The negative and positive diagnosis of cancer of the gastrointestinal tract / Lewis Gregory Cole, M.D., New York.

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During the last half decade the Röntgen method of examination has made remarkable advancement in the diagnosis of gastrointestinal lesions, particularly in the positive or negative diagnosis of gastric carcinoma. Prior to five years ago, exposures were not sufficiently rapid to obtain the necessary detail for the diagnosis of early cancer and its differentiation from non-malignant filling defects of spasm, adhesions, and pressure from without. At that time it seemed almost incredible that we should have placed at our command a method by which one might make a negative or positive diagnosis of gastric cancer and might even detect the localized indurated area in its precancerous stage. But the prophecy of this attainment was fulfilled so rapidly and that diagnosis was such a relatively small part of our task compared with the much broader scope of gastrointestinal diagnosis and Röntgen indications for surgical procedure, that it lapsed into obscurity and has not had sufficient emphasis.

Even within the last year we have frequently heard it stated by men of international reputation as diagnosticians and gastroenterologists, that there is no way of making an accurate diagnosis of early gastric cancer, or indurated gastric ulcer, and in a recent article one of these men stated that in only ten per cent. of the cases was the x ray an aid. Such statements are believed by the great majority of general practitioners who read the articles, and consequently thousands of patients are robbed of

an opportunity of obtaining a definite diagnosis of cancer at a stage when the diagnosis is of any value.

We are fortunate, therefore, in having an opportunity of presenting this aspect of the problem in an issue devoted solely to the subject of cancer, where the various methods of diagnosis may be compared with each other under the same cover.

Cancer comes as a "thief in the night" and gets a firm grip on the very vitals of the subject without causing enough symptoms to make the patient consult a physician. In this respect gastric cancer is not unlike cancer in any other part of the body; for instance, cancer of the breast is usually discovered accidentally by the patient herself, and if detected in the early stage when there is any hope of surgical cure, there are none of the constitutional or local classical symptoms of mammary cancer, and it is unhappily true that gastric cancer progresses far beyond the stage when there is any hope of surgical cure before developing any of the classical symptoms of gastric cancer such as emaciation, coffee ground vomitus, palpable tumor, and dilatation from obstruction.

In fact, the functional gastric disturbances resulting from lesions at some distant point, such as chronic appendicitis, pericolic membrane, stone in the kidney, Lane's kink with obstruction and dilatation of the terminal ileum, gallstones, and cholecystitis cause gastric symptoms that are far more severe than those of early or even moderately advanced gastric carcinoma. Patients suffering from early cancer may have some slight prolonged gastric symptoms, and the physician who recognizes them as the "green light" signal and applies to the röntgenologist for aid, will detect the lesion before the well known "red light" danger signal appears., and the relief of these symptoms without the negative diagnosis of carcinoma is dangerous, because it may allow the patient to go on and develop an advanced carcinoma while under the observation of the physician.

It is only by recognizing the lesion at this early stage that there is any hope of surgical cure. If the carcinoma involves the pars pylorica, particularly if it is of the annular type and causes obstruction, symptoms of obstruction may present at a relatively early stage; but it is difficult to determine solely from the clinical symptoms whether the condition is due to malignant growth of the stomach, to the nonmaligiant cicatricial contraction following

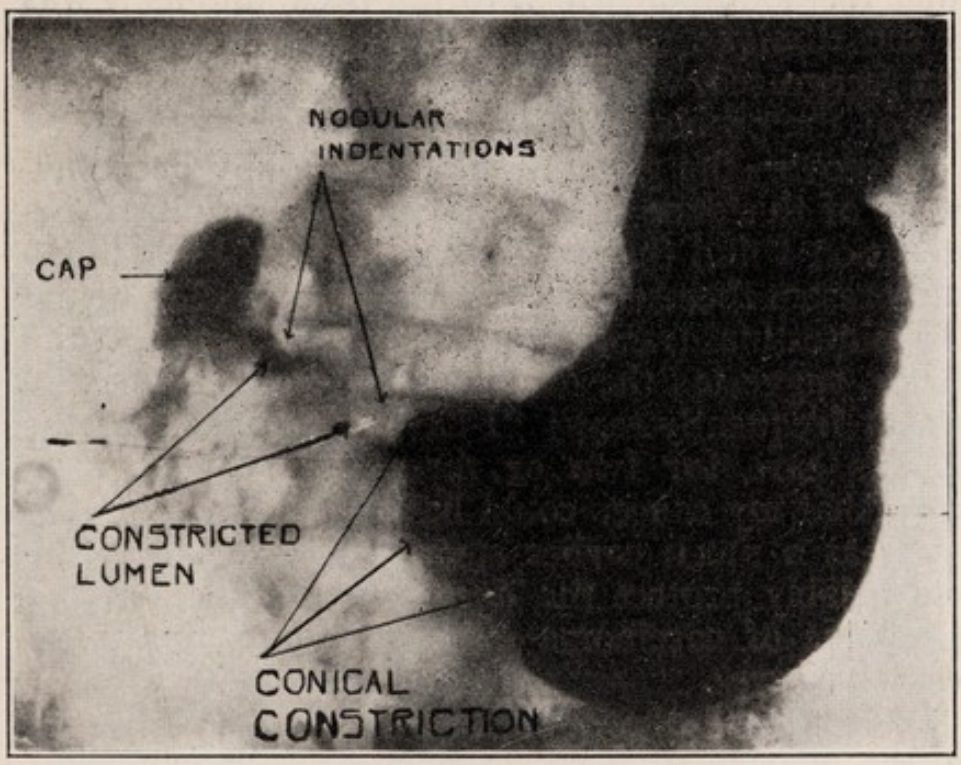

FIG. 1.—Typical carcinoma.

or accompanying ulcer of the cap, or to a functional retention without organic obstruction. Gastric analysis and any other laboratory tests which help to confirm the diagnosis may be used, but if the conclusions reached by the use of any of these methods are at variance with a positive röntgenological diagnosis, they should not be considered for an instant. To *wait* for the development of symptoms discernible by other methods robs the patient of the opportunity for surgical cure.

When we consider the large number of cases

where the diagnosis of gastric cancer or ulcer is made by clinical methods and nothing is found röntgenographically or surgically, and then reflect, on the other hand, that seventy-five per cent. of the cases of carcinoma that are presented for x ray examination are far beyond the stage of surgical cure, the value of the classical symptoms is rendered somewhat uncertain. The plight of the diagnostician would, therefore, be pitiable unless he had some other method upon which to fall back, and as it was by the Röntgen method that these conditions were first recognized, we look to that method for the solution of the problem.

Moreover, the general public is rapidly becoming aware of this state of affairs, and as a result of this education I find that more than half of the patients who present themselves for x ray examination of the gastrointestinal tract state that they, rather than the doctor, suggested the examination. As a result, the patient frequently says: "I have been under Doctor Blank's care for two or three years. Didn't he know that my cancer could have been diagnosed by x ray at a much earlier stage than this?" While I invariably protect the doctor by stating that the symptoms of carcinoma were not there, this is an evasive answer.

To approach the subject more personally, each patient over thirty years old who presents himself with abdominal symptoms might also confront us with this question, Have I or have I not cancer of the stomach, indurated ulcer of the stomach or cap, gallbladder infection with or without calculi, or renal or ureteral calculi? Even the most careful and experienced diagnostician would be somewhat embarrassed if required to give an unequivocal answer. Yet the röntgenologist may answer these questions with a definite Yes or No with as great a degree of certainty as he would make a positive or negative diagnosis of fracture of the hip, and furthermore, he can differentiate the malignant from the non-malignant lesions with remarkable certainty. Syph-

ilis of the stomach very closely resembles carcinoma. Therefore, the Wassermann reaction should be made in all cases prior to operation, especially in annular growths of young subjects.

The time has come, therefore, when a man need not remain in doubt for a single day as to whether he has gastric cancer or a precancerous area of in-

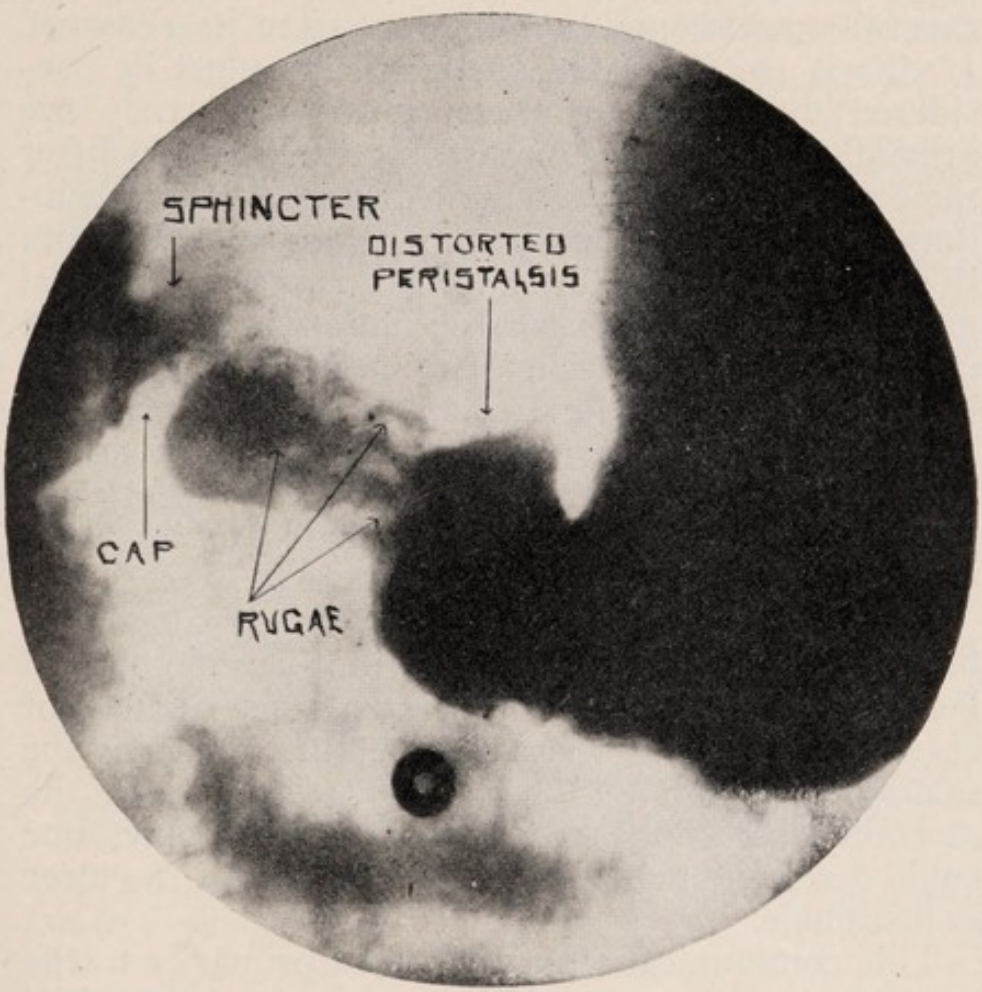

FIG. 2.—Typical spasm.

duration which at any instant may become malignant. If either of these lesions is known to be present, a röntgenographic examination is of inestimable value in determining whether surgical procedure is necessary, and if so, whether a radical operation is indicated or only a palliative procedure is possible.

For our purposes, all types of carcinoma, adeno-

carcinoma, sarcoma, and indurated gastric ulcers may be included under the term cancer of the stomach. At present it is the consensus of opinion among surgeons, and to a large extent among diagnosticians, that indurated gastric ulcers are the source of gastric carcinomas, and that whether the base of an indurated gastric ulcer has begun to undergo carcinomatous degeneration can be determined only by a careful microscopic examination after its removal. If this is so, indurated gastric ulcers must be considered malignant or precancerous until they are proved otherwise by microscopic examination after their removal. A differential diagnosis between indurated ulcer and cancer can be made with about the same accuracy by a serial röntgenographical examination as by surgical exploration without the microscopic examination of a specimen. It is only by the removal of these small indurated areas that one can hope for a permanent surgical cure of gastric cancer. They can be readily detected by serial röntgenography and their size determined to within one sixteenth of an inch.

What percentage of them have a carcinomatous base or will eventually develop into carcinoma, can be determined only by following a large number of cases over a period of years. Then by comparing the number of those that become cancerous with the mortality resulting from partial gastrectomy, one could determine whether or not removal of the ulcer is justifiable.

This communication is addressed primarily to the general practitioner and diagnostician and therefore any extensive discussion of the methods of examination is unnecessary. Two methods of x ray examination have been used. One, the European or continental method, depends upon recognizing by means of a fluoroscopic examination a certain group of gastric symptoms designated as a "symptom complex" or as "Röntgen signs." These, as the name suggests, are only symptoms and not direct evidence of the cancer itself. They vary as greatly as the

observers who describe them, and for accuracy in diagnosis they do not compare with the direct method of examination. The other method is based on the recognition of morphological defects in the wall of the viscera. When these defects are large they may be observed by fluoroscopic examination or one or two röntgenographs. But in the early stages of gastric cancer or in cases of indurated gastric ulcer with a possible precancerous base, the lesion can be detected with accuracy only when serial röntgenography is employed, and the scope and accuracy referred to in this communication deal solely with the serial method of examination.

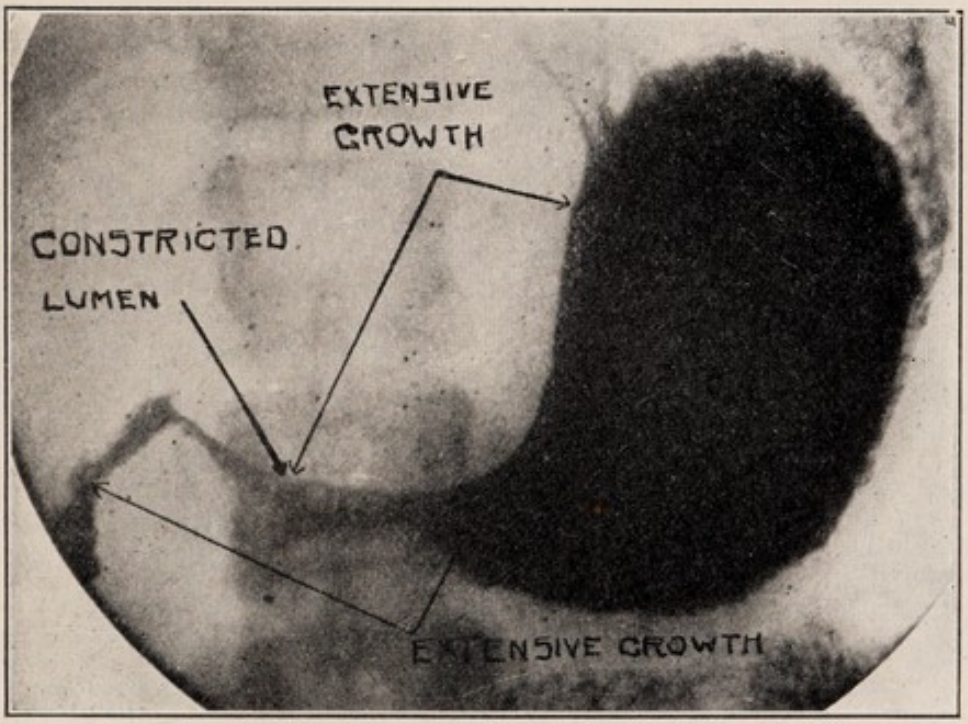

FIG. 3.—Pyloric obstruction. Growth too extensive for removal, or for gastroenterostomy.

When the gastric walls are invaded by new growth, they fail to expand to their normal dimensions. As similar "filling defects" are also found in benign conditions, such as adhesions and habitual spasms of the muscular coat, certain points of differentiation between malignant or nonmalignant findings must be especially noted in determining upon

the diagnosis. This differentiation is based on a study of the following comparative data:

Malignant. (Fig. 1.)	*Nonmalignant.* (Fig. 2.)
Rugæ are absent.	Rugæ show with unusual distinctness and run obliquely or transversely.
Lumen of constricted area is constant in size, shape, and position.	Lumen varies in size, but never completely relaxes or contracts.
Peristaltic contractions are absent in involved area.	Peristaltic contractions in involved area are abnormally wide and shallow.
Lumen is encroached upon by nodular growth projecting into the wall of the stomach.	Lumen is diminished by a contraction of the muscular coats of the stomach without the projection into the lumen of localized areas.
Line of invasion is characterized by nodular indentations similar to finger prints in a ball of putty.	Line of invasion may be sharp and clear cut or finely serrated by the rugæ coming to the surface, but shows no nodular indentations.

Frequently the various nonmalignant lesions can be differentiated from each other, but in other instances it is best to state the location and extent of the lesion and determine whether there is sufficient obstruction to warrant surgical procedure, leaving the question of cause to the pathologist.

The absence of rugæ in the involved area is perhaps the most reliable differential point between malignant and nonmalignant lesions. If the rugæ are distinctly visible, the condition may be safely defined as nonmalignant, caused by spasmodic constriction of the muscular coat or by adhesions involving the peritoneal surfaces. If the constricted area is devoid of rugæ, the lesion involves the mucosa or submucosa and is probably malignant or premalignant.

Another important indication of a malignant condition is the absolutely constant size and contour of the deformities which it causes. If the lesion is a spasmodic or nonmalignant organic condition, the

distortion will assume slightly different aspects during the different phases of a gastric cycle. On the other hand, the presence of new growth entirely deprives the gastric wall of flexibility, so that the in-

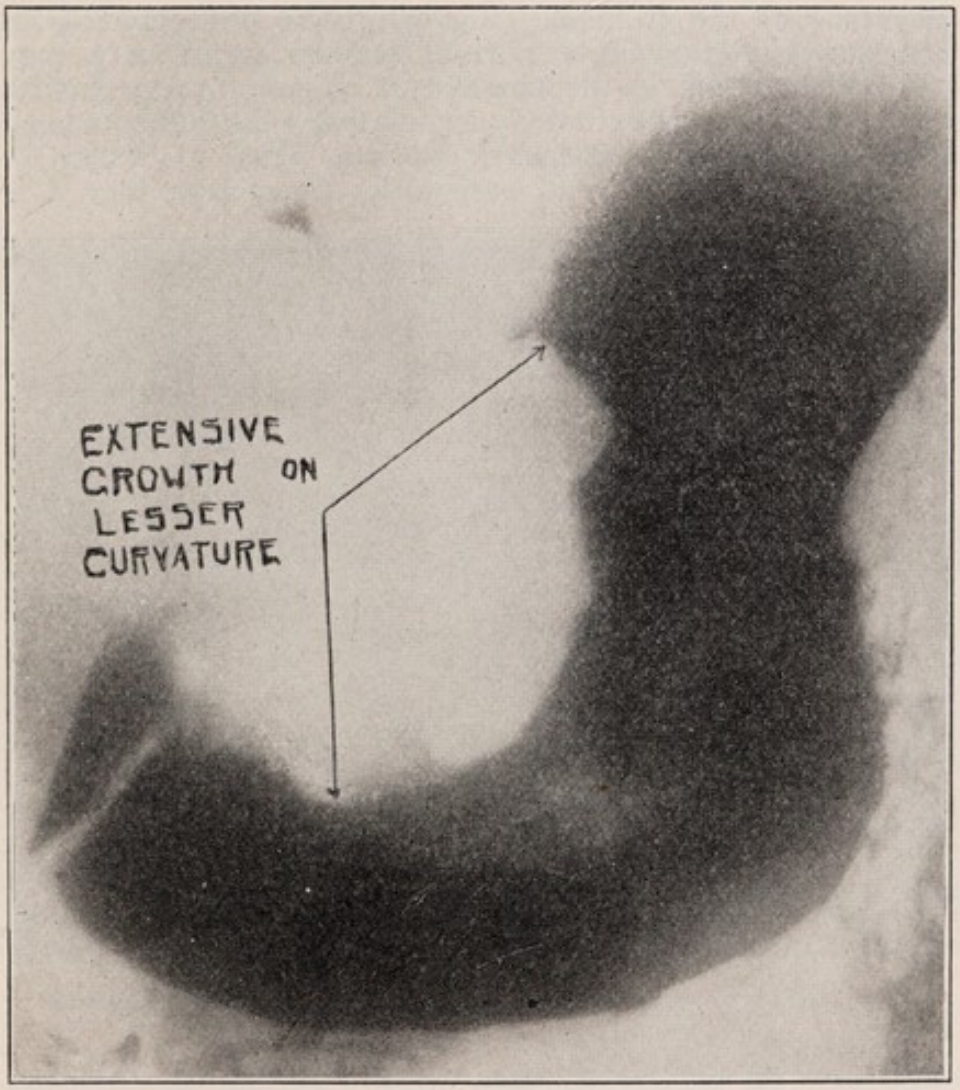

FIG. 4.—Carcinoma on lesser curvature, too extensive for removal. No obstruction; no occasion for gastroenterostomy.

volved area presents exactly the same outlines in all the röntgenograms of the series.

TYPES OF GASTRIC CARCINOMA.

Gastric carcinomas may be classified as of several types, according to the form, extent, and location of the lesion as observed röntgenologically.

TYPE I. The lumen of the stomach may be encroached upon by a nodular growth in the wall of the viscus, from

which projections extend into the normal tissue at the line of invasion, like peninsulas or islands (Fig. 5). This gives a peculiar appearance to the fluid cast of the stomach, suggesting finger prints in a piece of putty.

TYPE II. The growth may be formed of one large, fairly smooth mass, projecting into the lumen from one wall or curvature of the stomach (Fig. 4). The uninvolved portion may function in a normal manner, and there may be no obstruction to the passage of chyme. At an earlier stage when the growth may or may not be malignant, it appears as a small constant induration (Fig. 7), which so closely resembles a broad peristaltic contraction that it is

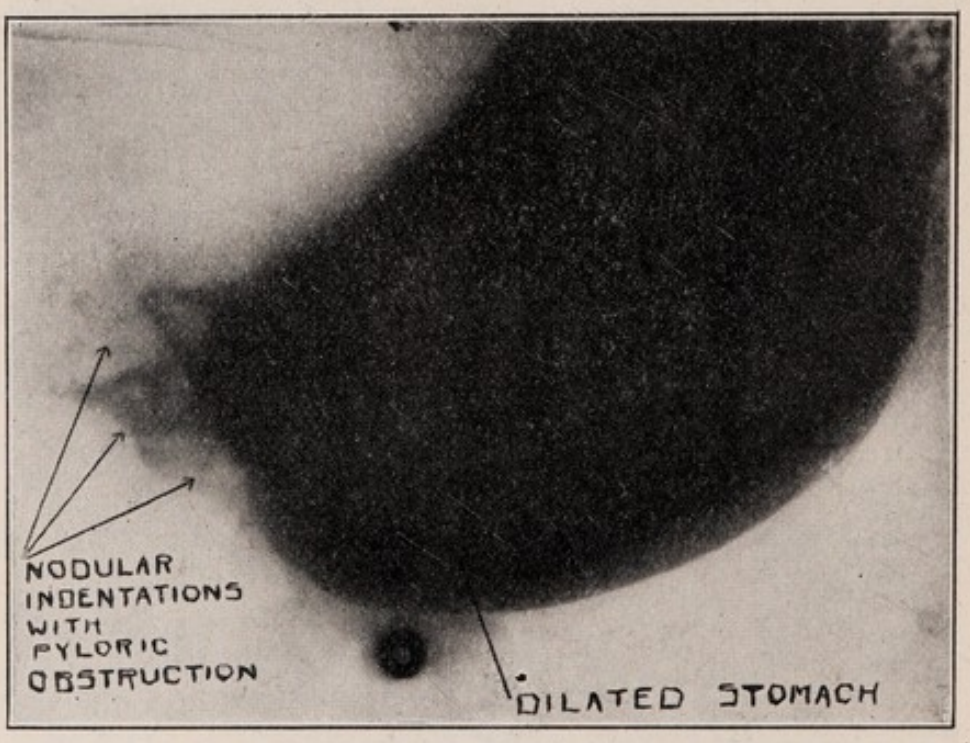

FIG. 5.—Pyloric obstruction. Surgery for palliation indicated.

necessary to use great care in differentiating the two phenomena; but it will be seen in studying a series of röntgenograms, that the induration does not progress pylorusward nor relax during diastole. These cases are readily detected at an exploratory laparotomy, and are amenable to surgical procedure. But the surgeon cannot determine their malignancy with any greater degree of certainty than the röntgenologist. He does not know whether he has prevented a carcinoma by excising an indurated ulcer or removed an early carcinoma until he receives a pathological report after the specimen has been examined microscopically.

TYPE III. The growth may be annular, involving the entire circumference of the gastric wall. An extensive

involvement may reduce the diameter of the lumen to one eighth inch or even entirely obliterate it (Fig. 1). If the röntgenograms of a series are matched over each other, it will be seen that the constricted area is constant in size, shape, and position. Where the growth joins the normal tissue, the line of invasion may have a wormeaten appearance, with overhanging edges (Fig. 6), or it may be conical or funnel shaped, the flaring edge of the conical area corresponding to the line of involvement, while the apex of the funnel terminates at the most constricted area.

TYPE IV. Small annular growths, which are found at

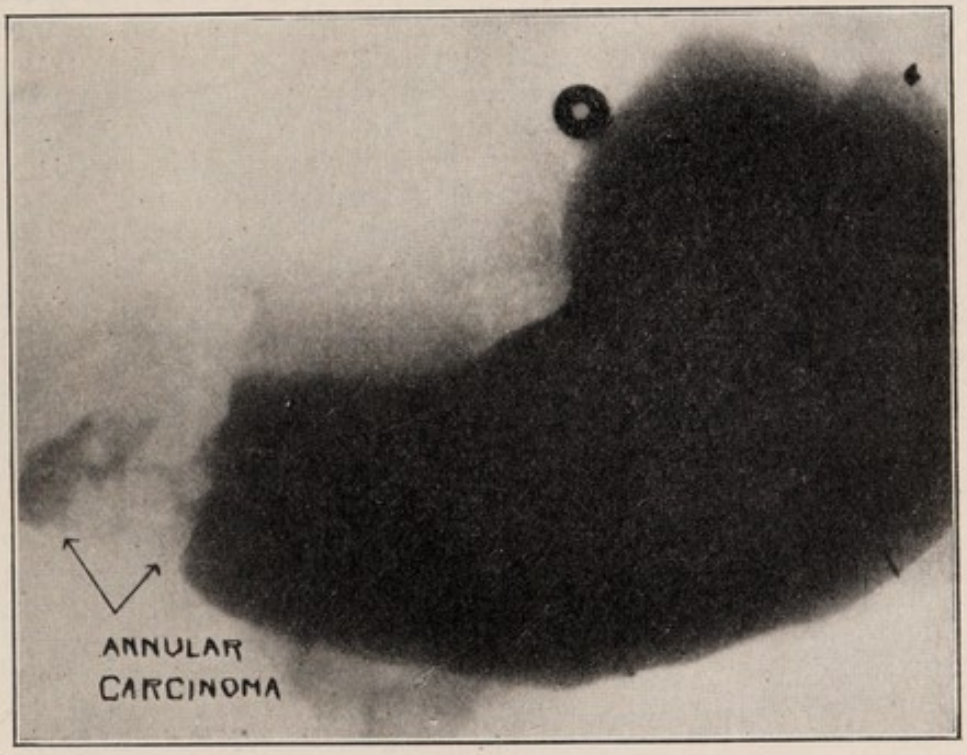

FIG. 6.—Annular pyloric carcinoma. Surgery indicated.

the extreme end of the stomach, are usually of the adenocarcinoma type, and freely movable (Fig. 6). In two cases which presented a typical röntgenographic picture of this type of involvement, the growth was considered benign by the surgeon at the time of operation. In one of these cases, a gastroenterostomy was performed and the patient died later of gastric carcinoma. The other was a case diagnosed and reported by Doctor George as carcinoma of the pylorus. At operation the surgeon excised the affected tissue, simply because it was easy to remove, believing it to be an ulcer. The surgeon and pathologist both considered it benign on gross examination. Microscopic examination, however, proved that it was malignant. In spite of the fact that the microscopic findings proved its ac-

curacy, the case has been cited as an example of the absurd presumption of a röntgenologist's diagnosis.

It is a fortunate circumstance when a marked narrowing of the gastric lumen, causing retention and dilatation, results while the growth is still small. Such lesions which cause symptoms early, while the growth is freely movable, offer a good opportunity for surgical cure. In one case of this type, the gastric secretions were so nearly normal that the patient was kept under observation in the hospital for six weeks before an operation was performed.

TYPE V. The schirrous carcinoma, which involves a considerable area without projecting appreciably into the gastric lumen, is the type of growth most likely to escape detection by röntgenological methods. The absence of the peristaltic rings in the involved region is the *first clue* by which this lesion is identified. That part of the stomach infiltrated with carcinomatous cells is less pliable than the normal gastric walls, and the peristaltic rings are therefore obstructed in their progression pylorusward when they reach the areas of infiltration. An absence of the deep angular sulcus on the lesser curvature is of great importance (Fig. 3). As a simple demonstration of what happens, a string may be tied around an inflated rubber tube where a small patch has been applied. The patched portion will not be creased by the string like the rest of the tube.

Another finding characteristic of scirrhous involvement consists of slight irregularities in the wall of the stomach, visible only upon close observation, which present an absolutely identical contour in all the röntgenograms, as can be seen by matching the rönegenograms over each other. Such growths occur frequently on the lesser curvature. Small constant creases on the greater curvature near the pylorus, which very closely resemble a peristaltic sulcus, frequently call one's attention to the extensive lesion on the lesser curvature which might otherwise escape detection If the involvement is extensive and the stomach considerably contracted, the nonpliability of the gastric walls causes a dilatation of, and retention in the lower end of the esophagus, a phenomenon to which Schmieden[1] calls particular attention. It is important to differentiate this condition from the Haudek niche, caused by a perforating gastric ulcer of the lesser curvature.

TYPE VI. In many cases, particularly those in which a röntgenographic examination is not made until the patient presents classical symptoms of cancer of the stomach, there is such complete obstruction that even the hair line of bismuth, connecting the lumen of the stomach with the small intestine is not visible. In these cases the apex of the cone or funnel shaped constriction, indicates .where the con-

[1]Dr. V. Schmieden: Die Differentialdiagnose zwischen Magengeschwür und Magenkrebs, *Arch. f. klin. Chir.*, 96, 1911.

striction originated (Fig. 5). Unfortunately, a large percentage of the carcinomas found röntgenographically belong to this group; and this will continue to be the case until the laity and profession realize that, in order to detect carcinomas at an early stage, all patients past forty years of age with even slight gastric symptoms, must be examined röntgenographically if the lesion is to be detected at a stage when a recognition of the condition is still of some value to the patient.

TYPE VII. The röntgenographic picture of a saddle shaped ulcer is more graphic than words can describe (Fig. 4). The affected area may conform to the lines of an English saddle, having a more or less flat surface, with

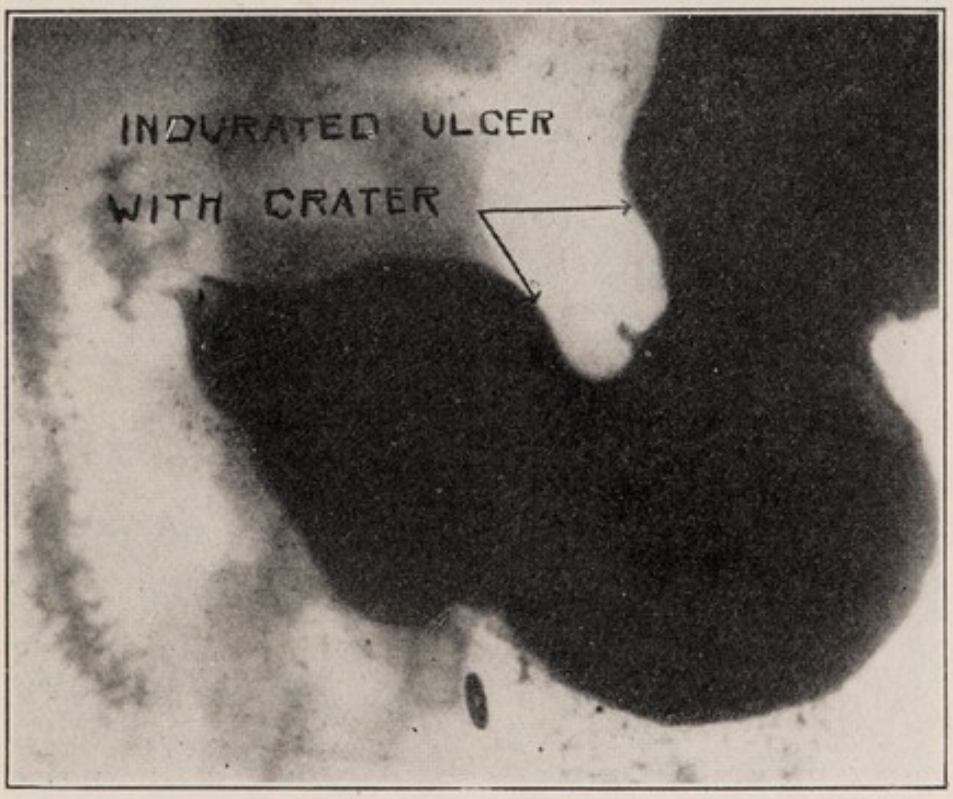

FIG. 7.—Precarcinomatous area on lesser curvature. Surgery indicated for complete cure.

flaps extending down on the anterior and posterior surfaces of the stomach, or it may be deep, with a high pommel and back, like a typical McClellan army saddle. While such lesions are usually described surgically as gastric ulcer, all those I have seen proved malignant upon microscopic examination. This type of involvement causes no obstruction to the passage of chyme and no gastric retention. Indeed such a stomach usually evacuates itself with uncommon rapidity, either on account of the diminished hydrochloric acid or because adhesions interfere with the normal function of the pyloric sphincter.

In the detection and interpretation of gastric lesions, serial röntgenography fulfills two functions—that of a scout and that of an architect. As a scout it detects the malignant and premalignant lesions at an earlier stage than any and all other methods combined. But, if the scout is to be of any real value, he must be employed before the enemy has fired the deadly volley which announces to the medical attendant that malignancy is already established.

Serial röntgenography, the architect, is not nearly so romantic a character as serial röntgenography, the scout. Alas! In most cases the cancer has advanced to such a stage that x ray as an architect is of little value, except to prevent an unnecessary mutilation of the body in the guise of an exploratory laparotomy. Every single case of gastric carcinoma or precarcinoma in the form of indurated gastric ulcer which is discovered by the x ray scout is submitted to the x ray architect to determine whether or not surgical procedure is indicated.

Inoperable cancers are divided into two groups: 1. Those in which the lesion is too extensive to allow even a gastroenterostomy; 2, those in which gastroenterostomy is possible, but not indicated.

Operable cancers are divided into two groups: 1. Those for palliative relief; 2, those for surgical cure, or cancer prevention.

The first group of inoperable cases is illustrated by Fig. 3. There may be such an extensive growth —usually annular—of the pars pylorica as to prevent the passing of anything except fluids into the duodenum, but the posterior and anterior walls of the stomach may be involved to such an extent that it is impossible to perform even an anterogastroenterostomy. In such cases the patient may be saved the discomfort of an unnecessary mutilating exploratory laparotomy during the last weeks or months of his life.

The second group of inoperable cases is illustrated by Fig. 4. In this group there is no pyloric obstruction, but the growth along the lesser curva-

ture is so extensive that there is no hope of its complete removal, and the patient will die of constitutional symptoms before the growth obstructs the pars pylorica. Therefore, the palliative operation

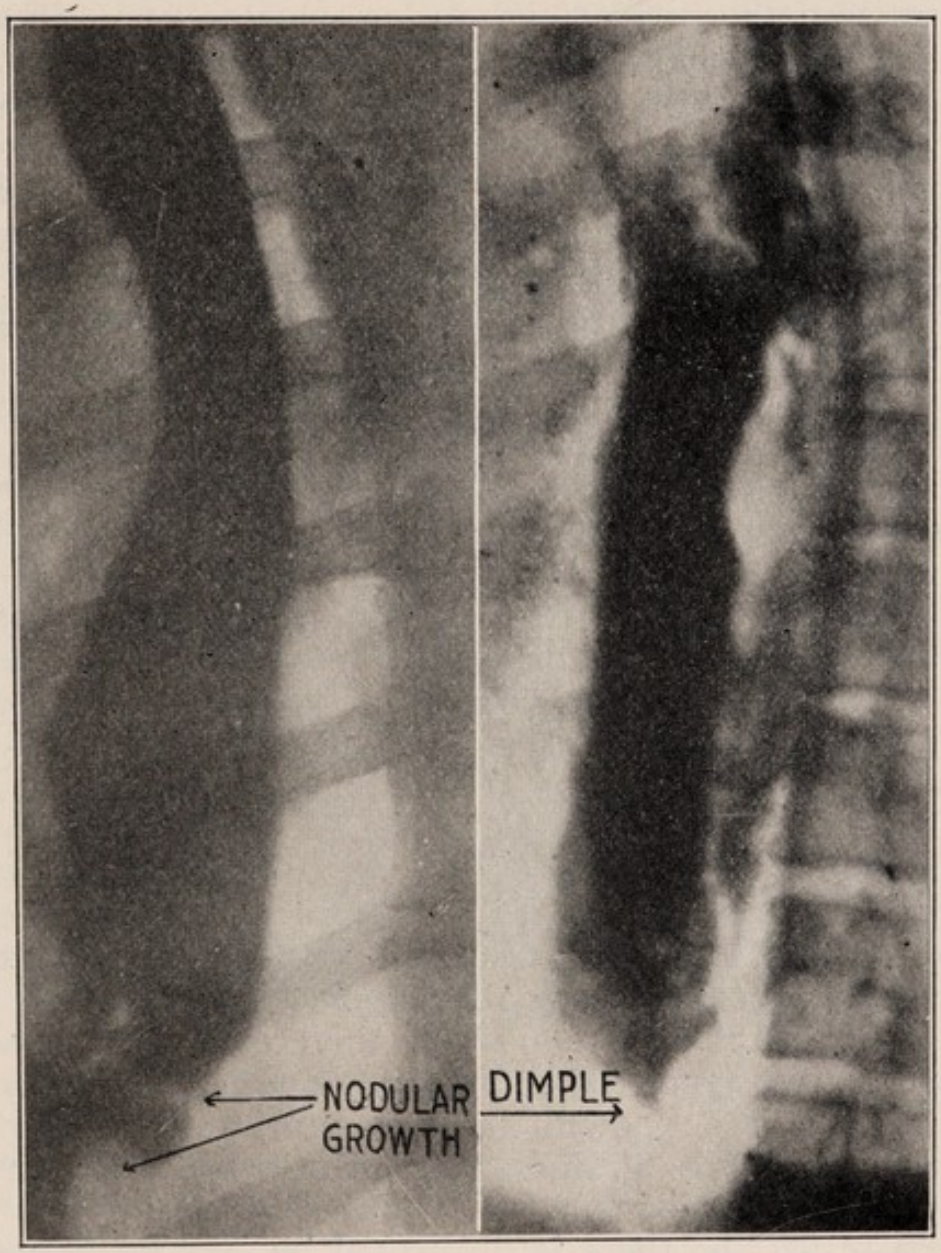

FIG. 8a.—Carcinoma. FIG. 8b.—Spasm.

of gastroenterostomy is unnecessary. And unless the pylorus is artificially obstructed, the patient's symptoms are aggravated rather than alleviated.

In this type there is always the question of whether or not the growth is removable, but the

Röntgen architect can state with certainty just how much of the stomach wall is involved. The surgeon can then determine before operating whether he is bold enough to attempt a complete gastrectomy, and the patient can decide whether he wishes to take the chance of the high mortality of such a surgical procedure. It is true that some of the cases described under Group 2 of operable cases will, because of extensive glandular involvement or metastatic involvement of the liver, belong to this class.

Operable for alleviation of pyloric obstruction.— A large majority of the cases of carcinoma presented for x ray examination after the development of some of the characteristic symptoms of gastric cancer, come in the class illustrated by Fig. 5. The growth involves the pars pylorica and causes or will cause such an obstruction that the patient would die of inanition before the constitutional symptoms of cancer became very marked. The posterior or the anterior wall of the pars media is not extensively involved, and there is a possibility of successfully performing a postero- or anterogastroenterostomy, thereby temporarily relieving the patient of very distressing symptoms. In such cases there is no hope of surgical cure, and it can be decided by the physician, surgeon, röntgenologist, and patient whether the temporary alleviation is worth while.

The operable cases in which there is hope of cure are of two types, those in which one is reasonably sure that the growth is malignant, and those in which there is an indurated ulcer which may or may not be malignant.

The first of these is illustrated by Fig. 6, where there is a small annular growth involving the extreme pyloric end of the pars pylorica, freely movable and demanding immediate surgical procedure regardless of whether or not it causes gastric symptoms. These go on very rapidly to complete pyloric obstruction, with gastric symptoms: and operation is inevitable in a very short time. If the operation

is performed in the early stage before the clinical symptoms of obstruction present this type offers hope of a surgical cure.

The second group of the operable cases, illustrated in Fig. 7, are the indurated gastric ulcers which may or may not be malignant. Up to the present time it has seemed wise to follow the trend of general teaching, to consider that all indurated gastric ulcers are malignant or may become so at

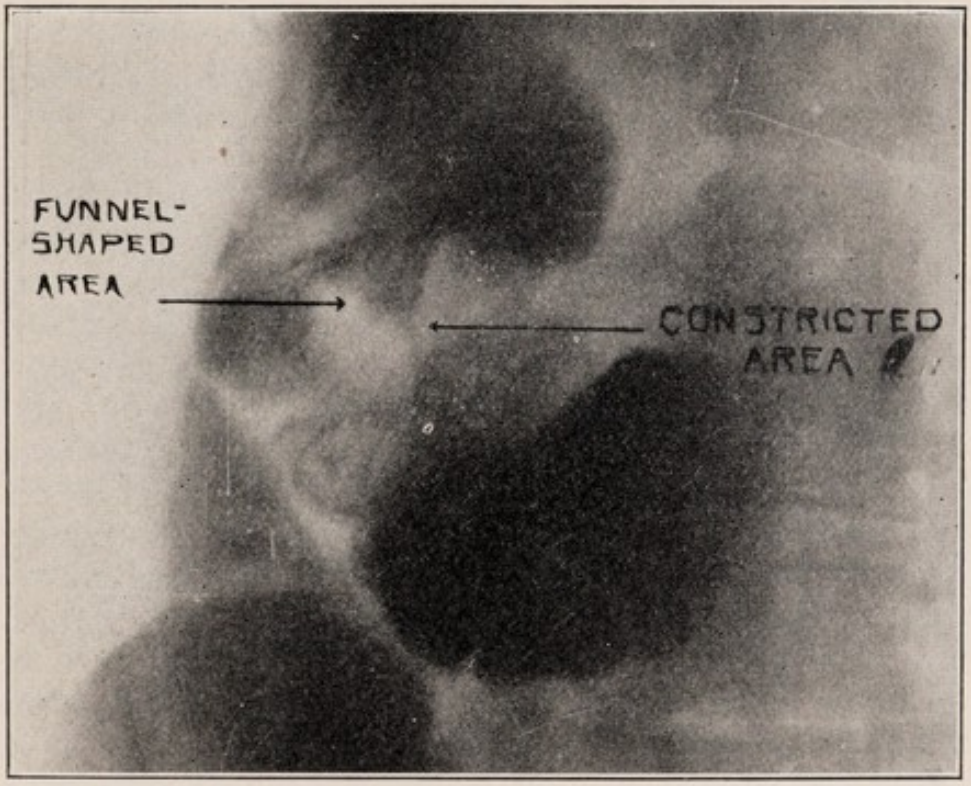

FIG. 9.—Carcinoma, first portion of transverse colon.

any moment, and to advise surgical procedure for the removal of the induration and the "cancer bearing area."

These indurated areas show very distinctly and are readily demonstrated by serial röntgenography, even when the induration is so small as to require the closest scrutiny and palpation of the gastric wall after the abdomen is open, and in some cases where the Röntgen evidence is very characteristic, the ulcer can be definitely detected at the time of

operation only by opening the stomach and examining the mucosa.

Negative diagnosis of gastric cancer.—By the use of serial röntgenography it is possible to state with a remarkable degree of accuracy that a person is not suffering from a gastric cancer or from a precancerous indurated gastric ulcer. When a patient past forty years of age has chronic gastric symptoms for several months, and has lost some flesh and strength, it is worth a great deal to him to know definitely that he has neither a gastric cancer nor even a precancerous area of induration. This is particularly true if there is a family history of cancer.

This rather radical statement is not made without careful consideration. It is based on a negative diagnosis of 907 cases. In order to determine the accuracy of this method of examination, letters are written to the physician who referred the case, or to the patients themselves, every three or six months, and in not a single case, to my knowledge, has the negative diagnosis of gastric cancer been proved erroneous, either by later surgical procedure or by autopsy. In two cases, both of them more than four years ago, the subsequent clinical history indicated that the patient died of cancer, but in one of these it was doubtful if the growth was in the stomach.

On one other occasion I stated that any one who knew of a case in which I had made an erroneous diagnosis of gastric cancer, either positive or negative, would confer a great favor by reporting it to me, and I repeat the statement here.

What we have said of gastric cancer applies practically to the esophagus and colon, and with a slight degree of modification to the small intestine. By administering a thick paste of barium or bismuth and water, the lumen of the entire esophagus may readily be determined, either röntgenographically or fluoroscopically. By this technic even the lumen of the normal esophagus may be shown, and if there are

any areas of diminished elasticity in the wall, they are apparent. It is more difficult to differentiate the malignant and nonmalignant lesions of the esophagus than of the stomach, but in this region of the gastro-intestinal tract, the röntgenological examination may be supplemented by esophagoscopy which may, if desired, be applied also to the cardiac orifice and the upper end of the lesser curvature of the stomach.

In cases of carcinoma the constricted area in the esophagus is constant in size and irregular in shape, and has a wormeaten appearance. The uninvolved

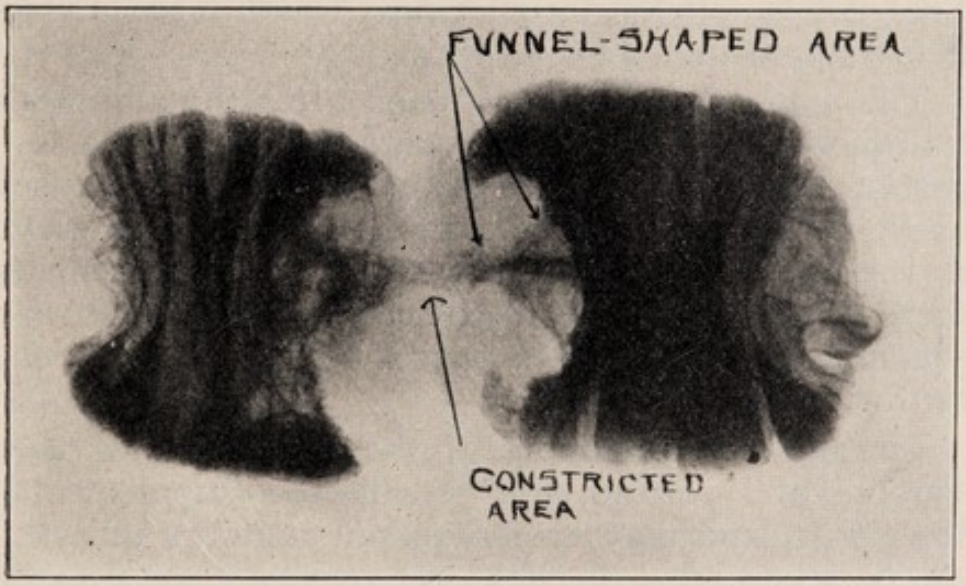

FIG. 10.—Specimen, after removal.

portion above the growth is usually dilated. Esophageal carcinoma (Fig. 8a) must be differentiated from cardiospasm and esophageal diverticulum and, if possible, from benign cicatricial constrictions.

One case of esophageal diverticulum reported by Doctor Stetton, had been previously diagnosed as carcinoma, but the real condition of diverticulum was readily diagnosed by x ray and a complete surgical cure was obtained by Doctor Stetton.

Cardiospasm may cause such a complete obstruction as to result in an immense dilatation of the esophagus. Selby, formerly of the Mayo Clinic, showed that in cases of cardiospasm the dilated area

terminated in a conical point to which he referred as a "dimple." (Fig. 8b.)

In some cases the esophagus becomes elongated and folds on itself. This is much more likely to occur in cardiospasm than in carcinoma.

Organic lesions of the colon may be detected with about the same degree of accuracy as a lesion of the stomach. In organic lesions of an annular type the positive diagnosis of carcinoma is readily made, but in some cases the carcinoma may follow extensive adhesions from an old appendicitis, and it becomes more difficult to determine whether the lesion is malignant or not.

The colon should be examined after the administration of a barium clysma, and also after the ingestion of a barium impregnated meal. In the case of the clysma the solution should pass all the way to the cecum, and if it does not, one can state that there is an obstruction in the colon or of the colon, pressure on the colon, or spasm of the colon which can be readily recognized.

In cases of carcinoma of the lower end of the sigmoid and rectum, the proctoscope supplements the x ray, and may even supplant it if the growth can be seen and a specimen removed.

We find, however, quite a number of carcinomas of the upper part of the colon. Some of these occur in young persons and are quite amenable to surgical cure. The best illustration of this is the first case that I saw five years ago (Fig. 9). It was that of a woman who presented herself for a Röntgen examination, giving a clinical history of tuberculous peritonitis. The examination revealed an annular carcinoma of the first portion of the transverse colon, and surgical measures were resorted to. Doctor Draper, who operated in the case, removed a section of the colon, and a specimen which was radiographed is reproduced here (Fig. 10). Subsequent Röntgen examinations have been made nearly every year since. There has been no return of the growth, the

patient has gained sixty pounds in weight, and is perfectly well and strong.

SUMMARY.

1. The rapid development of the x ray diagnosis of gastrointestinal lesions is beyond the comprehension of many of the diagnosticians, or even of the gastroenterologists who are foremost on the firing line.

2. The statement by eminent gastroenterologists that this is no way to make a positive diagnosis of early cancer or indurated gastric ulcer, robs thousands of cancer patients of an opportunity for surgical cure.

3. Gastric cancer comes as a "thief in the night" and gets a grip on the patient before the well known "red light" danger signals of the classical clinical symptoms develop.

4. Nonmalignant functional gastric disorders cause more severe clinical symptoms than early carcinoma.

5. The public is learning the scope and accuracy of the x ray, and demanding its use.

6. The time has come when a man need not be in doubt for a single day as to whether or not he has gastric cancer or a precancerous gastric ulcer.

7. All types of carcinoma, adenocarcinoma, sarcoma, and indurated ulcer are considered under the term cancer.

8. "Symptom complex" and "Röntgen sign" are a snare and a delusion.

9. This communication deals solely with the detection by serial röntgenography of morphological changes in the wall of the viscus.

10. The röntgenological indication of malignant, compared with nonmalignant lesions of the stomach.

11. Types of growth and method of involvement of the gastric wall.

12. The x ray as a scout and the x ray as an architect.

13. Röntgenological indications for surgical procedure: *a.* Inoperable because too extensive for even gastroenterostomy. *b.* Inoperable because too extensive for complete removal. *c.* Operation for palliative relief. *d.* Operation for surgical cure. *e.* Operation for prevention of cancer.

14. We can state that a patient has not a cancer of the stomach with as great a degree of certainty as we can state that he has not a fracture of the hip.

15. Organic lesions of the esophagus may be detected with an equal degree of accuracy, but it is more difficult to differentiate between the malignant and nonmalignant lesions. Gastroscopy is a valuable method of corroboration.

16. Colonic growths are readily detected by the x ray, but here also it is sometimes difficult to differentiate between the benign and malignant lesions, and in the lower sigmoid and rectum proctoscopic examinations are valuable.

In closing, I wish to express my gratitude to the NEW YORK MEDICAL JOURNAL for an opportunity of presenting this aspect of the cancer question.

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