself. Sometimes a change of position is necessary to affect this demonstration, the tumor remaining concealed behind the liver so long as the patient lies on his back, but falling downward and forward within reach whenever he turns upon his left side or gets upon his hands and knees.

When a tumor is demonstrable, its apparent size will, of course, depend largely upon its age and its situation. Usually placed near the extremity of the ensiform cartilage, it may finally occupy the entire epigastrium, reaching even so far as the left hypochondrium or the umbilical region. Such extensive growths are more or less irregular in their shape, a fact that can be easily demonstrated after emaciation has occurred. Unlike tumors of the liver and spleen, which are so extensively displaced by the excursions of the diaphragm during respiration, these gastric tumors are but little influenced by the movements of respiration. They are much more affected by filling the stomach with air, water or food, which causes the upper portion of the organ to rise and to carry with it the new growth, until it may be entirely concealed behind the liver, whence it once more emerges after the stomach is emptied again.

When the tumor is accessible to palpation, its outline can often be clearly defined. But in many instances this is impossible, and the explorer must remain content with a sensation of diffuse resistance

¹ The patient died three weeks later and the autopsy discovered the existence of a small scirrhous cancer in the posterior wall of the stomach, just far enough from the pylorus to avoid obstruction of that orifice.

to pressure over the epigastrium. Inflation of the stomach with air often aids in displacing the mass so that it can be more easily reached. Sometimes it will rest upon the abdominal aorta, and can be felt to rise and fall with the pulsations of the vessel. But these displacements are simply rhythmical movements in a direction perpendicular to the artery, instead of being universally expansive like the pulsating dilatations of an aneurysm.

Percussion over a tumor connected with the stomach gives out a dull sound in which there is a somewhat tympanitic resonance, though not so clear and full as when the healthy organ is distended with air. Auscultation furnishes very little help in the diagnosis, unless performed with the help of the phonendoscope. With this instrument a skilled observer can often outline the tumor with great precision.

In cases where no tumor can be discovered, it is necessary to rely upon general symptoms for a diagnosis. The books advise persistent scrutiny of vomited matter and of the feces, in hopes that a detailed fragment of a carcinomatous mass may be thus captured for microscopic examination. But success has very rarely rewarded such patience. Better results are obtained by observation of the blood that in one form or another is usually vomited during the course of the disease. Unlike the copious hemorrhage that occurs in ulcer of the stomach the blood that is present in the vomited matter is usually scanty in amount, appearing in streaks among the mucus that is discharged from the cavity of the organ; or, when it has remained for some time in contact with the gastric juice, transformed into a substance that looks like coffee grounds, due to the conversion of the oxyhematin of the red corpuscles into hematin. Similar sediments are often apparent in the vomit in gastric ulcer, so that this symptom alone is not diagnostic. The stools may also contain blood, just as they sometimes do in ulceration of the stomach or small intestine.

Vomiting is a frequent event, especially in the majority of cancerous growths that encroach upon the pylorus. Sometimes the patient experiences sudden relief and permanent cessation of vomiting when the obstructive neoplasm breaks down and leaves the pyloric opening clear. In many instances, however, the appearance of relief is due either to a degenerative paralysis of the muscular coat of the stomach, or to the exhaustion that heralds the approach of death. Vomiting is sometimes replaced by hiccough or by eructation of offensive gases. This is not diagnostic since it may occur in other disorders of digestion.

The absence of free hydrochloric acid from the gastric juice is a symptom of great importance, though not by itself decisive. Cancer that has supervened upon a round ulcer of the stomach may be accompanied by an actual increase of free hydrochloric acid if the gastric glands have not undergone atrophy. Such degeneration of the glandular apparatus is the proximate cause of a deficiency of acid; the remote causes may be various. But, when free hydrochloric acid is absent from the stomach of an elderly, cachectic and emaciated patient, the probabilities are all in favor of the existence of a carcinoma as the fundamental cause. In all such cases there is also diminution of the pepsin and other ferments that are present in normal gastric juice.

Another interesting symptom of cancer of the stomach is the retardation of absorption through the

mucous membrane of the viscus. When iodid of potassium is swallowed by a healthy person it can be detected in the saliva within ten or fifteen minutes; but when cancer exists, there will be no trace of the iodid until the lapse of an hour or an hour and a half.

When a tumor can be felt through the abdominal wall, it is sensitive to pressure. Besides the pain that may be thus excited, there is a general diffusion of dull, aching, burning, boring pain all over the region of the stomach. These pains are more widely felt and are less intense than the corresponding pain in gastric ulcer. Pain is usually increased after eating, and is often worse in the night than during the day. It sometimes is felt, like other pains of gastric origin, in the thoracic nerves, in the shoulders, or even in the arms. Sometimes, symptoms of an asthmatic character are thus excited.

The tongue is usually coated with a thin white, gray, or yellowish brown coat. If there be frequent vomiting of acid and acid liquids, the tongue becomes red, smooth, shining and dry, like the "beefsteak tongue" sometimes seen in advanced cases of typhoid fever. In the "latent cancer" of old people this condition of the tongue is often one of the most conspicuous symptoms.

During the earlier stages of the disease the bowels are constipated, but, when the large intestine has become inflamed by reason of the passage of ill-digested food and acrid products of ulceration from the stomach, there may be diarrhea or dysentery.

The urine is usually scanty, high-colored, and sometimes loaded with indican, which may be demonstrated by introducing equal parts of urine and pure hydrochloric acid into a test-tube, and then adding two or three drops of a saturated solution of calcium chlorid. When indican is present, a deep blue or reddish blue color at once develops in the tube.

A symptom of great value when it is present is sometimes afforded by an enlargement of the lymph-glands in the neck, above the left clavicle, in the immediate vicinity of the orifice of the thoracic duct. In like manner, during the last days of the disease one or more of the extremities may become swollen by interference with the lymphatic circulation, or through the occurrence of marantic thrombosis in an important vein. Serous effusion into the various cavities of the body may also precede death.

Appetite usually fails, unless the position of the neoplasm obstructs the entrance of food into the stomach; hunger is then a prominent symptom. Thirst is frequently experienced. Insomnia is a common event. Emaciation and exhaustion are progressive; the skin often assumes a dirty color, and becomes thin, dry and furfuraceous. Sometimes there is dreadful itching all over the body, especially in the latent cancer of old people. Occasionally, the patient exhibits all the phenomena of progressive pernicious anemia, and only after death is the fact of a local cancerous growth made apparent.

Continuous loss of flesh is the rule in these cases, but occasionally we see patients who die before the subcutaneous fat has been all consumed. Sometimes when there is pyloric obstruction and dilatation of the stomach, a course of careful washing out of its cavity, and attention to the diet, will result in a temporary increase of weight.

The temperature of the body usually remains normal or abnormal; but in certain cases there are intermittent paroxysms of fever occasioned by septic poison-

ing from the absorption of products of disintegration in the tumor. This may be considered as one of the rather numerous complications to which the disease is liable. Among other complications may be named dilatation of the stomach as a consequence of pyloric obstruction. Sometimes such obstruction is relieved by a process of spontaneous sloughing, and the opposite condition, pyloric incontinence, is established. When the cardiac portion of the stomach is involved, the esophagus may be invaded, and the original disease becomes complicated with the symptoms of esophageal stenosis. A gastric sound can be introduced only with difficulty, and there is a change in the auscultatory sounds that should be heard during the act of swallowing liquids, when the stethoscope is placed to the left of the ensiform process; there is either no audible gurgle, or it is replaced by a tardy trickle.

Secondary growth of cancer in other organs is a not uncommon complication of the disease. Sometimes the liver is so extensively invaded by the secondary process that the primary gastric neoplasm is quite overshadowed during the life of the patient.

The duration of the disease is not easily determined because of the obscurity of the early symptoms. The course of the disease is more rapid the younger the patient is. Sometimes it proves fatal, apparently after a few weeks only; and it may be prolonged for two or three years. Ordinarily it continues for about one year. Death may occur suddenly, as a consequence of profuse hemorrhage; or perforation of the wall of the stomach, followed by peritonitis; or it may occur during coma, with collapse that is suggestive of auto-intoxication. Sometimes death results from slow starvation due to obstruction, either pyloric or esophageal. Frequently the patient gradually wastes to a skeleton, and slowly sinks into a condition of apathy that terminates in death. Albuminuria, edema of the extremities and venous thrombosis are not uncommon incidents in this mode of decease. When there is esophageal obstruction regurgitated food may find its way into the trachea, producing fatal pneumonia, abscess or gangrene of the lungs.

Despite the gravity of the symptoms it is not always easy to diagnosticate the existence of gastric carcinoma. In the absence of a tumor there may be only the symptoms of progressive pernicious anemia; or of progressive emaciation and cachexia. But when an old person without apparent cause, suffers loss of appetite, indigestion, insomnia, persistent itching of the skin, cachexia and frightful emaciation, the probability of latent cancer is very great. The gastric juice should be examined, with regard to the presence or absence of free hydrochloric acid. Some have emphasized the presence of lactic acid in excess, but this is not always the case in gastric cancer. The absence of pepsin in the urine has also been announced as an important symptom in doubtful cases. Slow absorption of potassium iodid is another valuable indication of the disease. Reduction of hemoglobin to less than 60 per cent. is another suspicious circumstance. But none of these symptoms are diagnostic; it is the concurrence of several indications that gives a high degree of probability to the diagnosis in these obscure cases.

When a tumor is present it should be, if thus accessible, explored with a sound. Sometimes it can be reached through the esophagus by the aid of a sound of extra length. From tumors of the liver or spleen

it may be differentiated by the almost total absence of movement during respiration. But it may be considerably displaced if the stomach be distended with air, water or food.

Sometimes the tumor can not be accurately defined, but gives only a generalized sense of increased resistance to pressure over the epigastrium. In such cases, it is allowable to entertain the possibility of a tumor consisting of cicatricial tissue after previous ulceration of the stomach, or of a fibroid hypertrophy of the gastric walls or of the presence of foreign bodies, or of other tumors outside of the stomach. In the last case it is necessary to discuss the differential diagnosis of all possible abdominal tumors, such as sub-phrenic abscesses, circumscribed peritonitis, enlarged mesenteric glands, intestinal tumors, coprostasis, mesenteric cancer, tumors of the pancreas, uterus and ovaries, together with aortic and other intra-abdominal aneurysms. The field for contemplation that is thus opened to the diagnostician is one of the widest in medicine.

About the prognosis in cancer of the stomach there is very little to be said, and that little is absolutely unfavorable. When the disease is sufficiently advanced to render the diagnosis reasonably certain, it is only a matter of a few months before the inevitably fatal termination. Consequently, there is nothing that is known regarding curative treatment. During the early stage the symptoms are usually vague, and merely characteristic of indigestion, the treatment then is that which is appropriate for gastric catarrh. During the later stages, when symptoms of pyloric obstruction are present, the question of resection of the tumor should be raised. When a notable tumor, that is circumscribed and not adherent to other parts, can be demonstrated, it may be very properly removed by a surgical operation. In cases of doubt, an exploratory incision may be needed in order to decide whether an operation upon the pyloric tumor can be safely performed. In many instances it will be found that what seemed, before the incision through the abdominal wall, to be a small and freely movable growth is really extensive and widely adherent. When such a state of disease exists, relief may be procured by making an opening between the cavity of the stomach and the small intestine below the tumor, gastro-enterostomy. In the majority of cases this will be the preferable operation, because less dangerous to the life of the patient. When there is esophageal obstruction the operation of gastrotomy may be resorted to. By these methods nutrition is once more established and life may be prolonged.

But, in the majority of cases, the fatal day is only delayed for a brief period. Death comes at last in every instance.

When pyloric stenosis does not exist, and when a tumor is either late in its development or can not be demonstrated, the treatment should have for its object the relief of suffering, and the improvement of nutrition. In the earlier stages of the disease much benefit may be derived from the use of sodium iodid in doses of ten or fifteen grains three times a day, with five drops of Fowler's solution of arsenic after each meal. So long as the mucous membrane of the stomach remains without ulceration, digestion may be aided by the administration of diluted hydrochloric acid, ten drops in half a glass of warm water after meals. But in the later stages of the disease, when acids are liable to cause pain, it is better to give the

various peptonized foods which are prepared by the manufacturing chemists. Being already partially digested they are more easily disposed of by the enfeebled stomach. For the same reason kumys and extracts of meat will be found useful. As a stimulant of the appetite and a preventive of nausea, the various preparations of condurango have considerable reputation, though the extravagant expectations that were aroused on the first employment of the drug have not been justified. It is, however, a valuable gastric tonic, which may be given before meals in doses of twenty or thirty drops of the fluid extract, well diluted with water. If the stomach be dilated by reason of pyloric stenosis, much relief will be obtained through daily washing out of the stomach with the gastric syphon-tube. This will prevent the accumulation of decomposing substances which liberate irritating gases and liquids that excite pain, and when absorbed into the general circulation, act as toxins upon the tissues of the body. Vomiting will be often relieved by this operation, which in any case should precede the administration of internal remedies. If the distressing nausea be not arrested by simple lavage, trial should be made of ice pellets, creosote, cocain, tincture of iodine, and the milder narcotics. If they fail to afford relief, we should give one-eighth of a grain of morphin with a drop of diluted hydrocyanic acid every hour till the pupils begin to contract. In severer cases, when pain is a prominent symptom, morphin and atropin should be freely given with the hypodermic syringe. In the later stages of the disease this often remains the only means of relief; and the comfort thus procured leads the unfortunate patient to exclaim, with the celebrated Dr. Bartlett, that "opium is God's greatest gift to man!"

THE EARLY DIAGNOSIS OF CANCER OF THE STOMACH.

Read before the Detroit Academy of Medicine. December 9, 1896.

BY CHAS. D. AARON, M.D.

INSTRUCTOR IN MATERIA MEDICA, DETROIT COLLEGE OF MEDICINE.
DETROIT, MICH.

If our treatment of cancer of the stomach shows poor results, it is due to the fact that the medical practitioner usually does not make his diagnosis early enough, and when the surgeon is called, he finds a disseminated mass instead of a circumscribed tumor to be extirpated. When we take into consideration that .5 to 2.5 per cent. of all deaths and 35 to 45 per cent. of all cancers are of the stomach, it is time that more attention be paid to an early diagnosis. It is because the average physician neglects a more detailed examination and resorts to bismuth and pepsin, that cancer of the stomach has been allowed to attain such development as makes an operation practically useless. What, years ago, Brinton said of cancer of the stomach, is still true today. He said, it is obscure in its symptoms, frequent in recurrence and fatal in its course. In spite of the progress made in the diagnosis of stomach diseases, the therapy of cancer of the stomach remains the same, namely, early extirpation. But when a large tumor can already be felt in the epigastrium, it is usually too late to operate, since then the surrounding tissues are involved by metastasis.

It is the intention of this paper to show how beneficial it would be, in the majority of instances, if a diagnosis were made before a tumor is palpable. We

are told of recoveries after operations on cancerous patients, when the tumor was already palpable, but these cases are extremely rare. It is possible that the diagnosis was made early by one who was able to locate the new formation. But can we make a diagnosis on the basis of the general course of the disease, even if the presence of a tumor has not been established? Boas tells us that strong Uffelmann's reaction after a test breakfast, points out the probability of cancer of the stomach. Heretofore it was believed that when we had a case of chronic gastritis, with absence of hydrochloric acid, either lactic, butyric or acetic acid fermentation takes place. This has been proven not to be true. While we were formerly able to demonstrate that lactic acid is present in cancer of the stomach, this circumstance was not given sufficient weight until Boas drew our attention more particularly to it. Boas says that in cancer of the stomach Uffelmann's test gives us a greenish-yellow reaction, due to the presence of lactic acid, and that the little quantity of lactic acid which results from other causes, does not react in the same way. Ewald tells us that the advantage of Uffelmann's test is its extreme sensibility to lactic acid found in carcinomatous patients, but in the differential diagnosis the abundance of lactic acid should always be taken into consideration.

To get an intense lactic acid reaction, it is necessary that there is a stagnation of the stomach contents and that hydrochloric acid is absent. If only one of these conditions is fulfilled, as in chronic gastritis or dilatation, we can not get this reaction. I concede that in rare instances we have a formation of small quantities of lactic acid, but it occurs in small quantity only and it does not give the characteristic reaction, as lactic acid does in carcinoma of the stomach. Whether we have a specific lactic acid or not in cancer of the stomach, I will not discuss here.

When the stomach contents show the absence of hydrochloric acid and the persistent presence of lactic acid, we are able to make a diagnosis by differentiation. There can be a choice of but one of three diseases, nervous anacidity, chronic gastritis or malignant new formation. We can always exclude nervous anacidity and chronic gastritis, on account of the persistent presence of lactic acid, which always indicates carcinoma of the stomach. It is necessary to look for a stagnation of the contents of the stomach. The patient may have vomited food which had been taken a day or two before, or we can estimate the amount of the stagnation by washing out the stomach. In chronic gastritis we never have a stagnation, there is usually a prompt forwarding of food into the intestine. In fact, in many cases of chronic gastritis, the motor function of the stomach is heightened, as I have often seen.

It is unnecessary to wait for the cachexia, edema of the joints, enlargement of the glands, fissured tongue, emaciation, obstinate coffee-ground vomit, insomnia, vertigo and the palpation of a tumor to make a diagnosis of cancer of the stomach. No surgeon can give us a good result after these symptoms have already appeared. It must not be forgotten that, in a number of cases, the liver prevents us from palpating a growth of the pylorus until it is quite large. It is frequently found that the fenestra of the stomach tube is filled with small particles of clotted blood. Professor Ewald regards this as an indication of carcinoma, even though a tumor is not yet palpable. These particles should always be examined micro-