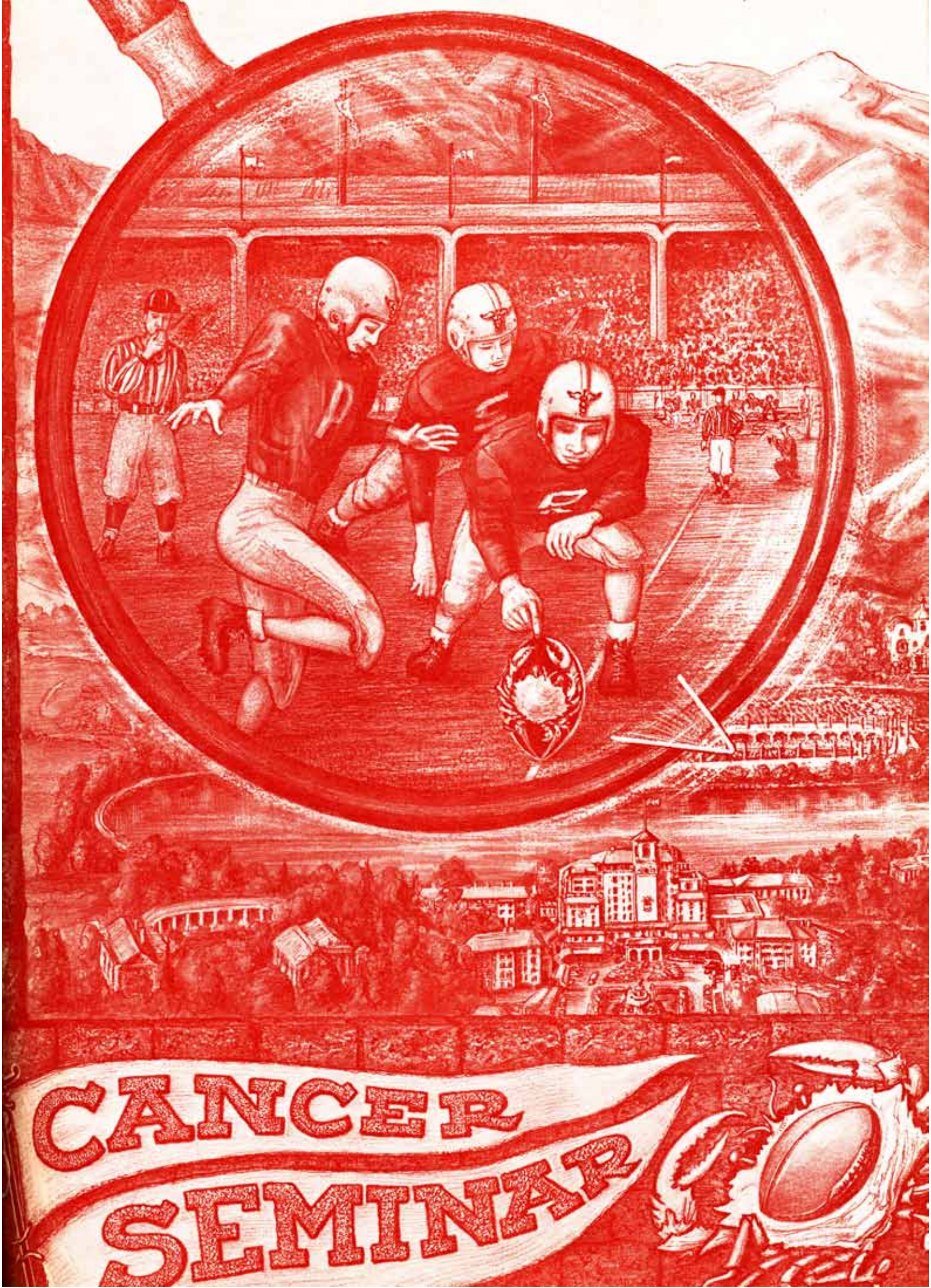
CANCER
SEMINAR

CANCER SEMINAR

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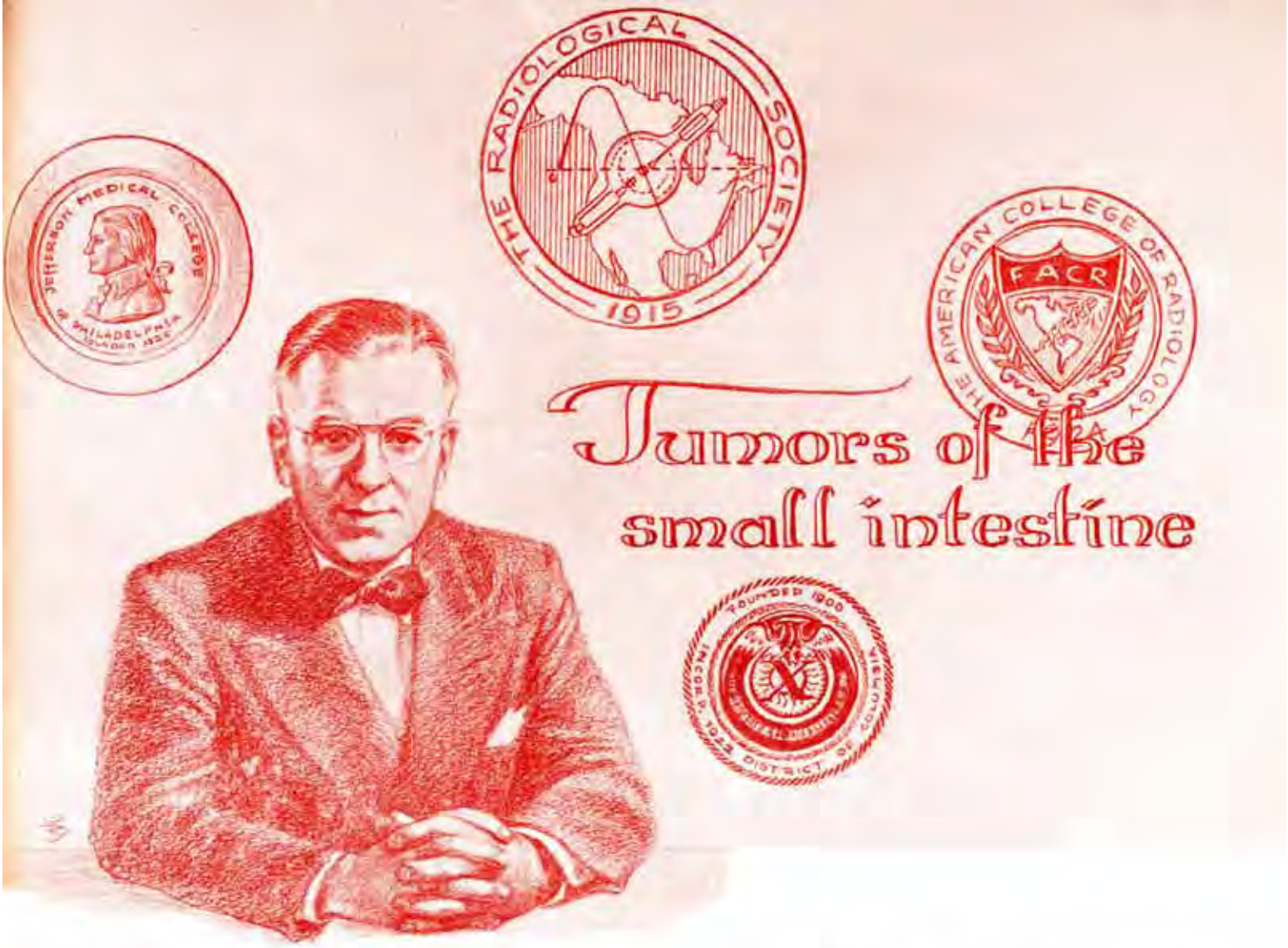


Tumors of the small intestine

THE DIAGNOSIS OF TUMORS of the small bowel is usually made after persistence of intestinal bleeding or signs of recurrent obstruction. The radiologic exploration of the small intestine is fraught with considerable difficulties. The length of the intestine precludes the possibility of complete fluoroscopic study; the duodenum is usually well visualized in fluoroscopy but the jejunum does not lend itself to the same study; only the terminal portion of the ileum can be rapidly and effectively visualized in retrograde filling after a barium enema. Roentgenographic study of the intestine, as the barium progresses along, is hampered by the slowness of the passage and superposition of loops. Whereas these routine measures do reveal filling defects, flattening of the mucosa and signs of obstruction, they are incapable of showing early lesions.

In the presence of persisting symptoms and negative findings, additional radiologic studies are usually employed. Special procedures are at times helpful, such as the injection of opaque material through a Miller-Abbott tube which has been introduced to the level of obstruction or of the suspected lesion. The so-called small bowel enema is time-consuming and it is generally applied only to problem cases. A special procedure has been advocated by which the bowel contents are repeatedly aspirated and tested for occult blood as the tube descends in the small bowel; this would permit examination at the most suspicious level. Another procedure consists in examining only a portion of the bowel between two inflated balloons along a three-lumened tube through which air or opaque material can be injected and withdrawn.

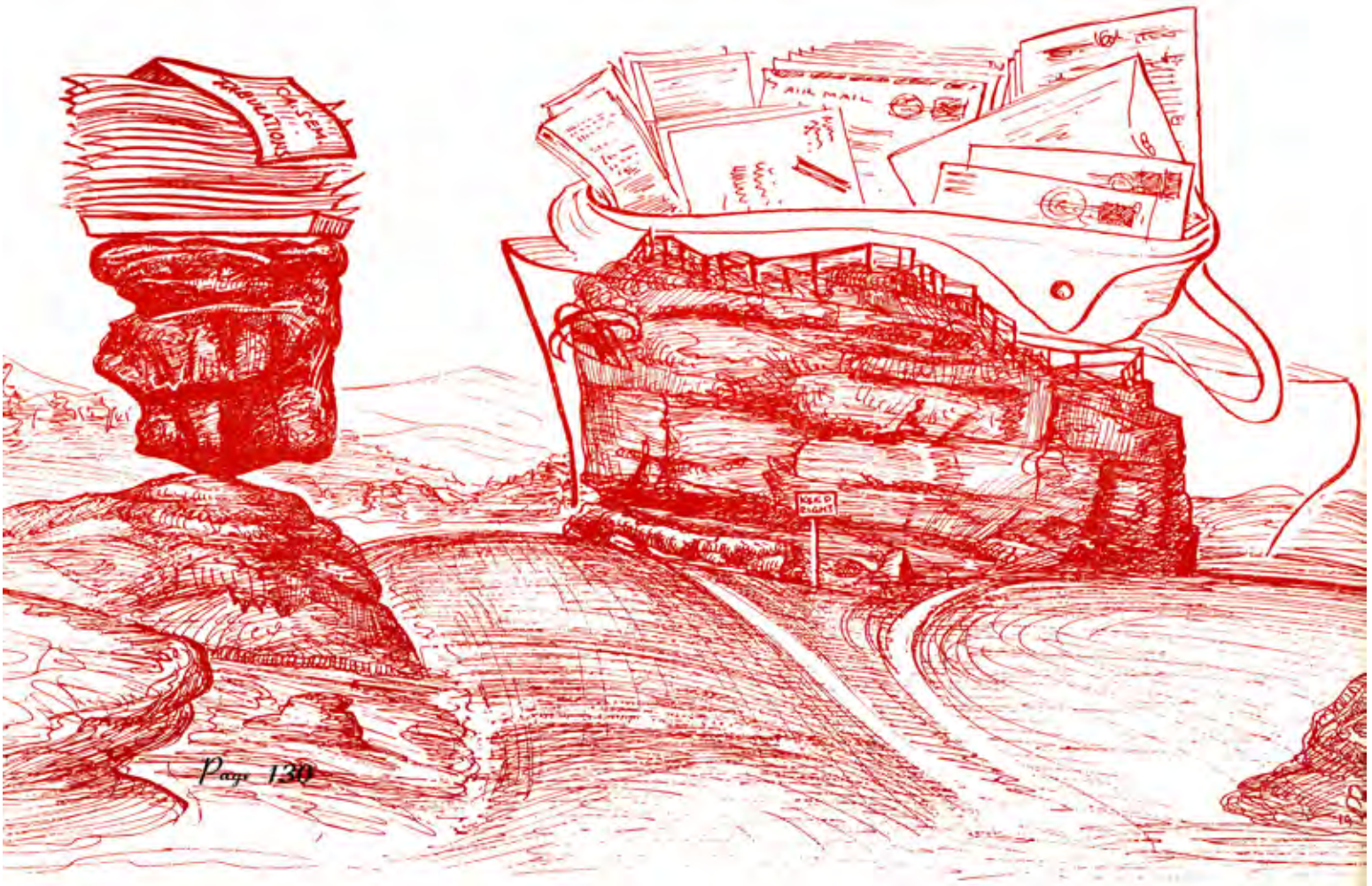
In the presence of suspicious symptoms and no radiologic findings the surgeon is often well justified in resorting to a laparotomy for the diagnosis and treatment of these lesions. In this manner lesions are sometimes found which had been missed on radiography; a re-study of the roentgenograms may then reveal previously unnoticed signs of the lesion. This is what was

called at this SEMINAR the "retrospectoscopic" view, by Dr. Swenson. There should not be much hesitation in proceeding to an exploratory laparotomy in lesions of the small bowel; the procedure is often successful and there is little question as to the adequacy of surgical treatment whether the lesion is benign or malignant. In the majority of unsuccessfully treated cases time appears to have been unnecessarily wasted.

In this CANCER SEMINAR more than in all the previous ones, the radiologists found themselves handicapped in expressing a diagnostic impression for in a number of instances, as is often the case in clinical practice, the information available was insufficient to venture a diagnosis except by virtue of position of the lesion rather than by any differential character. In a few cases the radiologic impressions were remarkably accurate. All recognize that the purpose of this CANCER SEMINAR is not to test the accuracy of the radiologic impressions but to facilitate an educational exercise from which we all benefit. The histopathologic diagnosis of tumors of the small intestine does not offer great difficulties as a rule. The cases offered for the SEMINAR were naturally problem cases for the most part. As usual the wide differences of opinions among pathologists in some cases, was a revelation to many and a humbling experience to some, proving once again that the morphologic diagnosis of tumors has its definite limitations.

A number of those who had attended previous SEMINARS were unable to attend this one because of short hotel accommodations. We wish to extend our apologies to them with our promise that we will try to improve our capacity in the future. The 252 pathologists, radiologists, internists and surgeons who were able to attend this CANCER SEMINAR on September 9, 1953, benefited by the discussions of our two guest speakers, Dr. Paul C. Swenson, Professor of Radiology, Jefferson Medical College, Philadelphia, Pennsylvania, and Dr. William A. Meissner, Assistant Professor of Pathology, Harvard University Medical School, Boston, Massachusetts. The discussion was enlivened by the spirited remarks of another guest, Dr. Harry M. Weber, Chief of the Section of Roentgenology of the Mayo Clinic and Professor of Radiology of the Mayo Foundation of the University of Minnesota, who participated in the audience discussion.

J. A. del REGATO, M. D.
Colorado Springs, August 1954.



1. Benign Adenomatous Polyp of the Duodenum

Contributed by THEODORE C. PRATT, M. D., Brookline, Massachusetts

THE PATIENT was a 73-year-old lady in December 1952 when she gave a history of poorly controlled diabetes and of diarrhea of several months' duration; there had been occasional nausea and vomiting but no loss of weight. The fluoroscopic examination revealed dilatation of the second duodenal portion; the barium flowed around what appeared to be a polylobated filling defect at the junction of second and third duodenal portions.

Dr. Swenson: This looks like a single, smooth, rounded mass attached to the duodenal wall and displacing the barium in the lumen. Provided this mass was a constant finding in the lumen, then I think the first bet is that of a leiomyoma.

A single polyp, of course, is a good second possibility, or even a polypoid carcinoma, assuming that this was proved fluoroscopically to be definitely intraluminal. The defect across the one portion at the bottom of the U-loop could be due to the pressure of an annular pancreas; also a foreign body or an intramural cyst is a possibility.

Dr. Swenson's impression: (1) LEIOMYOMA of the duodenum, (2) Adenomatous POLYP and (3) Polypoid CARCINOMA.

Roentgenologic Impressions Submitted by Mail

Benign duodenal tumor	48
Malignant duodenal tumor	25
Pancreatic tumor	15
Inflammatory lesion	6
Others	9

Dr. Weber: My radiologic diagnosis was polypoid lesion of the duodenum, histologic type (?). I like that term polypoid lesion because it is very general and non-commital as far as the histologic type of lesion is concerned; it describes only the gross morphology of the lesion and in my own opinion that is usually as far as our examination will permit us to go. I would not have considered leiomyoma; there is a syndrome for leiomyoma although not all cases will have all the features of the syndrome. The leiomyoma is essentially a mural tumor; in most of those that I have seen the larger part of their mass has been extraluminal rather than projecting into the lumen; in addition an ulceration is frequently demonstrated, which is probably a digestive phenomenon; and finally since the leiomyoma is well circumscribed and very hard, nothing feels so much like a golf ball attached to the wall. I hesitate to make the diagnosis of leiomyoma without all or at least two or three of these parts of the syndrome in the picture. My diagnosis would be polypoid lesion of the transverse portion of the duodenum. I don't like to attach the qualification benign to any lesion which has a chance, no matter how remote, of malignant transformation or of original malignancy. The fact the chance of malignancy is statistically remote should not lead anyone to make the relatively safe assertion; I believe it is best to admit that the true histological nature cannot be predicted radiologically.

Dr. Regato: Dr. P. J. Hodes of Philadelphia also suggested a leiomyoma. Dr. J. A. Campbell of Indianapolis, Dr. L. Arrieta of Panama, Dr. W. Christensen of Salt Lake City, and Dr. L. Blattspieler of Lincoln, all made a diagnosis of benign polyp.

Operative findings: On January 2, 1953 a surgical exploration revealed what appeared to be a polyp of the second portion of the duodenum; it was removed through a longitudinal incision. The growth was soft and had a wide base near the sphincter of the ampulla of Vater.

Dr. Meissner: This is a polypoid tumor composed of intestinal-type epithelium. The individual tumor cells are columnar, often contain mucus and resemble surface epithelial cells of the duodenum. The cells show infrequent mitoses and lie on a fairly well-defined intact basement membrane. Nowhere do the cells invade the scanty stroma of the papilliferous stalks, nor do they pile up against each other in a "back to back" arrangement.

This then is a neoplasm of duodenal mucosa and the only differential diagnosis is between benign polyp or polypoid carcinoma. The chief criteria for the diagnosis of carcinoma in a polypoid growth in the intestine are invasion, anaplasia, and irregularity of architecture. I was unable to find any stromal invasion and do not think there is sufficient anaplasia or irregularity of architecture to warrant a diagnosis of cancer in this case. I therefore have diagnosed this a benign adenomatous polyp of the duodenum.

If one excludes tumors arising from the ampulla, adjacent pancreas, and ducts, tumors of the duodenum are quite rare. I have been able to find in our files of duodenal lesions only five benign polyps, one lipoma, one leiomyoma and six carcinomas which adequately meet the criteria of primary neoplasms. This apparently is the experience of others, too, since in order to accumulate even a small number of benign duodenal tumors, such entities as pancreatic rests, hyperplasias, etc—not truly neoplasms—have been included. This is surprising in light of the fact that this portion of the intestine is subject to trauma and irritations as, for example, from excessive gastric acid, peptic ulcerations with repair, etc. Duodenal polyps are too rare for us to be able to evaluate their pathogenesis and possibilities of transition to cancer. One of the duodenal polyps we have in our files is composed of gastric epithelium! For the most part they seem histologically similar to the more familiar and common large intestinal polyp.

Dr. Meissner's diagnosis: BENIGN ADENOMATOUS POLYP.

Histopathologic Diagnoses Submitted by Mail

Adenomatous polyp	92
Adenocarcinoma (papillary, early)	60
Adenoma with carcinoma	26
Others	9

Dr. Regato: Dr. R. Lattes of New York, Dr. N. Puente-Duany of Havana and Dr. Dorothy Russell of London also made a diagnosis of benign adenomatous polyp. Dr. C. Oberling of Paris thought the lesion to be potentially malignant, corresponding to the Zottenkrebs of the German authors. Dr. D. Brachetto-Brian of Buenos Aires made a diagnosis of early malignant transformation in an adenoma.

Lauren V. Ackerman, M. D., Saint Louis, Missouri (by mail): It is not completely benign. There are focal atypical changes present. These changes are not sufficient to call it invasive cancer. I would not be surprised if some of the sections showed cancer but I am unable to make that diagnosis on my section. Carcinoma in situ?

Elson B. Helwig, M. D., Washington, D. C. (by mail): This lesion is consistent with the diagnosis of primary carci-

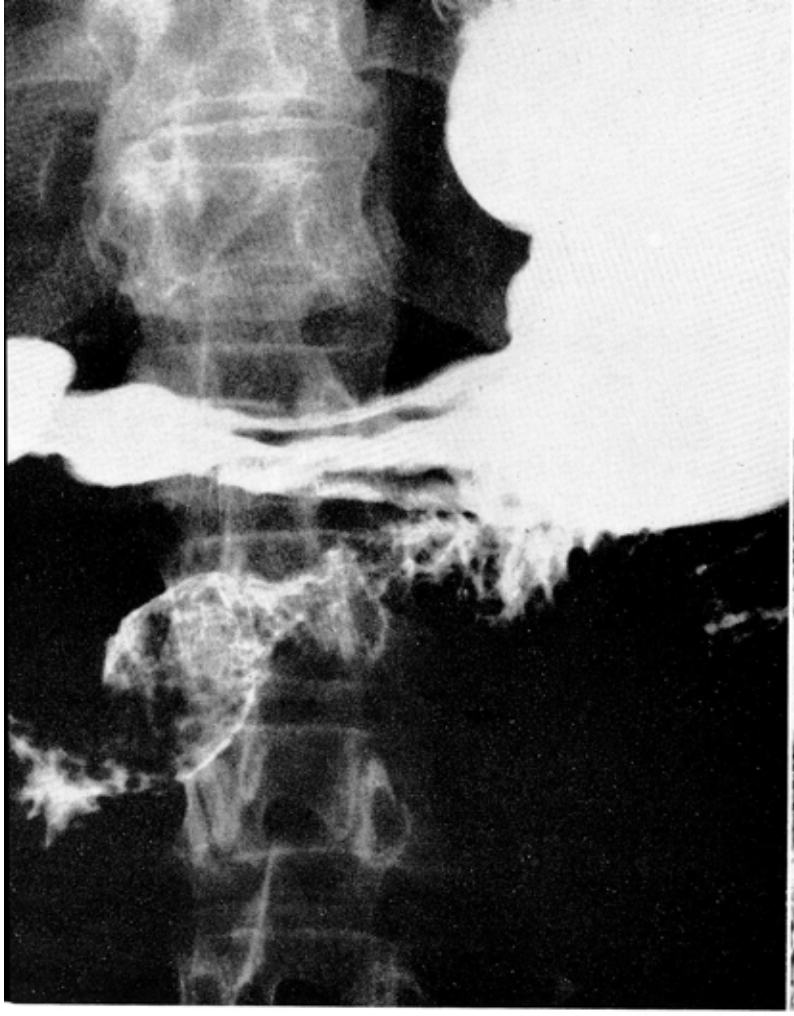


Fig. 1—Roentgenogram showing filling defect at the junction of the second and third duodenal portions.

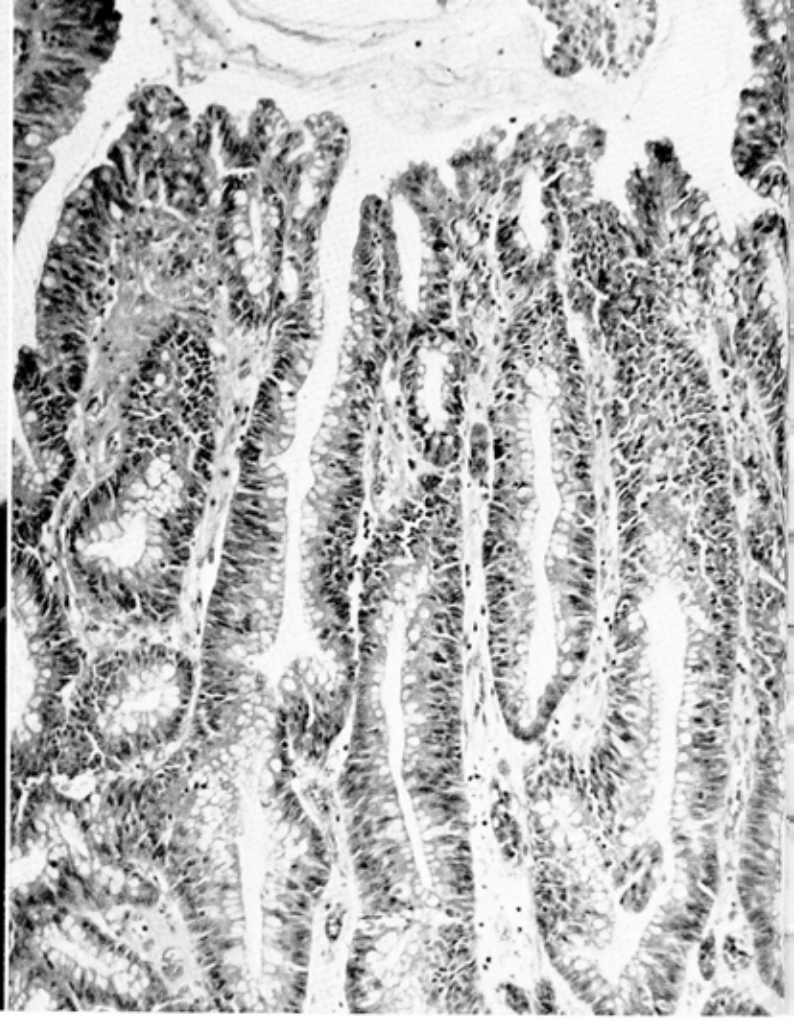


Fig. 2 — Photomicrograph of mucosal polyp, demonstrating well-differentiated glands of intestinal type. Stromal invasion is absent.

noma of the duodenum; these carcinomas often show a tendency to form a polypoid type of growth particularly when near the ampulla of Vater.

Malcolm C. Dockerty, M. D., Rochester, Minnesota (by mail): This is a low grade adenocarcinoma in an adenoma. There is stratification of cells with hyperchromatic nuclei containing mitotic figures. There might be a question of some early breakdown of the malignant glands. I think that the lesion is an IN SITU one.

Arthur P. Stout, M. D., New York (by mail): Without knowing the gross findings I have to call this a papillary adenomatous polyp. Since there is some irregularity of cellular proliferation, there is a possibility that somewhere in this growth a definite carcinomatous change may have occurred, with invasion at the base.

William L. Lehman, M. D., Portland, Oregon: I would like to ask Dr. Meissner what success he has had with frozen sections on lesions of this sort, and what advice he would give the surgeon if he found a small area of malignant transformation in an otherwise benign polyp?

Dr. Meissner: We should do a frozen section and if we find cancer we can be sure of the malignancy. However, a negative frozen section does not rule out the possibility of cancer; we have found our poorest percentage of correct diagnoses in the frozen sections of mucosal polyps. This is not due to misinterpretation of what we see, but simply to the fact that we cannot amply section the lesion. If we found a small focus of malignant transformation on a frozen section the decision as to what to do would depend from the site of the polyp and its size. One can take chances with a small focus of malignant transformation near the tip of a polyp; although it is always preferable to remove a portion of the bowel wall, one should hesitate whenever a diagnosis of malignant transformation may lead to radical surgery; many other factors should be taken into consideration in such cases.

Mark Wheelock, M. D., Chicago, Illinois: I must confess I made a diagnosis of an adenocarcinoma on a papilloma; I think it makes a great deal of difference which part of the duodenum is involved when you consider surgical treatment. If the lesion is away from the ampulla, probably the widest surgery possible should be carried out if one finds evidence of carcinoma. The fact that there is a pedicle or stalk which is uninvolved is much more important than the histologic picture at one point. If the surgeon gives you only the tip of the polyp, you cannot give him much as an answer; if he gives you the whole papilloma and you have the opportunity to study the stalk or the base and you can see invasion, you can come to a better conclusion.

Leo Lowbeer, M. D., Tulsa, Oklahoma: How do you think a history of several months' duration of the diarrhea ties in with the finding of a duodenal polyp? Was there perhaps another lesion responsible for the diarrhea?

Dr. Meissner: This patient was 73 years old and a diabetic; perhaps the diarrhea was due to some other causes than this duodenal polyp.

References

Hoffman, G.: Benign Tumors of Duodenum. Am. J. Surg. **70**:394-400, 1945.

Jenkinson, E. L., Pfisterer, W. H. and Seitz, E. R.: Primary Tumors of the Small Intestine. Radiology **55**:12-19, 1950.

Olson, J. D., Dockerty, M. B. and Gray, H. K.: Benign Tumors of the Small Bowel. Ann. of Surg. **134**:195-204, 1951.

2. *Undifferentiated Carcinoma of the Duodenum (?)*

Contributed by EDMUNDO ROJAS, M. D., Mexico, D. F.

THE PATIENT was a 40-year-old man in August 1952 when he gave a history of postprandial epigastric pain of four years' duration; the pain had become more frequent and there was also vomiting and loss of weight. On physical examination a mass 10 cm in diameter could be felt fixed in the upper abdomen. On fluoroscopy the stomach showed a pressure defect; the second duodenal portion was displaced and dilated and there was an obstruction at the point of junction of the second and third portions of the duodenum.

Dr. Swenson: This is an obstructing lesion of the duodenum; not only is the distal duodenum involved, but the proximal loop of jejunum as well. I am not certain just where the gas filled tract runs which is adjacent to the duodenum. If it is in transverse colon, it probably can be discounted. If it be gas in the duct of Wirsung, that would be of quite different significance.

Firstly, there is a good possibility that this is due to a carcinoma of the pancreas invading the duodenum and with involvement of the adjacent mesentery of the jejunum in such a way as to affect the bowel pattern by lymphatic blockage, or affecting the nervous mechanism, or perhaps both. Secondly, there is always the chance of an inflammatory process doing exactly the same thing—a large inflammatory mass of the pancreas affecting the adjacent loop of bowel. Thirdly, lymphosarcoma might be responsible for exactly the same picture, or any primary lesion in the duodenal wall itself. I once saw a hemangioma involving the mesentery and retroperitoneal structures which had produced this sort of picture.

Dr. Swenson's impression: (1) CARCINOMA OF THE PANCREAS. (2) LYMPHOSARCOMA OF THE DUODENUM.

Roentgenologic Impressions Submitted by Mail

Lymphosarcoma	41
Carcinoma of pancreas	22
Carcinoma of duodenum	16
Inflammatory lesion	10
Oh, well!	1
Others	15

Dr. Weber: My impressions were exactly those of Dr. Swenson. I looked at the apparent upward displacement of the greater curvature of the stomach and this elongated constriction of the duodenum causing a dilatation of the uninvolved portions of the duodenum; then I noticed all of this apparent involvement down below the level of the ligament of Treitz, and I thought that no lesion arising from the pancreas could possibly get down that low, so I gave that diagnosis up. Then I thought this must be one of those ulcero-hyperplastic inflammatory processes of the duodenum causing obstruction. What made me doubt that diagnosis

Fig. 1—Roentgenogram showing enlargement of the duodenum with obstruction at the junction of the second and third portions.

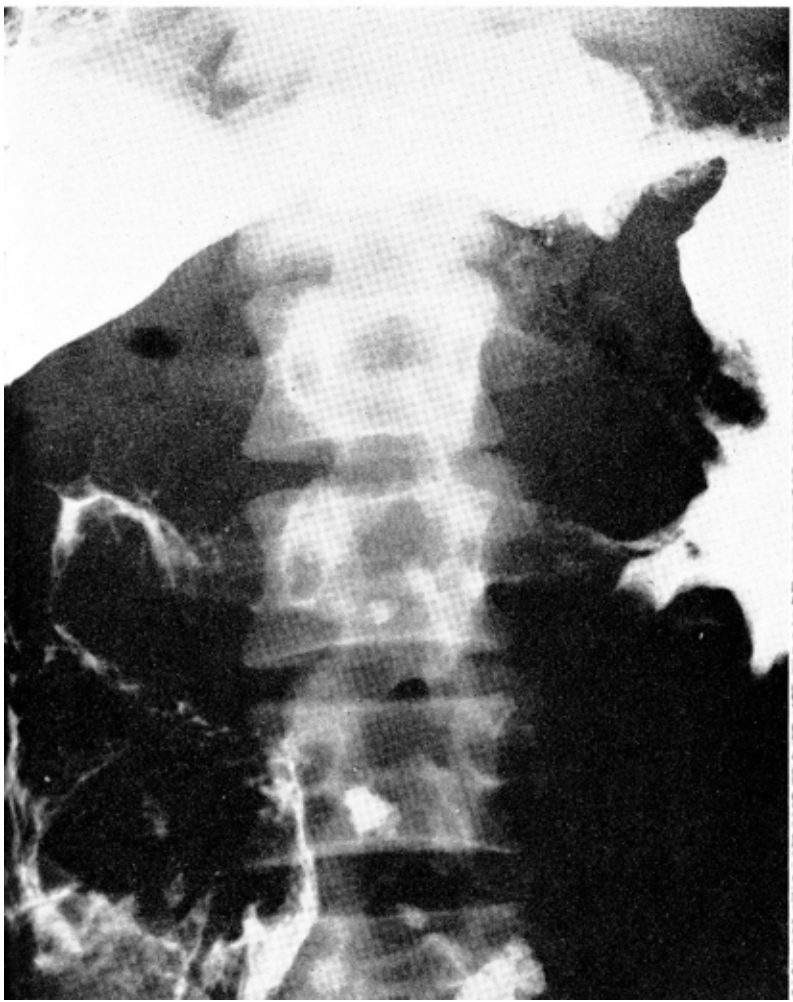
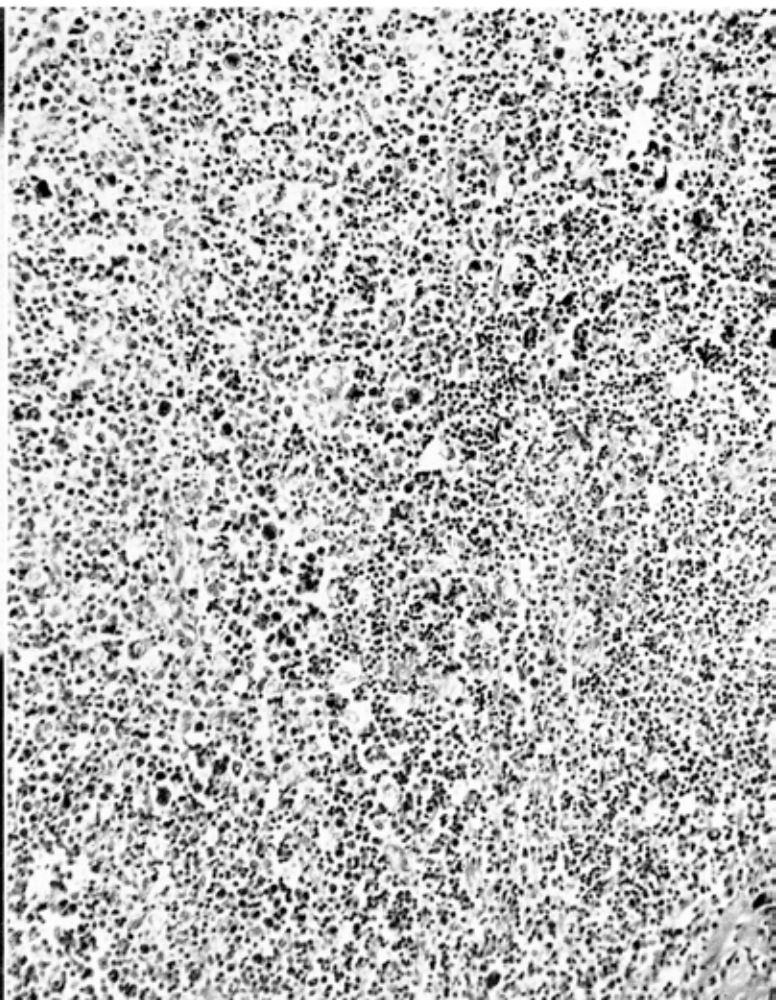


Fig. 2—Photomicrograph of undifferentiated tumor, showing features resembling both anaplastic carcinoma and lymphosarcoma. The smaller tumor cells are more suggestive of lymphoma, whereas the larger ones resemble anaplastic carcinoma.



was the relief pattern of the duodeno-jejunal junction right at the ligament of Treitz, for there is there a retention of the opaque material. If that could be substantiated with many examinations and a fluoroscopic examination, then I would agree with the diagnosis of a primary neoplasm at the ligament of Treitz, this being actually the ulcerated area, with perforation and penetration of the duodenum, displacement of the stomach upwards and extension down to involve 12 to 15 inches apparently or more, of the jejunum. But I could not know if this relief pattern at the ligament of Treitz level was definite or if that was just an accident of the disposition of the opaque material at that level. So I ended up by writing down my diagnosis as non-neoplastic tumefaction of the duodenum or neoplasm of the duodenum; that is as far as I could go.

Dr. Regato: Dr. H. Friedell of Cleveland and Dr. J. H. Marks of Boston, made a diagnosis of carcinoma of the duodenum; Dr. Harry Houser of Cleveland suggested lymphoma of the duodenum.

Subsequent history and findings: No operation was contemplated because of the patient's bad general condition. In September 1952 the patient expired. An autopsy revealed a soft tumor involving the 2d and 3d portion of the duodenum; about 30 cm of the bowel were involved beyond the angle of Treitz. There were numerous metastatic lymph nodes of the mesentery and peritoneal implants.

Dr. Meissner: This tumor is composed of rather solid sheets of large cells which have no specific structural pattern or arrangement. The cells vary somewhat in size throughout, but in some foci there are numerous multinucleated tumor cells, which resemble Reed-Sternberg cells of Hodgkin's disease. Many of the cells contain mitoses. Some have a vacuolated cytoplasm but the vacuoles do not stain positively for mucus. The adjacent stroma—no intestinal wall can be identified as such—is infiltrated with tumor cells and here they grow in a more compact fashion. There are small zones, but no large foci of necrosis in the tumor.

The differential diagnosis here lies between a lymphoid tumor and an undifferentiated carcinoma or sarcoma. The large size of the tumor cells and the infolding of many of the tumor nuclei suggests that they are tumor reticulum cells, but the tumor is too anaplastic to be a typical reticulum cell sarcoma. The large multinucleated giant cells resemble those seen in Hodgkin's disease, but they are not sufficiently typical to be conclusive; furthermore there is not the cellular pleomorphism, necrosis and fibrosis that one expects to find in Hodgkin's disease. A second possibility is that this anaplastic tumor is a sarcoma and that the vacuolated cells may represent malignant fat cells—a liposarcoma, although material was not available for fat stains. The numerous giant cell tumor forms are quite in keeping with sarcoma. A third possibility, largely on a statistical basis, is undifferentiated carcinoma. The large cells, arrangement of tumor cells and multinucleation are all quite consistent with an anaplastic epithelial tumor; it is disappointing that the vacuoles do not stain positively for mucus.

In the absence of further information we must assume that this tumor is primary in the duodenum, although there is no reason why it could not as well represent a tumor of an adjacent organ, or a metastatic lesion, which is growing into the duodenum perhaps from celiac axis lymph nodes. The differential diagnosis between anaplastic carcinoma and lymphoma as in this case is frequently a difficult one but is encountered more commonly in the stomach than in the small intestine. We have not found silver stains for reticulum to be of value very often in the differentiation between such lymphomas and carcinomas. The most valuable finding, if it can be found, is the presence of mucus in the tumor cells.

The distinction between lymphoma and carcinoma of the gastro-intestinal tract is of more than academic interest since there is great difference in prognosis. In a review of 32 cases of lymphoid tumor of the stomach, for example, we found indications that the five-year survival rate after surgery might be as high as 40%, whereas the five-year survival rate after operation for gastric cancer is considerably lower.

Dr. Meissner's diagnosis: UNDIFFERENTIATED CARCINOMA OF THE DUODENUM (?).

Histopathologic Diagnoses Submitted by Mail

Lymphosarcoma	62
Hodgkin's	59
Carcinoma	24
Others	12

Dr. Regato: Dr. R. Willis, of Leeds, and Dr. C. Oberling, of Paris, favored a lymphosarcoma. Dr. H. K. Giffen, of Omaha, and Dr. C. A. Hellwig, of Wichita, made a diagnosis of Hodgkin's sarcoma.

L. V. Ackerman, M.D., Saint Louis, Missouri (by mail): A highly cellular tumor appears to be replacing the intestinal wall and spreading into the fat; individual cells have pleomorphic prominent nuclei and abundant cytoplasm. I considered a carcinoma of the pancreas or of some other origin. However, the pattern is more that of a lymphoma. I would be in favor of placing this in the category of Hodgkin's sarcoma. I see little difference between reticulum cell sarcoma and Hodgkin's sarcoma.

A. P. Stout, M.D., New York, (by mail): I assume that the section is from the wall of the duodenum and that tumor has destroyed the mucosa, infiltrated through the entire thickness and left only traces of the muscularis. This must be either an undifferentiated carcinoma or a lymphosarcoma or conceivably both. There are two varieties of cell: one is large and occasionally multinucleate with cytoplasm irregularly vacuolated but without signet ring formation; the other, also rounded, but much smaller and usually without vacuolization. I believe, however, that the whole picture can be best explained as a carcinoma.

M. B. Dockerty, M.D., Rochester, Minnesota (by mail): Lymphosarcoma of the Hodgkin's type with numerous bizarre Sternberg-Reed cells. Difficult to say from the section whether the origin is duodenal or retroduodenal.

H. Rappaport, M.D., Washington, D.C., (by mail): Malignant lymphoma, Hodgkin's type; areas of Hodgkin's sarcoma and of Hodgkin's granuloma can both be found in the section.

M. Wheelock, M.D., Chicago, Illinois: I would like to defend that diagnosis of lymphosarcoma very vigorously. I don't believe, under any circumstances, from the description that you have given, that you will ever see a carcinoma that was 30 cm. in length beyond the ligament of Treitz. It is hard for me to believe that a carcinoma would grow along or extend along a bowel in that particular fashion. I must admit that my first diagnosis was an anaplastic carcinoma; for a while I thought I could see some pseudo-acini. Later I concluded that it must be a lymphosarcoma or reticulum cell sarcoma. I would like to have Dr. Meissner comment on what Dr. Warren or Dr. Gates said if they saw the slide.

Dr. Meissner: I showed the slide to both Dr. Warren and Dr. Gates and also Dr. Stanley Robbins from the Mallory Institute. Dr. Robbins commented that these large cells were not Sternberg cells. Dr. Warren and Dr. Gates both agreed that this was a carcinoma. However, I don't think I should care to defend the diagnosis of carcinoma too strenuously here. From the subsequent findings I would agree with Dr. Wheelock that perhaps a lymphosarcoma is a better possibility. I still do not like the diagnosis of Hodgkin's and would not make that under any circumstances. Incidentally, I might mention that in tumors of this type this problem comes up not infrequently as I mentioned a few minutes ago. We have great difficulty in distinguishing

between anaplastic carcinomas of the stomach, and of that general region, and the lymphomas.

C. E. Wilson, M. D., Omaha, Nebraska: I should like to ask Dr. Meissner's opinion of the significance of peritoneal implant perhaps in support of carcinoma versus sarcoma.

Dr. Meissner: I think one can see peritoneal implants such as described here with lymphomas as well as carcinomas; perhaps not as commonly but just as well as with carcinomas.

F. P. Bornstein, M. D., El Paso, Texas: I would like to ask Dr. Meissner if he has seen anything in this tumor which looked like a genuine signet cell. It has been my experience that the periodic acid-Schiff stain would give you much more uniform results than mucicarmin.

Dr. Meissner: I stained this both with mucicarmin and with McManus stains and they were negative for mucus. I was quite sure that these large cells, which do not look quite like signet cells but nevertheless have a vaculated cytoplasm could contain mucus, and was disappointed to find they did not.

L. Lowbeer, M. D., Tulsa, Oklahoma: I would believe that the history of symptoms of four years increasing gradually would also be taken in favor of a lymphosarcoma rather than a carcinoma.

Dr. Meissner: I would agree with that unless the carcinoma arose from a pre-existing benign lesion.

References

Copeland, M. M. and Greiner, D. J.: Lymphosarcoma of the Duodenum. Report of a Case; Review of the Literature. Arch. Surg. **58**:511-528, 1949.

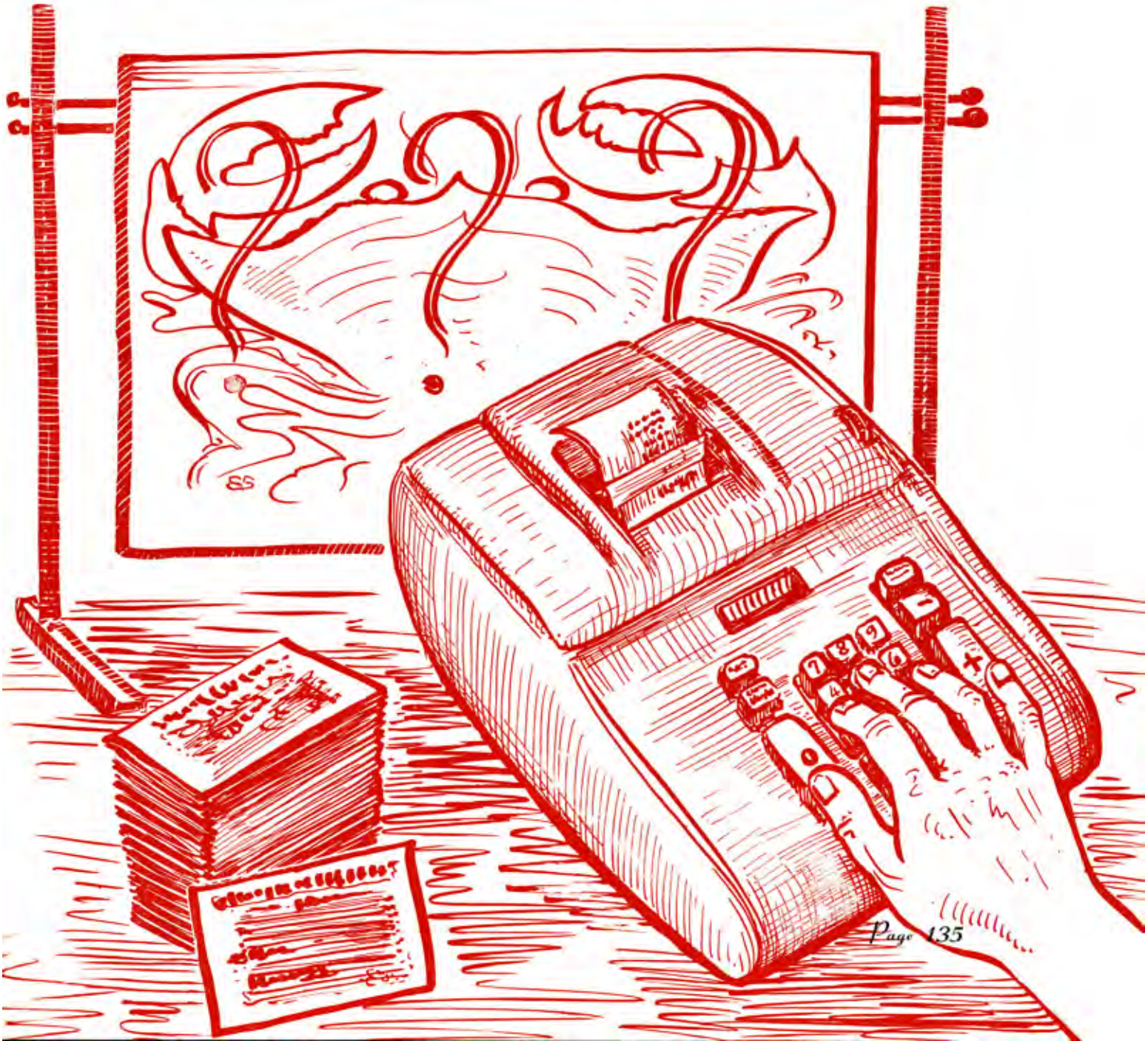
Hodges, F. J., Rundles, R. W. and Hanelin, J.: Roentgenologic Study of the Small Intestine. I. Neoplastic and Inflammatory Diseases. Radiology **49**:587-602, 1947.

Marshall, S. and Meissner, W. A.: Sarcoma of Stomach. Ann. Surg. **131**:824-837, 1950.

Odelberg, A.: Infrapapillary Carcinoma of the Duodenum. Acta chir. scandinav. **102**:241-250, 1951.

Shallow, T. A., Wagner, F. B., Jr. and Manges, W. B.: Primary Carcinoma of Infrapapillary Portion of Duodenum. Surgery **27**:348-355, 1950.

Sheinmel, A. and Joffe, A.: Duodenal, Ampullary and Peri-Ampullary Carcinoma. With Three Case Reports. Am. J. Roentgenol. **66**:65-72, 1951.



3. Anaplastic Pleomorphic Carcinoma of the Pancreas

Contributed by JACK FRIEDMAN, M. D., Minneapolis, Minnesota

THE PATIENT was a 64-year-old man in January 1952 when he complained of cough, asthenia and 20 lbs. weight loss of five months' duration. For the last three weeks there had been pain in the left upper abdominal quadrant, anorexia and constipation. Upon examination there was tenderness but no palpable mass in the left upper quadrant. On fluoroscopy there was a pressure defect on the lateral aspect of the stomach; the duodenum and proximal jejunum were distended and there was a filling defect of the jejunum several centimeters in length.

Dr. Swenson: Here we have a most irregular lumen with loss of mucosal fold pattern, apparently in the mid jejunum. Something has destroyed the mucosal pattern and is invading the wall of the bowel. Some of the barium may be extraluminal as well. I think the most likely diagnosis is that of neoplasm, either primary or secondary, most probably a carcinoma of the jejunum, but I have known lymphosarcoma or other rarer tumors to give the same picture. There is a possibility of perforation in this case. The segment involved here seems rather long. This favors lymphosarcoma, although it is a bit difficult on this single film to say how much actual length of bowel is involved.

I don't suspect that it is either one of the two I mention, but under ordinary circumstances they are by far the most likely possibilities. An inflammatory process would be less likely to do something of this nature. A third possibility is one which might be secondary to some adjacent pathological process (kidney?).

Dr. Swenson's impression: MALIGNANT TUMOR OF THE SMALL BOWEL with perforation.

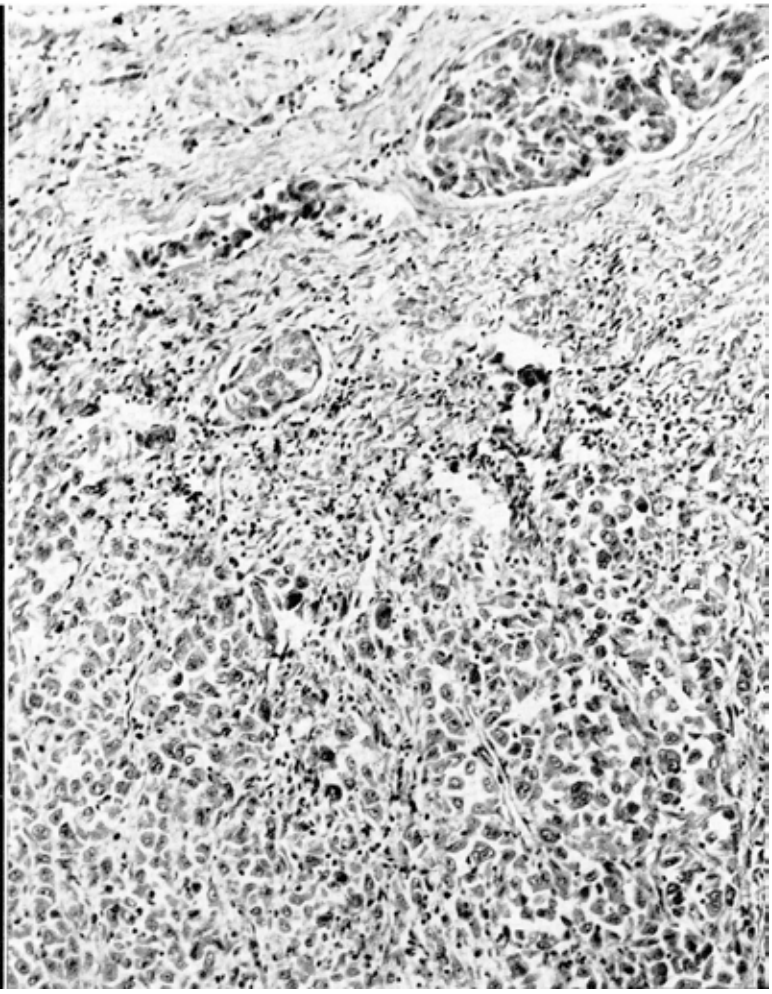
Roentgenologic Impressions Submitted by Mail

Lymphosarcoma	35
Carcinoma of jejunum	20
Malignant tumor	17
Inflammatory lesion	15
Blank	15
Various others	20

Dr. Weber: I have the impression that this image is due to an extrinsic and contiguous process, probably a neoplastic one. The fluoroscopist said there was a filling defect in the jejunum several centimeters in length; more accurately it could be said that it must run about 8 or 10 centimeters; that is a very large filling defect. This is a very irregular accumulation of opaque material. There is no basis for assuming that it is really extraneous to the intestine except its general character; it could be an inflammatory process of a neigh-

Fig. 1—Roentgenogram showing filling defect of the jejunum.

Fig. 2—Photomicrograph of anaplastic carcinoma. Note presence of tumor in lymphatic spaces and the considerable pleomorphism in the size and shape of some of the tumor cells; the latter is sometimes seen in pancreatic carcinomas.



boring or contiguous organ which had extended to, possibly invaded, or possibly caused a trophic type of ulceration in the intestine.

Dr. Regato: Dr. F. Gorishek, of Denver, and Dr. L. Pascucci of Tulsa suggested the possibility of carcinoma. Dr. H. L. Garland, of San Francisco, sent his impressions in care of the chief horoscopist and suggested the possibility of regional enteritis.

Operative findings: In January, 1952, surgical exploration revealed a large mass in the root of the mesentery of the small bowel and another near the left colon; biopsies were taken.

Dr. Meissner: This is a malignant tumor that involves the entire wall of the stomach. There is a zone of gastric mucosa which shows inflammatory but no other changes and then a rather abrupt transition to a highly anaplastic cancer. The tumor cells are extremely large, pleomorphic and often appear as tumor giant cells. Multinucleated cells and mitoses are frequent. The cells do not arrange in any definite pattern, although at times they suggest a lining-up along poorly developed stalks. Brown pigment granules are scattered throughout the tumor, but an equal amount of similar pigment is present in the adjacent normal stomach; it seems fair to conclude that the pigment is formalin artefact rather than melanin. No mucus can be found in any of the cells. Because of the inward distortion of the muscularis, the tumor seems to be growing into the gastric wall, rather than outward from the mucosal surface.

This is another highly malignant tumor which suggests sarcoma as much as carcinoma. Without distinguishing signs, such as mucus formation, melanin pigment, etc., I know of no way to arrive at a conclusive diagnosis. However, we have been impressed in the last few years by an occasional finding in the pancreas of a highly malignant cancer with much pleomorphism of cells and many giant tumor cells. These pancreatic cancers, because of their giant cells, often suggest malignant melanoma, rhabdomyosarcoma, or liver cell cancer, and yet they definitely are of pancreatic origin since they frequently show foci of "ordinary" differentiated pancreatic cancer. Without such foci, one cannot be certain of the diagnosis. These pleomorphic carcinomas of the pancreas are highly malignant and in some respects are comparable to the highly malignant giant cell cancer of the thyroid. I believe that the tumor we have here is of this type; that it is arising from the pancreas and secondarily invading the stomach, duodenum and jejunum.

Dr. Meissner's diagnosis: Anaplastic pleomorphic CARCINOMA OF THE PANCREAS.

Histopathologic Diagnoses Submitted by Mail

Adenocarcinoma	86
Metastatic melanoma	32
Metastatic tumor	20
Rhabdomyosarcoma	6
Others	15

Dr. Regato: Dr. R. S. Haukol, of Milwaukee, Dr. R. Lattes, of New York, and Dr. R. Willis, of Leeds, all suggested the possibility of a metastatic melanoma. Dr. F. Leidler, of Houston, made a diagnosis of mesothelioma. Dr. Peter A. Herbut, of Philadelphia, suggested a rhabdomyosarcoma.

L. V. Ackerman, M.D., Saint Louis, Missouri (by mail): The microscopic pattern of this tumor suggests malignant melanoma to me; I would think that would be a first possibility. Metastases to the small intestines are not unusual in malignant melanoma. If an epithelial mucin stain were positive, however, it would rule out melanoma.

M. B. Dockerty, M.D., Rochester, Minnesota (by mail): Too malignant a tumor for me to classify but I feel that this is probably an adenocarcinoma imitating a sarcoma. Non-melanotic melanoma, hepatoma and rhabdomyosarcoma are three tumors showing large liver-like cells with eosinophilic cytoplasm.

C. Oberling, M.D., Paris (by mail): Anaplastic carcinoma with widespread lymphatic invasion.

Subsequent history: In January 1953 an autopsy revealed a large ulceration of the jejunum and numerous loops of intestine were bound to a large retroperitoneal mass.

M. Wheelock, M.D., Chicago, Illinois: I thought that the only thing which would have the cellular pattern such as this and could possibly invade the duodenum, was a tumor derived from the adrenal particularly a paraganglioma. I recall several years ago Dr. Goldblatt said that the tumors formed of large cells of this particular type are usually tumors from the kidney, the adrenal and the so-called hepatoma. I thought that the pigment which was in there might be that pigment which you see sometimes with a chromaffinoma. It could be, of course, a malignant melanoma and that was one of the questions that was raised in my own mind. What would Dr. Meissner think of this being a malignant parietal cell tumor of the stomach?

Dr. Meissner: Regarding the parietal cell tumors of the stomach, I have never been able to find a real bona fide case of parietal cell carcinoma or carcinoma of the stomach composed of parietal cells, although there has been one case reported in the literature from Australia. I suppose parietal cells might look like this if they became malignant, but I don't know how one could identify them. In regard to the pigment that Dr. Wheelock mentioned, there is the same type of pigment, at least in my slide, in the adjacent normal gastric mucosa; I think that was enough to rule out any significance to the pigment.

W. L. Lehman, M.D., Portland, Oregon. Does the presence of tumor emboli in the lymphatic channels help you to differentiate between a sarcoma and a carcinoma?

Dr. Meissner: Yes, that is a very good point! I think it should help one in leading toward the diagnosis of an epithelial tumor rather than sarcoma, although, of course, you may see it in both.

References

Case, J. T.: Roentgenology of Pancreatic Disease. Am. J. Roentgenol. **44**:485-518, 1940.

Hodges, F. J., Rundles, R. W. and Hanelin, J.: Roentgenologic Study of the Small Intestine. I. Neoplastic and Inflammatory Diseases. Radiology **49**:587-602, 1947.

Sheinmel, A. and Joffe, A.: Duodenal, Ampullary and Peri-Ampullary Carcinoma. With Three Case Reports. Am. J. Roentgenol. **66**:65-72, 1951.

4. Renal Carcinoma Metastasizing to the Duodenum

Contributed by ROATH E. MEATHERINGHAM, M. D., JAMES W. MCMULLEN, M. D.
and ERVING F. GEEVER, M. D., Colorado Springs, Colorado

THE PATIENT was a 65-year-old man in September 1951 when he complained of flatulence and of fullness during meals which had been present for two months. Six months previously he had been hospitalized because of hematuria and left dorsolumbar pain; while in the hospital he had passed several stones and the pain had subsided. Physical examination revealed no abnormalities; there was 4 plus occult blood in the stools and hemoglobin was 8.5 grams per cent. On fluoroscopy the duodenal loop was widened and showed a large intrinsic defect.

Dr. Swenson: There is something within the duodenum here which is displacing the barium. There seems to be a track of the intussuscepting lumen within the other defect which makes me think the most probable diagnosis is one of intussuscepting polyp. I have seen polyps with pedicles long enough to be attached within the stomach and still give this sort of picture in the duodenum. Reduplications of the bowel lumen have been known to give this sort of picture as well. The most likely diagnosis is the first one mentioned. The fluoroscopist, however, might have been wrong here and this might have been an extrinsic defect or a large tumor in the pancreas, but I only mention this to include all possibilities. The duodenum is also in relationship with the kidney and I have seen tumors of the kidney involve the duodenum with fistula formation. In this case fistulas form before much of a mass is apparent, and we are taking the radiologist's word that this was an intrinsic defect. Nevertheless this remains a possibility.

Dr. Swenson's impression: 1. Intussuscepting POLYP. 2. CARCINOMA OF THE PANCREAS invading the duodenum. 3. Secondary carcinoma from adjacent structures (KIDNEY).

Roentgenologic Impressions Submitted by Mail

Carcinoma of pancreas	35
Carcinoma of duodenum	20
Leiomyosarcoma	10
Metastatic carcinoma of kidney	8
Lymphosarcoma	6
Others	35

Dr. Regato: Dr. Philip J. Hodes, of Philadelphia, and Dr. J. H. Marks, of Boston, both suggested the possibility of a sarcoma. Dr. J. A. Campbell, of Indianapolis, suggested a perinephritic abscess.

Operative findings: In November 1951 a duodenectomy with partial pancreatectomy and choledochoduodenostomy were done to remove the tumor; this was followed by a gastro-jejunostomy. Exploration of the left kidney revealed its enlargement.

Dr. Meissner: This lesion is a tumor which has eroded through the wall of the duodenum to produce massive mucosal ulceration. The wall of the duodenum, where ulcerated, has been mostly replaced by granulation tissue, although there are tumor cells interspersed within it as well. The tumor is composed of cells which are quite uniform in size and shape and which have a clear, non-vacuolated cytoplasm suggesting fat. The cells have small nuclei without mitoses. The tumor cells have no purposeful arrangement but do seem to be quite intimately associated with the prominent and numerous blood vessels that are present. The high degree of vascularity accounts for the hemorrhage and infarction that are conspicuous within the tumor. The main bulk of the tumor lies extrinsic to the duodenal musculature; between it and the duodenal muscle is a zone of fibrous tissue containing several structures similar to renal tubules.

This then is a malignant tumor composed of clear cells which is invading the duodenum from without rather than being primary in this location. Tumors with such clear cells may be of fatty, adrenal or kidney origin. The presence of structures resembling renal tubules between the main bulk of the tumor and the point of invasion of the duodenal wall seems to prove fairly conclusively that the tumor is of kidney origin, and that it has pushed upward and compressed a narrow zone of remaining kidney against the duodenum. The tumor, therefore, is a clear cell type of renal cell carcinoma—the so-called hypernephroid type.

Renal cell cancers frequently get to large proportions before being discovered clinically. In addition to frequent metastases by blood stream—made possible by the extreme vascularity of tumors of this type—such cancers also may invade local structures extensively, and may erode through the diaphragm or abdominal wall. It is easy to understand why the five-year survival rate is so low with such invasive growth, although the individual tumor cells often seem quite well differentiated. We have been unable, by any microscopic criteria, to make a consistently accurate prognostic evaluation of clear cell kidney cancers.

Dr. Meissner's diagnosis: RENAL CELL CARCINOMA invading duodenum.

Histopathologic Diagnoses Submitted by Mail

Metastatic renal carcinoma	101
Liposarcoma	14
Carcinoma (clear cell)	8
Others	21

Dr. Regato: With few exceptions and with variations in nomenclature, the authorities recognized the carcinomatous renal cells when they saw them.

Subsequent history: In February 1952 a left nephrectomy was performed. Shortly afterwards the patient developed a cough; at bronchoscopy done in August 1952 a tumor was seen and biopsied in the right main stem bronchus; histological examination proved its renal cell character. In March 1953 a right middle and lower lobectomy was carried out for metastatic carcinoma. He was last seen in August 1953 when he developed a transient fever but remained in good general condition.

Alvin O. Severance, M. D., San Antonio, Texas: I would like to ask Dr. Meissner if in his slide he saw little groups of eosinophilic staining cells which he would interpret as islands of Langerhans left behind by the invading tumor of the kidney.

Dr. Meissner: I did not see those in my slide, Dr. Severance. Perhaps I missed them.

Roath E. Meatheringham, M. D., Colorado Springs, Colorado: This was not an invasion, it was definitely a submucosal metastasis. It seems quite interesting to me that this case demonstrated two sub-epithelial metastases, one in the

Fig. 1—Roentgenogram showing widening of duodenal loop and large defect.

Fig. 2—Photomicrograph of renal cell carcinoma. The clear cells with small nucleus are typical of renal cell carcinoma. In the adjacent fibrous tissue, remnants of renal tubules may be identified.

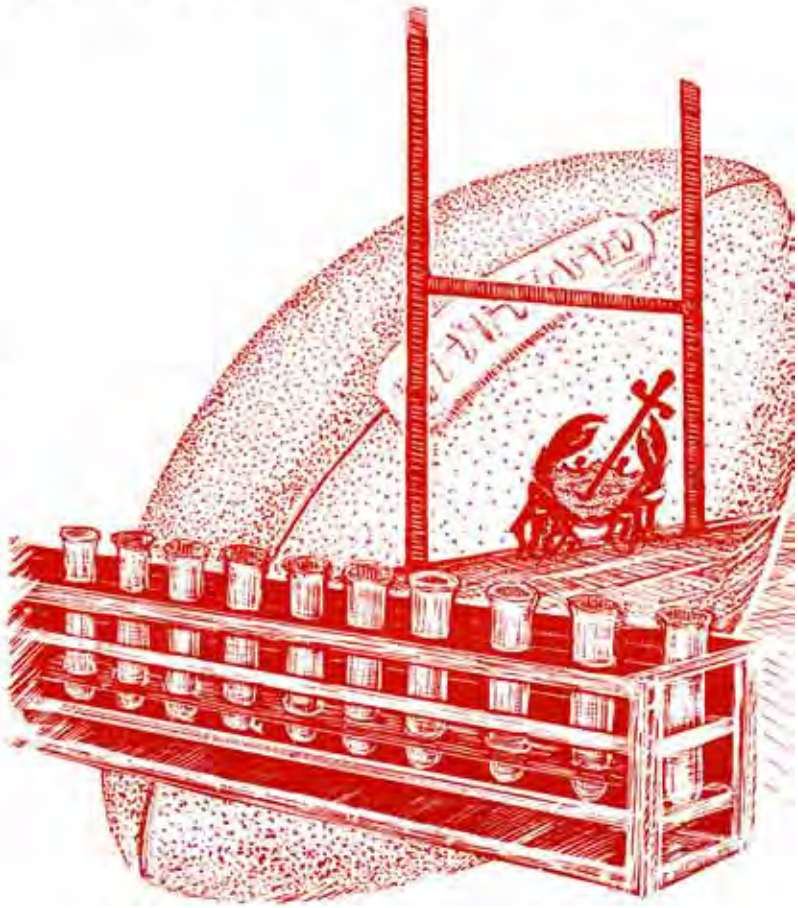
duodenum and one in the bronchus. I should also like to defend the partial pneumonectomy or lobectomy on the basis that the man was unable to sleep, losing weight, and had an intractable cough day and night. We thought about it a long time, hence the delay. But that is the reason it was done. His subsequent course has proven that to be of distinct value since he survived and did rather well. We realize the poor position of the man who is forced to make conclusions from experience with one case and the man with two cases isn't much better off.

Dr. Meissner: I think renal cell carcinomas are one of the carcinomas that do metastasize to unusual locations and one has to think about it in almost every possible metastatic site. Of course, perhaps the most common unusual place is for the renal cell carcinoma to metastasize to bone without giving any obvious lesion in the lung, although presumably it must have gone through the lung and perhaps the lesion is there. We have recently been interested in finding four cases of metastatic renal cell carcinoma to the sternum which was the presenting symptom of the renal cell carcinoma.

Editor's Note: The patient committed suicide with cyanide on December 16, 1953. Autopsy showed metastases to the right kidney, the pancreas, both lungs and para-aortic lymph nodes. These metastases were all small except for two masses 3.5 and 4 cm in diameter found in the head of the pancreas. All metastases, with the exception of the pulmonary nodules were well encapsulated by thick hyaline fibrous walls, suggesting slow tumor growth; deposits of iron and calcium were present in the capsules. There was no examination of the cranial cavity.

References

Barney, J. D.: A twelve-year Cure Following Nephrectomy for Adenocarcinoma and Lobectomy for Solitary Metastasis. J. Urol. 52:406-407, 1944.



5. *Adenocarcinoma of the Jejunum*

Contributed by LEWIS A. KIDDER, M. D. and FREDERICK D. STAAB, M. D., Greeley, Colorado

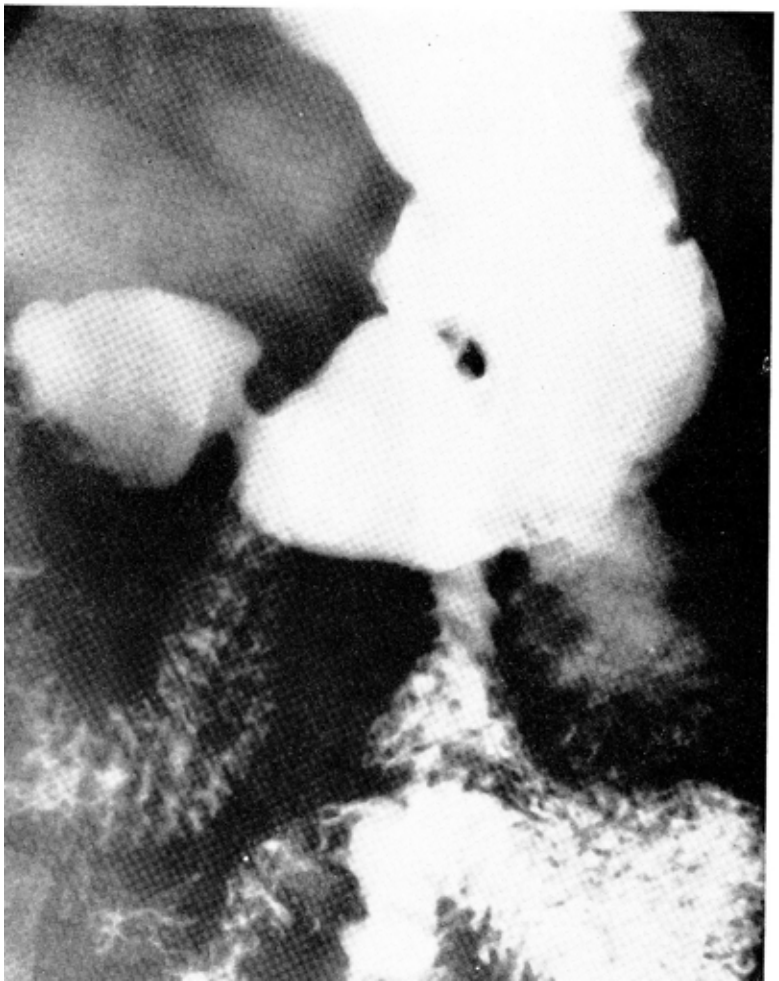
THE PATIENT was a 46-year-old woman who in September 1952 complained of asthenia, epigastric pain of four months' duration and 20 pound weight loss. There was a history of tarry stools nine months previously. Physical examination revealed no abnormalities. The hemoglobin was 6.4 grams per cent. On roentgenologic examination the proximal jejunum appeared dilated and mucosal folds were flattened; a suspicion of polypoid mass could be seen in this area.

Dr. Swenson: The most distal portion of the duodenum and the proximal jejunum in this case appear to show a definite abnormality in mucosal pattern and the lumen is *widened*. In my experience, lymphosarcoma is the one disease of a neoplastic nature that widens the lumen; so that I will put this as the first possibility.

Other infiltrating neoplasms might be responsible, but they would only be the surprise, in my opinion; if anyone would want to place something more than the more common neoplasms as the first bet here, he would be merely guessing, and I would question his intellectual honesty in so doing. Adenocarcinoma is a second bet.

Dr. Swenson's impression: (1) LYMPHOSARCOMA. (2) CARCINOMA of the jejunum.

Fig. 1—Roentgenogram showing dilation of the jejunum and flattened mucosal folds.



Roentgenologic Impressions Submitted by Mail

Adenocarcinoma of jejunum	49
Benign polyp	15
Lymphosarcoma	10
Carcinoid	8
Others	29

Dr. Weber: I think we can see enough of the lesions to recognize what is a fairly typical mucous membrane relief pattern of what I would call a primary carcinoma in the region of the ligament of Treitz. I can't tell exactly the length of the lesion, but I would imagine it would be 3 or 4 cm in length. If I interpret the extent of the change in relief pattern correctly, it is very abrupt. Like Dr. Swenson I see no reason to suspect a polyp, but in just speaking about this case to Dr. Milo Harris a moment ago, he pointed out the apparent rarefaction right in the bulb, and I wonder if that isn't what some radiologists might have thought was the polypoid defect, and possibly they overlooked what we think, at least now, is the significant change at the level of the ligament of Treitz.

Dr. Regato: Dr. L. Arrieta-Sanchez, of Panama, and Dr. L. H. Garland, of San Francisco, favored a diagnosis of carcinoma. Dr. P. J. Hodes, of Philadelphia, suggested Hodgkin's disease of the jejunum.

Operative findings: In October, 1952, a surgical exploration revealed a tumor of the first portion of the jejunum at the ligament of Treitz and there were enlarged retroperitoneal lymph nodes. A wide surgical excision was done but the surgeon felt that he had not removed all of the tumor. The removed portion of the intestine measured 17.5 cm in length; it contained an ulceration 5.5 cm in diameter, the edges were elevated and firm; the cut surface was gray in color.

Dr. Meissner: This is a tumor arising from jejunal mucosa. There is a fairly gradual transition between the normal jejunal mucosa and the tumor. The tumor does not invade entirely through the intestinal wall. The tumor is a malignant one, although fairly well differentiated. For the most part the tumor cells form fairly well-developed glands, although in some regions the growth pattern is rather solid. Mitoses, while not numerous, can be found without difficulty, but there is relatively little cellular or nuclear pleomorphism. With a Verhoeff elastic tissue stain tumor cells are found intermingled with an organizing thrombus in a moderate-sized vein. The mucosal surface of the tumor is partly ulcerated.

There is not much of a differential diagnosis on this case. The tumor is glandular carcinoma; its location and relationship to the respective layers of the intestinal wall leave little doubt to the fact that it is primary in the jejunum at this point.

Primary carcinoma of the small intestine is much less frequent than is generally realized. In spite of the considerably lesser surface area, cancer is many times more common in the stomach and 30 to 40 times as common in the large bowel. The most common malignant tumors is the adenocarcinoma such as in this case. Prigden and Dockerty report 63 cases of adenocarcinoma of jejunum and ileum seen in 40 years at the Mayo Clinic. I have found 28 cases in our files in the past 25 years. In our cases the jejunum is the commonest site of small intestinal carcinoma (duodenum 6 cases, jejunum 28 cases, ileum 7 cases), and is about twice as common in females as in males. The average age is about

Fig. 2—Surgical specimen of ulcerated lesion in first portion of jejunum.

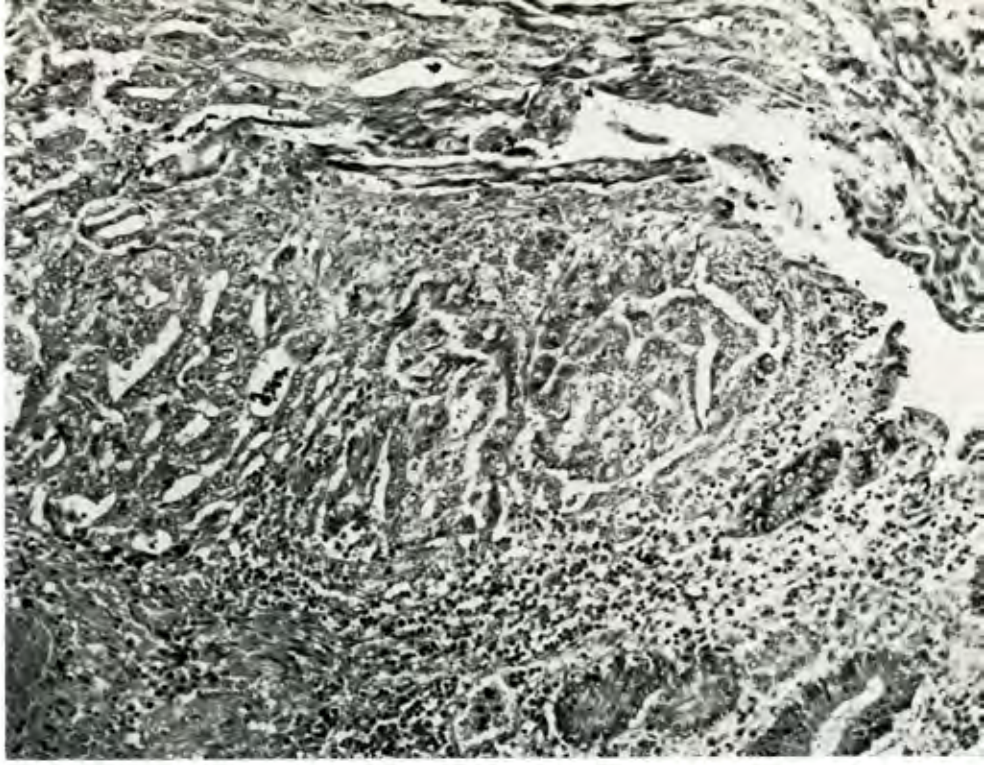


Fig. 3 — Photomicrograph of adenocarcinoma arising from jejunal mucosa. Normal jejunal glands remain in one corner of the field. The tumor is composed of moderately well-developed glands, resembling those of the normal intestine.

50 years. The prognosis of small intestinal carcinoma is poor, partly because many are of rather high grade malignancy, partly because the tumors are apt to be large when recognized. The presence of blood vessel invasion in small intestinal tumor has not been evaluated but certainly its presence, as in this case, does not improve the prognosis. In the large intestinal carcinomas, the presence of blood vessel invasion microscopically cuts the statistical five-year survival rate in about half. Blood vessel invasion incidentally is an inherent characteristic of an individual tumor and is not just something that gradually develops—as lymph node metastases do—merely by the passage of time.

Dr. Meissner's diagnosis: ADENOCARCINOMA OF THE JEJUNUM, with blood vessel invasion.

Histopathologic Diagnoses Submitted by Mail

Adenocarcinoma	136
Adenocarcinoma of colon	4
Others	7

Dr. Regato: The experts were all in agreement this time.

Subsequent history: In July 1953 the patient appeared well, appetite was good and radiologic examination revealed no abnormalities.

R. L. Ferguson, M. D., Joplin, Missouri: I would like to ask Dr. Meissner if the statement he made about blood vessel invasion is true of tumors of the breast and other tumors besides those of the intestine.

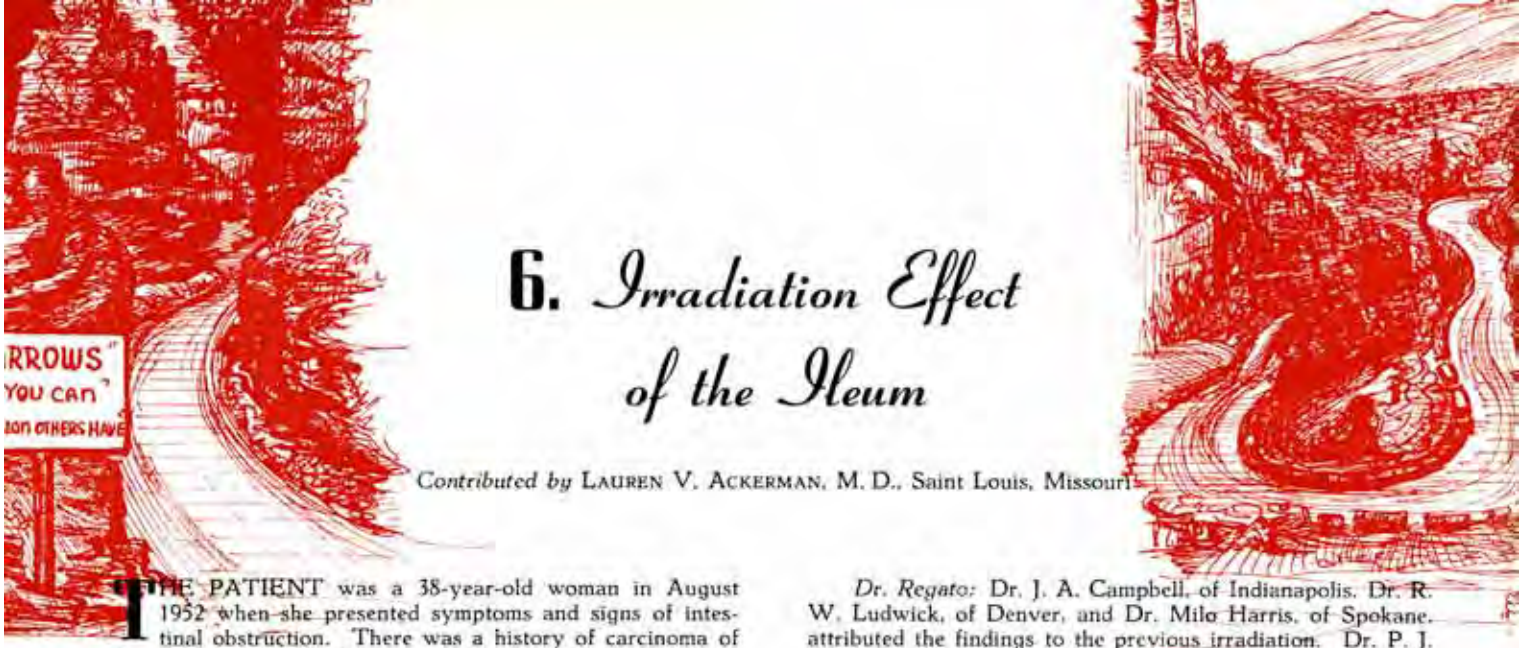
Dr. Meissner: I think statistics as quoted are true, as far as I know, only for the large intestine. I think the reason why breast tumors and gastric tumors are so malignant is that they frequently show blood vessel invasion but I don't know of any statistical studies on a five-year survival based on just the presence of blood vessel invasion. It is in intestinal tumors that it is of most value to us.

I was very interested in looking over the statistics in small intestinal tumors and was surprised to find they are so uncommon. I always thought, before the SEMINAR that they were much more common than they really are. It has been estimated that probably one or two per cent of malignant tumors of the intestinal tract arise in the small intestine, which is quite astonishing since the small intestine has so much more surface area than the stomach or large intestine. Cancers have been estimated to be at least 40 times as common in the stomach or large bowel as in the small bowel. In our own cases we have 28 cases of carcinoma of the jejunum compared with only 7 cases of the ileum. I think this is the experience of most other workers that adenocarcinomas of the small intestine are more common in the jejunum, especially the upper part as was present in this case. Sarcomas are more common in the ileum.

References

Prigden, J. E., Mayo, C. W. and Dockerty, M. B.: Carcinoma of the Jejunum and Ileum Exclusive of Carcinoid Tumors. Surg. Gynec. & Obst. **90**:513-524, 1950.

Weber, H. M. and Kirklin, B. R.: Roentgenologic Manifestations of Tumors of the Small Intestine. Am. J. Roentgenol. **47**:243-253, 1942.



6. *Irradiation Effect of the Ileum*

Contributed by LAUREN V. ACKERMAN, M. D., Saint Louis, Missouri

THE PATIENT was a 38-year-old woman in August 1952 when she presented symptoms and signs of intestinal obstruction. There was a history of carcinoma of the cervix which had been treated by radiotherapy in 1938, of hematuria in 1945 and of pyelonephritis in 1948. The retrograde barium filling of the terminal ileum revealed a narrowed but smooth segment; there appeared to be an abnormal filling defect within the lumen of the ileum which was not connected with the wall.

Dr. Swenson: There is a narrow, smooth segment in the terminal ileum, as described, with an abnormal filling defect. This probably is a foreign body, either a coprolith or a fruit pit, or a gallstone which has migrated from its usual site. The cause for such a relatively small foreign body being caught in the lumen might have been due to a previous ileitis, either on the basis of radiation effect or a "non-specific" infection.

Dr. Swenson's impression: RADIATION ILEITIS with obstruction and foreign body.

Roentgenologic Impressions Submitted by Mail

Irradiation effect	34
Carcinoid	13
Benign tumor	12
Inflammatory lesion	10
No dice!	1
Others	27

Fig. 1—Roentgenogram showing retrograde filling of terminal ileum which is narrowed.

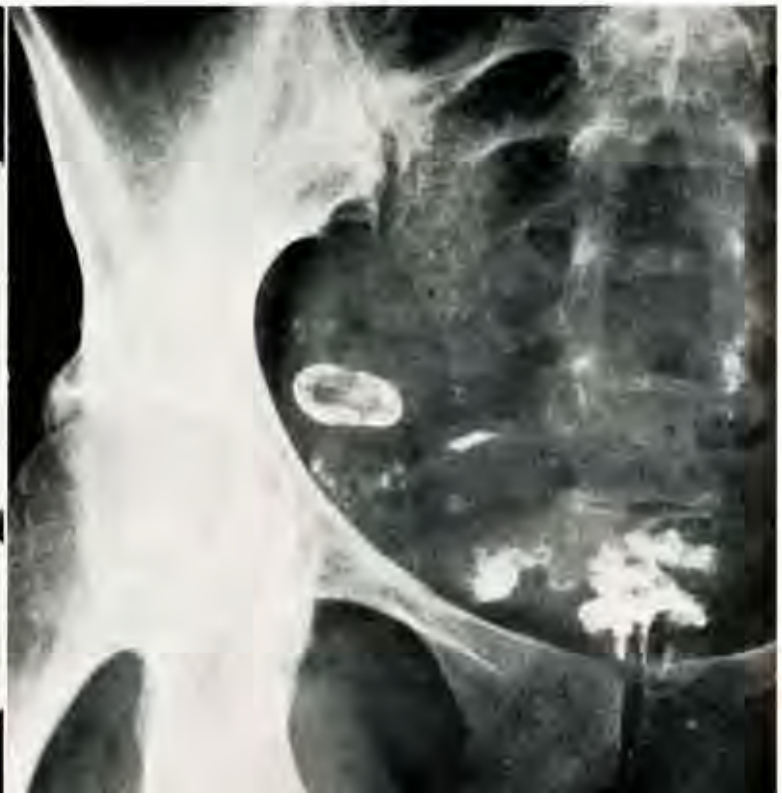
Dr. Regato: Dr. J. A. Campbell, of Indianapolis, Dr. R. W. Ludwick, of Denver, and Dr. Milo Harris, of Spokane, attributed the findings to the previous irradiation. Dr. P. J. Hodes, of Philadelphia, thought that there appeared to be a foreign body also, possibly a gallstone.

Dr. Weber: I would not on the basis particularly of frequency consider irradiation effects seriously; my best guess was an extreme cicatrization of a terminal ileitis. I have never observed such a localized involvement of the small intestine as a post-irradiation phenomenon. That it could occur, I have no question. From this film I did not recognize the foreign body. I would say on the basis of my experience that cicatrization of a terminal ileitis is the best guess. I am quite sure that it is a non-neoplastic process in any event.

Operative findings: In August 1952 a resection of the terminal ileum and appendix was carried out and followed by an ileotransverse colostomy. The bowel wall appeared friable; there were two areas of constriction in the terminal ileum with corresponding thickening of the wall; between these two points of constriction there was a plum seed.

Dr. Meissner: The entire wall of the intestine is altered by diffuse fibrosis and vascular changes. The fibrosis is particularly marked in the submucosa, which is focally quite thickened, but the fibrosis also involves the muscularis and

Fig. 2—Post-evacuation roentgenogram showing foreign body.



serosa as well. Vascular changes include ectasia of vessels, again most marked in the submucosa, and obliterative changes; one large vessel in the mesentery has its lumen almost obliterated as a result of intimal thickening. In addition, the intestinal epithelium also shows focal ulceration, thinning and fibrosis of some of its folds. The individual epithelial cells are at times of the regenerative type, but show no unusual or atypical hyperplasia. Evidence of older healed damage is the disruption of the muscularis mucosae.

The changes here are those of chronic radiation damage of the small intestine. Chronic irradiation effect may manifest itself in two ways: first by an alteration of the growth potentials of various cellular components, particularly epithelium and second, by a chronic vascular damage which is in part a dilatation of vessels, but more a fibrosis and obliteration of vessel lumens that results in ischemia. The great majority of chronic irradiation changes are the direct result of insufficient blood supply brought about by vascular damage. The ischemia results in ulcerations, fistulae, gangrene and so damages the entire wall that it has a boggy induration with congestion, mucosal ulceration, telangiectases, edema, etc., quite similar to that seen in regional ileitis. These chronic irradiation changes begin a few months following radiotherapy, and may give rise to clinical signs then or later. Usually if clinical trouble occurs it does so within a few years, but the changes may not be evident, as in this case, for a dozen or more years. The ileum is the most common site in the small intestine to be involved in factitial irradiation effects since it is the portion of small intestines most apt to extend into the pelvis and thus get into an irradiated field. Wiley and Sugarbaker report nine cases of factitial irradiation effects in the ileum occurring in 600 cases treated for cancer of the uterus—mostly of the cervix.

The epithelial changes here seem to be only those of ulceration and repair, all of which can be explained by fibrosis and vascular damage. It is well known, however, that the intestinal epithelium is quite radiosensitive, perhaps as sensitive as lymphocytes. The initial radiosensitivity does not seem to carry over to a chronic mucosal effect, however, the mucosal changes being those secondary to vascular damage and scarring. While the ileum and large intestines are frequently exposed to large doses of radiations, I am unaware of any intestinal carcinoma ever having resulted from irradiation enteritis. The cancers which have followed exposures to ionizing radiations have been primarily those of skin, lymphatic tissue and bone.

Dr. Meissner's diagnosis: CHRONIC IRRADIATION EFFECT OF THE ILEUM.

Histopathologic Diagnoses Submitted by Mail

Effects of irradiation	52
Regional (terminal) ileitis	36
Inflammatory lesion	30
No tumor	14
No soap!	1
Others	25

Dr. Regato: General DeCoursey of Washington, and Dr. C. A. Hellwig, of Wichita, also recognized the lesion as due to irradiation. Dr. R. E. Johnson, of Columbia, Missouri, commented that the depletion of lymphoid tissue of the mucosa and submucosa plus fibrosis suggest irradiation effect whereas the hypertrophy of the muscularis propia and neuro-enteric plexuses suggest chronic obstruction.

Subsequent history: In January 1953 the patient had gained weight and appeared well.

Sutomo Tjokronegoro, M. D., Indonesia (by mail): Slight erosion with submucosal hyperhemia, edema and chronic specific inflammation and hypertrophy of the muscle wall probably caused by an obstructive corpus alienum.

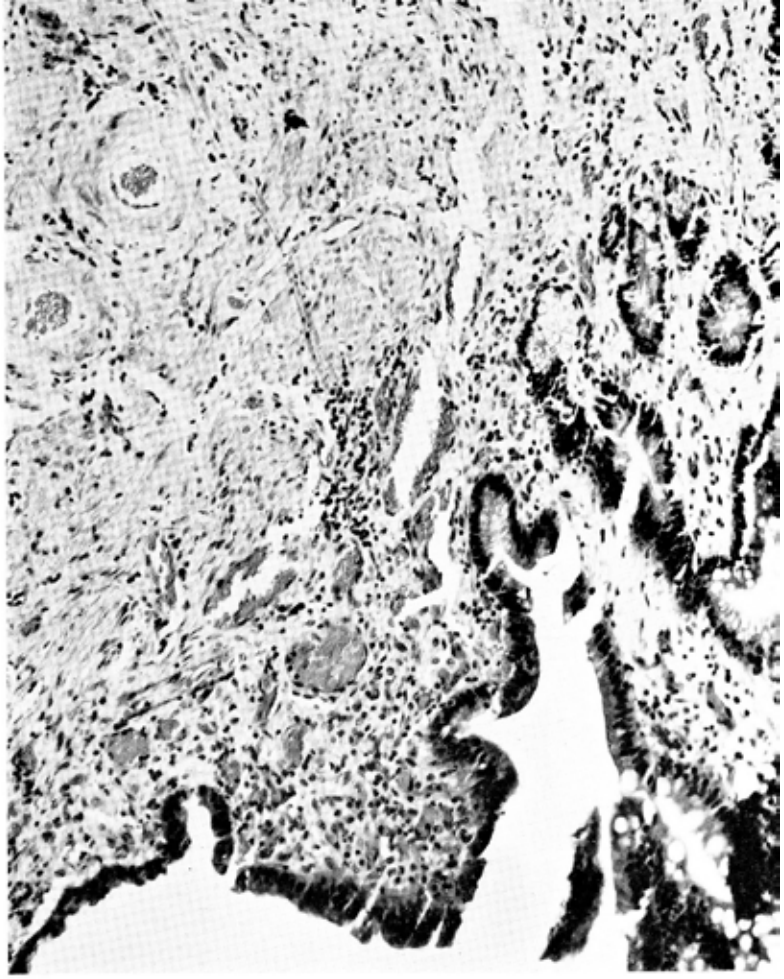


Fig. 3—Photomicrograph of radiation reaction of the small intestine. Note the thinning and fibrosis of the mucosa and the diffuse fibrosis of the submucosa. Thick-walled blood vessels are typical of chronic radiation reaction.

M. B. Dockerty, M. D., Rochester, Minnesota (by mail): Intestine showing effects of irradiation. There is marked submucosal edema with the formation of coarse bundles of hyaline tissue. Blood vascular changes are not very pronounced but there is a tendency towards telangiectasia. The large pale appearing cells seen in the submucosa are ganglion cells; these are sometimes erroneously interpreted as malignant cells.

Dr. Weber: I haven't been doing so well and I would like to make some inquiries about this case from the therapeutists. Why is it that in a midline treatment that we have a lesion of the intestine in the extreme right iliac fossa rather than somewhere in the midline? One other comment I would like to make about that fruit pit. Dr. Swenson thought that it may have something to do with the pathogenesis of the lesion, I would say the lesion had something to do with the retention of the fruit pit more likely. I have made a few misinterpretations in the diagnosis of foreign bodies particularly of bezoars in the stomach, in association with obstructing lesions or semi-obstructing lesions at the outlet of the stomach and invariably these errors have been fruit pits which have been retained behind semi-obstructing lesion or marked obstruction lesion.

Dr. Regato: It is quite true, Dr. Weber, that the most common lesions observed after irradiation for carcinoma of the cervix are reported in the midline areas and rectum. This is due to the fact that the most intensive part of the treatment given is due to radium, which is usually placed in the midline in the vagina or the middle of the uterus. But the most radiosensitive part of the intestinal tract is the small

intestine, particularly the ileum which may fall into the cul de sac and is in the field of external roentgentherapy. Now this woman could have very well lived to an old age and had no troubles if the plum had not come along and created a vicious circle; but the fact is that the narrowing, fibrosis, and so on, are common radiophysiologic findings which can be reproduced experimentally in animals and are probably due to the external irradiation which covers the entire pelvis. I am certain that these effects are perfectly correctible by surgery of the intestine.

Dr. Swenson: Dr. Weber, I did not mean to imply that I thought this fruit pit had anything to do with the etiology of this lesion except to call clinical attention to the fact that there was a stenosis there. I think it sometimes happens that a foreign body such as a gallstone—I remember one case an overcoat button—calls attention to a stenosing tumor of the transverse colon.

Ira Dixson, M. D., Denver, Colorado: I would like to know from Dr. Swenson whether that shadow above the barium filled colon in the first film is residual dye in the gallbladder and whether that indicates the clinician suspected a foreign body, probably gallstone.

Dr. Swenson: I have no idea—I saw that shadow but there is nothing in the history to tell us that. I am completely at a loss to explain why that shadow is there, there is no comment on it in the write-up. It just strengthens my idea that this whole thing was a "retrospectoscopic" diagnosis and they just picked out the film that happened to show something. That happens more than once. It even happens in my laboratories, as a matter of fact.

Dr. Regato: I am certain that was the case. However, since subsequent films were taken the presence of the foreign body was suspected. We gave you the film that had a filling of barium that covered up the foreign body but the Department of Radiology at Washington University had the advantage of seeing films that showed unquestionably the presence of a foreign body.

V. B. Buhler, M. D., Kansas City, Missouri: Since Washington University is so thorough, was the appendix involved? Was there irradiation reaction in the appendix also?

E. M. Bricker, M. D., Saint Louis, Missouri: All I know is the hard time Dr. Ackerman has had this summer during the drouth, trying to grow the seed in order to establish definitely whether or not it was a plum or a prune seed!

References

Martin, C. L. and Rogers, F. T.: Intestinal Reactions to Erythema Dose. Am. J. Roentgenol. **10**:11-19, 1923.

Tsuzuki, M.: Experimental Studies on the Biologic Action of Hard Roentgen Rays. Am. J. Roentgenol. **16**:134-150, 1926.

Wiley, H. M. and Sugarbaker, E. C.: Roentgenotherapeutic Changes in Small Intestine. Cancer **3**:629-640, 1950.

Warren, S.: Effects of Radiation on Normal Tissues. Arch. Path. **34** and **35**:443-450, 562-608, 749-787, 917-931, 1070-1084, 121-139, 304-353, 1942 and 1943.

7. Leiomyoma of the Jejunum Causing Intussusception

Contributed by PHILIP J. HODES, M. D., Philadelphia, Pennsylvania

Fig. 1—Roentgenogram showing evidence of intussusception in the proximal jejunum.

THE PATIENT was a 63-year-old woman in November 1952 when she gave a history of intermittent melena of four years' duration. There were no findings on physical examination and no abnormalities were noted on fluoroscopy. The roentgenograms showed apparent evidence of intussusception in the proximal jejunum.

Dr. Swenson: This is an intussuscepting lesion of some sort. One can see the lumen of the intussuscipiens beautifully, or what may even be the pedicle of a large polyp that has been pulled through. Just what the exact nature of the polyp is, is problematical. It is probably an adenoma on a pedicle, some sort of benign polypoid lesion, since intramural lesions rarely intussuscept. Fibroma? or adenoma; or even leiomyoma.

Dr. Swenson's impression: ADENOMA, FIBROMA or LEIOMYOMA with intussusception.

Roentgenologic Impressions Submitted by Mail

Intussusception	31
Benign tumor	27
Polyp	24
Leiomyoma	10
Worms!	9
Others	13

Dr. Regato: Dr. J. A. Campbell, of Indianapolis, suggested a leiomyoma. Dr. F. Gorishek, of Denver, and Dr. L. Pascucci of Tulsa made a diagnosis of benign pedunculated tumor causing intussusception.

Dr. Weber: I like the diagnosis of intussusception. That is as far as we can go except that in adults we find the most common cause of intussusception is neoplasm. And, of course, it will have to be a localized unperforated type of neoplasm as a general rule. Leiomyomas and leiomyosarcomas are the most likely statistically to produce this picture. But on the basis of objective findings, intussusception is our diagnosis.

Operative findings: At exploration an intussusception was found high in the jejunum and a mass could be palpated in the leading portion of the intussuscepting segment. A pedunculated growth was removed through an incision on the bowel wall; it was amputated at its base. The mass was semi-spherical and measured 17 mm in diameter.

Dr. Meissner: The lesion here is a tumor mass involving predominantly the muscular layer of the intestinal wall. The tumor is well circumscribed but not encapsulated and is composed of a fairly uniform pattern of spindle-shaped cells which grow in whorls or sheets. At times the tumor cells have thin strands of collagen between them but for the most part such intercellular collagenous tissue is absent. The individual cells show no mitoses, and have regular, uniform, elongate nuclei; myofibrils are present in the cytoplasm. No nerve fibers are present. The tumor is moderately vascular. The cells at times arrange themselves in a palisade formation. At several points the tumor has pushed against the mucosa to cause either thinning or complete mucosal ulceration.

This is a benign tumor arising from the muscularis of the intestinal wall. There is not sufficient pleomorphism of cells or enough evidence of growth activity even to suggest a low grade sarcoma. These tumors, because of their frequent tendency to form whorls and palisade arrangements, have sometimes been confused with neurilemomas. The presence of myofibrils is a useful differentiating point.

Smooth muscle tumors are found much more commonly in the stomach than in the intestine, but they may arise anywhere in the gastro-intestinal tract from the esophagus to the anus. Small leiomyomas, a few millimeters in diameter are common findings at autopsy, especially in the stomach. Larger tumors, big enough to give symptoms of hemorrhage or obstruction, are rare. They arise most commonly from the muscularis, but may also arise from the muscularis mucosae. The resulting tumor mass is round or ovoid and protrudes into the lumen, out from the serosa or in both directions in dumbbell fashion. When the tumor mass protrudes into the lumen there is a progressive pressure atrophy and eventual necrosis of the overlying mucosa so that an ulcer, often deep and saccular, results. In our experience, smooth muscle tumors of the small intestine are quite rare. I was able to find only 17 in our records. One of the 17 was located in the duodenum, the remainder about equally divided between jejunum and ileum. Those smooth muscle tumors large enough to give symptoms are also about equally divided between benign and malignant. I have recently seen a large leiomyoma of the ileum removed from a hernial sac!

Dr. Meissner's diagnosis: LEIOMYOMA of the small intestine with ulceration.

Histopathologic Diagnoses Submitted by Mail

Leiomyoma	116
Ganglioneuroma	12
Neurilemoma	6
Others	15

Dr. Regato: Dr. E. Rojas of Mexico City, and Dr. F. Bang of Copenhagen, made a diagnosis of leiomyoma of the jejunum. Dr. R. Willis, of Leeds, felt that this tumor could be also a neurilemoma.

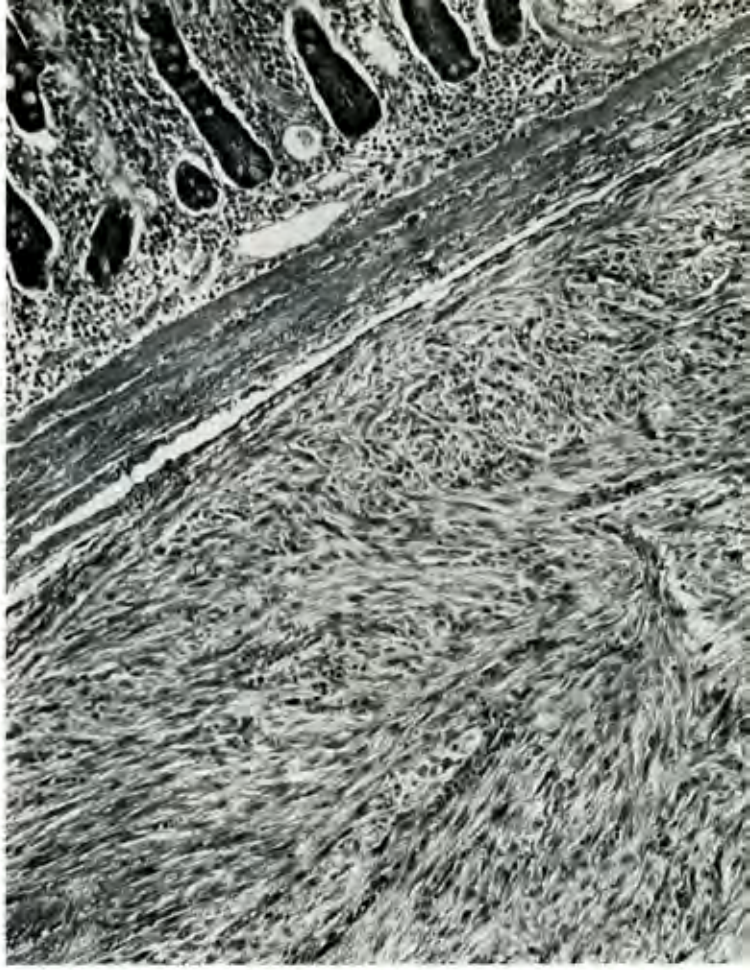


Fig. 2—Photomicrograph of leiomyoma of the intestinal wall. The tumor is arising from the muscularis and is compressing against the muscularis mucosae and the adjacent mucosa. The tumor shows a fairly uniform pattern of spindle-shaped cells which grow in whorls or sheets. The tumor is well circumscribed but not encapsulated.

M. B. Dockerty, M. D., Rochester, Minnesota (by mail): Leiomyoma; the palisading of nuclei, prominent in this preparation should not lure one into making out malignant change as evidenced by the presence of significant number of mitoses.

L. V. Ackerman, M. D., Saint Louis, Missouri (by mail): The smooth muscle cells appear quite uniform. I would designate this tumor as benign for that is suggested by the pattern; but there are exceptions. Lipomas produce intussusception more commonly in this situation.

Subsequent history: In April 1953 the patient appeared well.

References

Golden, R. and Stout, A. P.: Smooth Muscle Tumors of the Gastrointestinal Tract. Surg. Gynec. & Obst. **73**:784-810, 1951.

Jenkinson, E. L., Pfisterer, W. H. and Seitz, E. R.: Primary Tumors of the Small Intestine. Radiology **55**:12-19, 1950.

Marshall, S. F. and Meissner, W. A.: Leiomyoma of the Stomach. S. Clin. North America. Lahey Clinic Number: 735-742, 1951.

Olson, J. D., Dockerty, M. B. and Gray, H. K.: Benign Tumors of the Small Bowel. Ann. Surg. **134**:195-204, 1951.

8. *Adeno-Acanthoma of the Pancreas Extending Into the Duodenum*

Contributed by JOHN A. CAMPBELL, M. D., Indianapolis, Indiana

Fig. 1 — Roentgenogram showing narrowed duodenum with flattening of mucosal folds.

THE PATIENT was a 63-year-old woman in October 1952 when she complained of pain in the right upper abdominal quadrant which radiated to the dorsolumbar region and had been progressively increasing for seven years. The pain was intense and required strong analgesics; it was followed by vomiting of greenish-brown material. There had been "considerable" weight loss in the past year. On physical examination there was a suggestion of fullness of the right upper quadrant. Serum amylase was 247 mgm per cent. The roentgenograms showed narrowing of the terminal portion of the duodenum with flattening of the mucosal folds.

Dr. Swenson: Here is a constricting defect in the distal duodenum which could be the result of inflammation of the pancreas, considering the serum amylase, but neoplasm, either primary or secondary cannot be ruled out. From a purely roentgenologic standpoint, I would put carcinoma of the duodenum first — one which has considerable fibrogenic elements in it. Second, a carcinoma of the pancreas invading the duodenum. It is a bit distal for annular pancreas, but this is not out of the question. The pain suggests either perforation of an ulcerating lesion or a pancreatitis secondary to the stricture in the duodenum. That, by itself, is relatively rare in my opinion. There may have been both, and let us say, even an annular pancreas involved in the inflammatory process.

Dr. Swenson's diagnostic impression: (1) CARCINOMA OF THE DUODENUM or (2) CARCINOMA OF THE PANCREAS.

Roentgenologic Impressions Submitted by Mail

Adenocarcinoma of duodenum	45
Carcinoma of the pancreas	37
Pancreatitis	9
Annular pancreas	6
Others	27

Dr. Regato: Dr. P. J. Hodes, of Philadelphia, also favored a primary carcinoma of the duodenum. Dr. R. W.

Ludwick of Denver and Dr. J. H. Marks of Boston suggested a carcinoma of the head of the pancreas.

Dr. Weber: I figured that a primary neoplasm of the duodenum was probably the best guess. But here I am going to change and think rather of some extrinsic process, possibly rising from the tail of the pancreas. In these cases in which the diagnosis of extrinsic nature is concerned the fluoroscopist has to get his big fat glove off, get in there with his hand and do a very careful manipulation. Most frequently he will get at the answer about the extrinsic lesions that way but he cannot do it with a big protective glove on his hand. The fluoroscopic findings are much more important than any number of graphic maneuvers that one might want to go through. I think sometimes clinicians are somewhat neglectful when they palpate abdomens if they don't manipulate or palpate an abdomen in the erect posture as well as in the recumbent.

Operative findings: In October 1952 a surgical exploration was done. There was an obstruction at the ligament of Treitz; a duodeno-jejunostomy was done.

Dr. Meissner: The lesion here is a highly anaplastic tumor lying in the outer portion of the intestinal wall. The mucosa is uninvolved by the tumor. The tumor cells are at times arranged in a glandular pattern and some of them form mucus which is seen either as droplets in individual cells or in irregular gland spaces. Other tumor cells, often in direct continuity with the mucus-secreting ones, grow in solid sheets and have a pavement arrangement similar to stratified squamous epithelium. Some of these latter cells form keratin and have intercellular bridges. There is much nuclear pleomorphism, and mitoses, both normal and abnormal, are common. The tumor is highly invasive.

This highly malignant carcinoma is a mixture of squamous and glandular elements. Tumors of this type are called adenoacanthomas, although some prefer to designate them as adenocarcinomas with squamous metaplasia. Cancers of the gallbladder, pancreatic and bile ducts are often of this type; in fact the squamous elements may predominate or be the only element found. Such tumors also are occasionally seen arising in other locations such as the cardia of the stomach and endometrium. Muco-epidermoid cancers of the salivary gland are still another rather comparable tumor. Although I have seen one such tumor arising in the transverse colon, I have never seen nor heard of such arising from the epithelium of the small intestine, although there is no reason why it should not be possible. However, the relative frequency of the occurrence of adenocanthoma of the pancreas, and the extrinsic location of this tumor in question lead me to believe that this is of pancreatic origin.

Dr. Meissner's diagnosis: ADENO-ACANTHOMA OF PANCREAS extending into duodenum.

Histopathologic Diagnoses Submitted by Mail

Adenocarcinoma	70
Adenocarcinoma of pancreas	66
Metastatic carcinoma	14
Others	6

Dr. Regato: Dr. D. S. Russell, of London, Dr. L. Lowbeer, of Tulsa, Dr. R. S. Haukohl, of Milwaukee, and Dr. C. A. Hellwig, of Wichita, all favored a diagnosis of duct cell type carcinoma of the pancreas.

A. P. Stout, M. D., New York (by mail): A carcinoma invading the duodenum and obstructing the pancreatic duct. I presume the carcinoma arose in the pancreas.

E. B. Helwig, M. D., Washington, D. C. (by mail): Adenocarcinoma secreting mucus; the slight suggestion of epidermoid tendency favors a pancreatic (ductal) origin.

C. Oberling, M. D., Paris (by mail): Carcinoma with peculiar inclusions (bird's eye) as are sometimes found in gastric carcinomas.

L. V. Ackerman, M. D., St. Louis, Missouri (by mail):

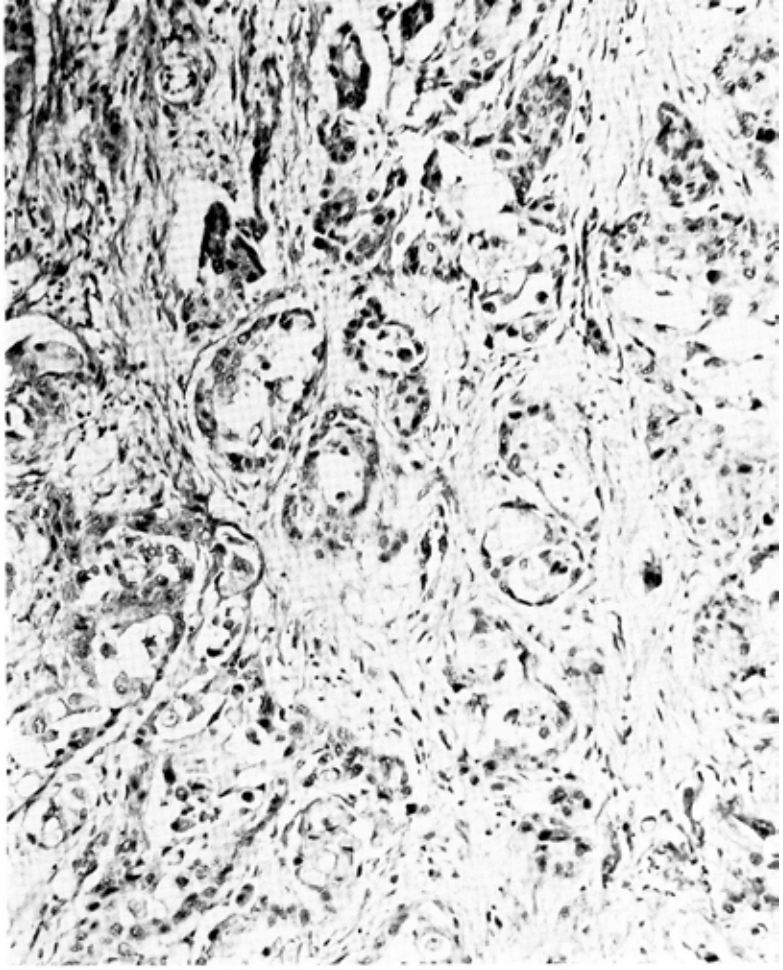


Fig. 2 — Photomicrograph of adeno-acanthoma of pancreas. While some of the tumor cells are arranged in glandular pattern and form droplets of mucus, some have a pavement arrangement resembling stratified squamous epithelium.

Adenocarcinoma with squamous metaplasia, highly suggestive of a primary in the small intestine.

Subsequent history: The patient died in the 8th postoperative day. At autopsy the body and the tail of the pancreas were found replaced by a spherical gray mass, 15 cm in diameter.

Mark Wheelock, M. D., Chicago, Illinois: When I first went to Chicago and made the diagnosis of adeno-acanthoma several times, it was pointed out to me that I was incorrect in my terminology. The gynecologists in particular do not like that term. So they have arrived at the conclusion that they are both adenocarcinoma and squamous cell carcinoma. I assume Dr. Meissner means squamous-cell carcinoma rather than squamous-cell metaplasia; I think he meant the carcinomatous element was of two varieties, squamous and adenocarcinoma which I think has very definitely been proved to originate in pancreas and bile duct and also in the gallbladder and ampulla and so on.

Dr. Meissner: I would agree with that interpretation Dr. Wheelock. Some of the carcinomas arising in the pancreatic and bile ducts are pure squamous carcinomas and have no glandular elements in them at all. I think that is proof to show that these are actually mixed carcinomas. The term acanthoma refers to the prickles that are present on these cells and I really don't see why it is a bad term. An adeno-acanthoma means an adenocarcinoma and a prickle cell carcinoma which is a synonym for squamous carcinoma.

References

Wilson, H. and Bushart, J. H.: Annular Pancreas Producing Duodenal Obstruction. Ann. Surg. **137**:818-824, 1953.

McNaught, J. B. and Cox, A. J.: Annular Pancreas. A compilation of Forty Cases With a Report of a New Case. Am. J. Med. Sci. **185**:249-260, 1933

Case, J. T.: Roentgenology of Pancreatic Disease. Am. J. Roentgenol. **44**:485-518, 1940.

9. Sarcoma of the Small Intestine

Contributed by WENDELL P. SCOTT, M. D. and FRANKLIN E. WALTON, M. D., St. Louis, Missouri

THE PATIENT was a 49-year-old man in March 1950 when he complained of lower abdominal pain and fever of several months' duration: there was a history of occasional melena, a duodenal ulcer and medical treatment for 20 years. On examination an ill-defined lower abdominal mass could be felt under the anterior wall. On roentgenographic examination there was an irregular collection of barium apparently in a segment of greatly distorted small bowel.

Dr. Swenson: This appears to be either a large extravasation of barium or barium within a markedly distended bowel lumen. I have seen terminal ileitis of a segmental variety give rise to a tremendous dilatation of the bowel between sites of constriction and this might well be such a process. On the other hand a periluminal abscess might just as easily have allowed for the extravasation. Tumor may underlie the whole process: for example, a lymphosarcoma infiltrating the mesentery and wall of the gut might give this picture with the bulk of the irregular shadow lying not within a dilated portion of the bowel but within an accessory pocket following perforation.

Dr. Swenson's impression: Peri-enteric ABSCESS or TUMOR OF THE SMALL INTESTINE.

Roentgenologic Impressions Submitted by Mail

Inflammatory lesion	35
Lymphoma	29
Neoplasm	22
Blank	9
Others	20

Dr. Regato: Dr. L. H. Garland, of San Francisco, Dr. J. H. Marks, of Boston, and Dr. H. Friedell, of Cleveland, all suggested the possibility of a lymphosarcoma of the small bowel.

Operative findings: In March 1950 an exploratory laparotomy was done: a tumor 8 x 9 x 10 cm was found in the mesenteric border of the jejunum, 30 cm from the ligament of Treitz: three loops of small bowel were involved in a mass of adhesions. A portion of the jejunum 18 cm in length and two-thirds of the omentum were resected. The tumor appeared to grow from the wall of small intestine.

Dr. Meissner: This is a solid mass of tumor without identifying intestinal or other organ attached. The tumor is uniform in its pattern and contains numerous small blood vascular spaces between which are spindle-shaped and polygonal tumor cells. The spindle-shaped cells strongly resemble smooth muscle cells but contain no myofibrils. Their cytoplasm is often foamy as are the nuclei. Some nuclei contain large vacuoles which stain only faintly for glycogen. A mitosis can be found in every 2 or 3 high power fields. The cells seem to have a definite structural grouping in relation to blood vessels although hardly a perivascular cuffing. There is very little intercellular stroma.

The differential diagnosis here includes: (1) Leiomyosarcoma. Against this diagnosis is the absence of myofibrils, although this does not necessarily rule the diagnosis out completely. (2) Hemangiopericytoma. Tumors of smooth-muscle-like cells with intimate relationship to blood vessels as seen here are often called by this name. With silver stains, however, the number of so-called occult vessels is disappointing, as is the relationship of the tumor cells to the vessels. (3) Mesothelioma. Tumors of mesothelial origin at times may grow in such arrangement. However, the lack of intercellular substance is against this diagnosis. (4) Other possibilities are Kaposi's sarcoma, neurogenic sarcoma, hemangioendothelioma, but I could find nothing conclusive for any of these possibilities. My diagnosis, therefore, is a non-specific one—sarcoma of undetermined type and origin and of low grade malignancy.

Dr. Meissner's diagnosis: SARCOMA of low grade malignancy (type undetermined).

Histopathologic Diagnoses Submitted by Mail

Leiomyosarcoma	86
Fibrosarcoma	18
"Neurogenic" sarcoma	12
Rhabdomyosarcoma	8
Sarcoma (various)	36
Others	15

Dr. Regato: Dr. Sutomo Tjokronegoro, of Indonesia, made a diagnosis of fibroblastosarcoma. Dr. Brachetto-Brian, of Buenos Aires, and Dr. R. Willis, of Leeds, favored a diagnosis of fibroscarcoma. Dr. R. Lattes, of New York, and Dr. P. Herbut, of Philadelphia, made a diagnosis of leiomyosarcoma.

C. Oberling, M. D., Paris (by mail): Sarcoma, possibly of reticular histiocytic type. I have seen several abdominal tumors of the same structure in rats, which in successive grafts proved definitely to be of that origin. A closer histological study with reticulin impregnations would be necessary to rule out the possibility of a tumor of nervous or muscular origin.

A. P. Stout, M. D., New York (by mail): This tumor may have arisen from the small intestine or in the retroperitoneal space: in either case it might be a leiomyosarcoma, but on morphological grounds I am not convinced that it is one. I have seen hypernephroid carcinomas of the kidney assume this sarcoma-like aspect, so that I would not exclude that possibility.

L. V. Ackerman, M. D., St. Louis, Missouri (by mail): This is apparently a smooth muscle tumor. When we first had a biopsy we thought it was benign but because of the unusual pattern we sent a slide to Dr. Stout who also thought it to be benign. Now we know that it has caused the death of the patient.

M. B. Dockerty, M.D., Rochester, Minnesota (by mail): Leiomyosarcoma. This growth shows an irregularity of cell size disproportionate to the number of mitoses present.

Subsequent history: The patient was well for one year and then pain recurred. In March 1951 he was reoperated, numerous nodules were found in the surface of the sigmoid mesentery and parietal peritoneum. Roentgenotherapy was administered which resulted in palliation of pain. In February 1952 he expired: the autopsy revealed widely disseminated tumor and fibropurulent peritonitis.

Leo Lowbeer, M. D., Tulsa, Oklahoma: We saw a similar tumor which was first found in an exploratory laparotomy: the omentum and liver were studded with nodules. The structure of the tumor was somewhat similar to this one and seemed to suggest a leiomyosarcoma. The patient later came

Fig. 1—Roentgenogram showing irregular collection of barium in a segment of greatly distorted small bowel.

to autopsy and the primary tumor was found in the small intestine and was an exceed'ngly small neoplasm measuring about 1½ cm in diameter which had the same structure as the primary neoplasm. We felt it was also a leiomyosarcoma. The contrast between the size of the primary tumor and the metastases was overwhelming.

References

Marcuse, P. M. and Stout, A. P.: Primary Lymphosarcoma of the Small Intestine. Analysis of Thirteen Cases and Review of the Literature. Cancer **3**:459-474, May 1950.

Weinstein, M. and Roberts, M.: Leiomyosarcoma of the Duodenum. Report of a Case and Summary of the Literature. Arch. Surg. **66**:318-328, March 1953.

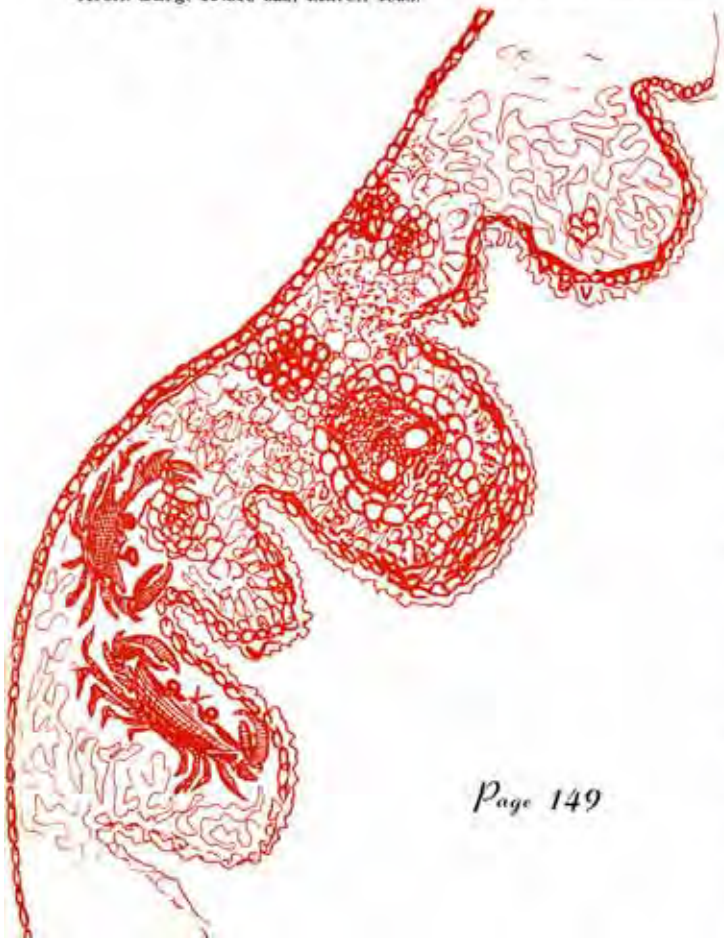
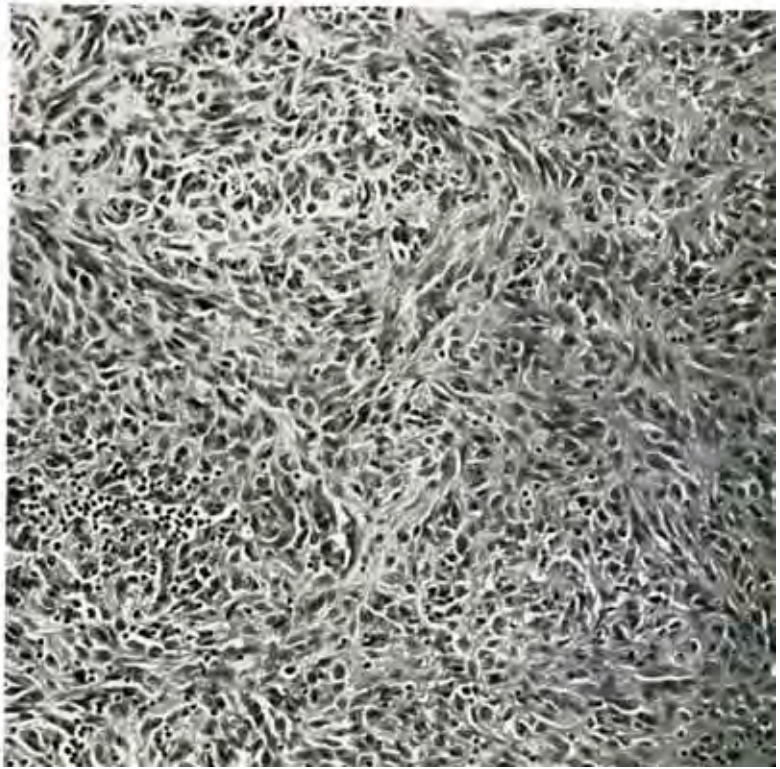


Fig. 2—Surgical specimen of a portion of the jejunum with considerable thickening of the wall.

Fig. 3—Photomicrograph of low-grade sarcoma. The spindle-shaped cells have a strong resemblance to smooth muscle cells, but contain no myofibrils.



10. Meckel's Diverticulum Causing Intussusception in an Adult

Contributed by Ross Golden, M. D., Los Angeles, California

THE PATIENT was a 55-year-old man who in July 1952 complained of intermittent tarry stools of a month's duration. There was no physical finding; hemoglobin was 10.3 grams per cent. Injection of non-flocculating barium through a Miller-Abbott tube showed a suspicion of filling defect of the ileum and a "coiled spring" appearance.

Dr. Swenson: Here are some loops of terminal ileum low in the pelvis which Doctor Golden no doubt had difficulty manipulating. Because of the low position of the loops in the pelvis, the Miller-Abbott tube has stopped at a point above the site where Doctor Golden directs our attention to the pattern. The meaning of the "coiled spring" pattern, if it be real, simply means a mass in the lumen as we see in the case of a polyp or an intussuscepting mass. This is most probably a polypoid lesion, probably a fibroma. A "polyp" we saw recently was due to an inverted Meckel's diverticulum which was acting as a "polyp"; the patient had bled considerably from this lesion. The matted appearance of the loops in this case suggest the possibility of a pre-existing inflammatory process, the adhesions of which did not allow the Miller-Abbott tube to progress downward.

Dr. Swenson's impression: INTUSSUSCEPTION due to: (1) LEIOMYOMA. (2) MECKEL'S DIVERTICULUM.

Roentgenologic Impressions Submitted by Mail

Intussusception	42
Benign tumor	25
Malignant tumor	23
Meckel's	6
Others	11

Dr. Regato: Dr. J. H. Marks, of Boston, and Dr. H. L. Friedell, of Cleveland, made a diagnosis of intussusception probably due to a tumor. Dr. P. J. Hodes, of Philadelphia, and Dr. L. Pascucci, of Tulsa, suggested that the intussusception could be due to a Meckel's diverticulum.

Dr. Weber: I would think that in a man this age a neoplasm should be considered but, of course, a Meckel's diverticulum is statistically more probable. About 2 per cent of all males have Meckel's diverticula, we should see a greater number causing trouble.

Operative findings: In August 1952 surgical exploration revealed a palpable mass within the lumen of the ileum; there was a dimple in the serosal surface of the bowel. A resection of 8 cm of the ileum was carried out. A "polypoid" mass 6.5 x 2.5 cm was found on the inner side of the dimple.

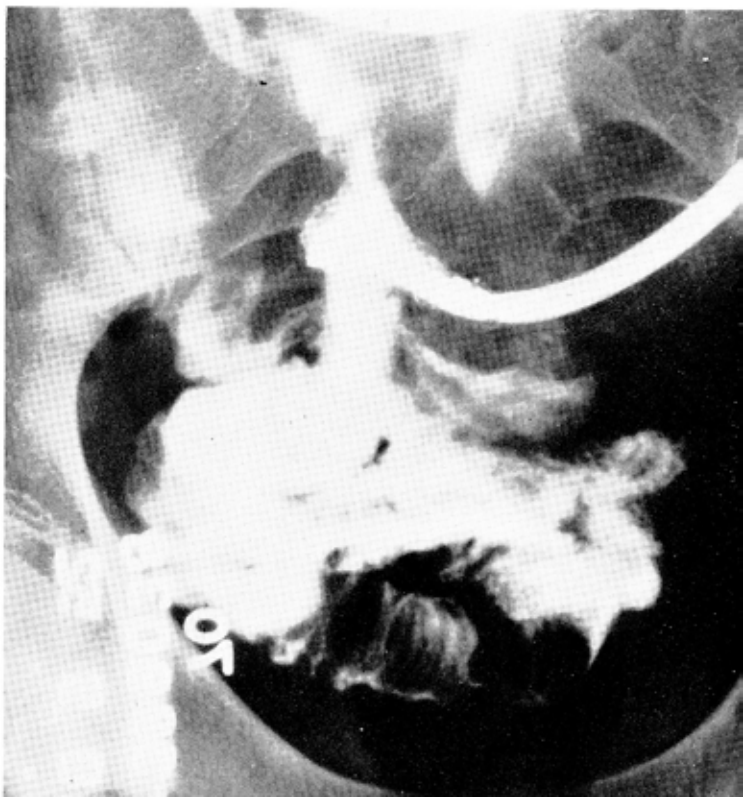
Dr. Meissner: The microscopic appearance of this lesion shows it to be an inverted or invaginated portion of intestine. Thus the peripheral portion of the mass is a circumference of mucosa. The epithelium is of the intestinal type and shows acute superficial ulcerations. Passing to the center, or core, of the mass, one finds, respectively, submucosa, muscularis and finally serosa. Some of the central serosal cells seem to be proliferating as they do in response to inflammation or irritation.

With special stains, it is easily seen that the musculature of this invaginated portion of intestine is abnormally thin and even is defective in foci. This suggests that the inverted intestine is an inverted diverticulum. Although there is no gastric mucosa in the mucosa, such as is often found, the location of this diverticulum in the ileum allows the assumption that this is a Meckel's diverticulum which has inverted into the lumen of the ileum and given rise to intussusception.

The mucosal ulceration seen here looks rather similar to a peptic type ulcer, but there is no gastric mucosa to be found, and it is probably better to assume that the ulceration took place after the invagination, rather than before. Although preceding disease in diverticulum, especially tumor such as lipoma, may cause it to invaginate, it is not necessary for such to be present. Harkins in 1933 made an excellent review of 114 cases of intussusception due to invaginated Meckel's diverticulum. Only 26 of the 114 cases had tumor in the tip of the diverticulum. The invagination of the diverticulum starts at the tip and is a primary rather than a secondary phenomenon. Harkins found that 17% of Meckel's diverticula that give clinical trouble do so by producing intussusception and that 2.5% of all intussusception is caused by an invaginated Meckel's diverticulum. The intussusception seldom extends beyond the hepatic flexure of the colon.

Dr. Meissner's diagnosis: INTUSSUSCEPTION due to invaginated MECKEL'S DIVERTICULUM.

Fig. 1—Roentgenogram showing "coiled spring" appearance of the ileum and a suspicion of filling defect.



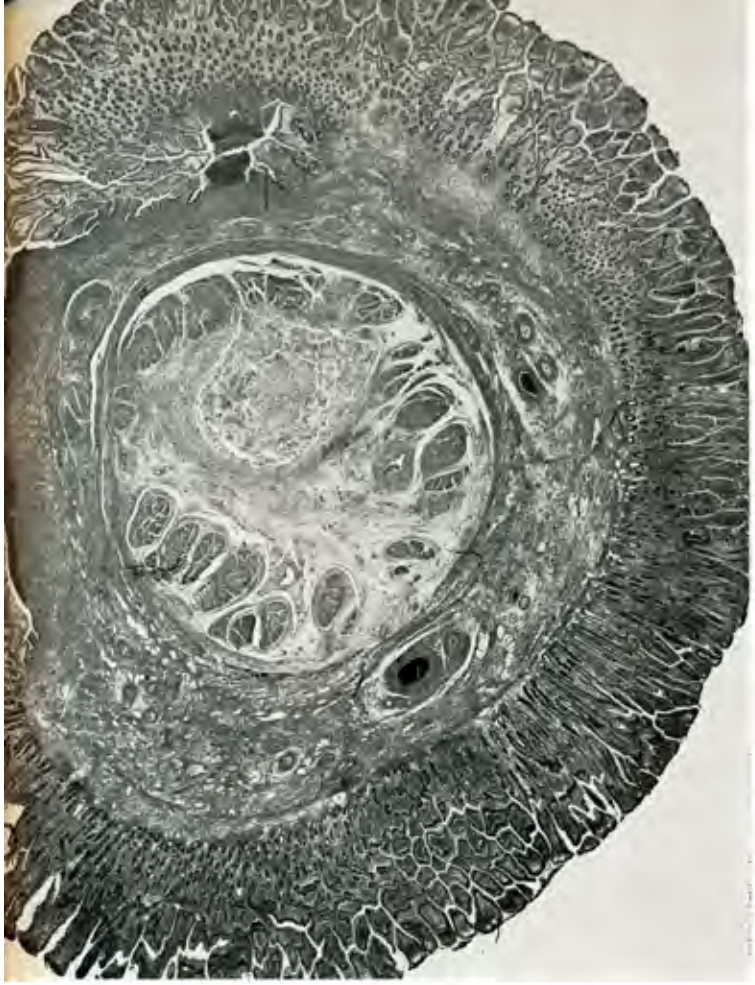


Fig. 2—Photomicrograph of invaginated Meckel's diverticulum. Note that the muscular coat lies entirely central to the epithelial layer, pathognomonic of invagination. The mucosa is superficially ulcerated at one point.

Histopathologic Diagnoses Submitted by Mail

Chronic Inflammation	46
Hamartoma	18
Inverted Meckel's	16
Invagination	15
Adenomatous polyp	14
I haven't a clue	1
Others	60

Dr. Regato: Dr. F. Leidler, of Houston, made a diagnosis of inflammation in a Meckel's diverticulum. Dr. Richard Shuman, of Washington, D. C., also recognized the inverted condition of the intestine and suggested Meckel's diverticulum or duplication of the intestine. Dr. A. E. Lubchenco, of Denver, made a diagnosis of inverted Meckel's with ectopic pancreatic tissue. Most other participants apparently thought that the outward situation of the epithelium was a confusing prank of the local committee.

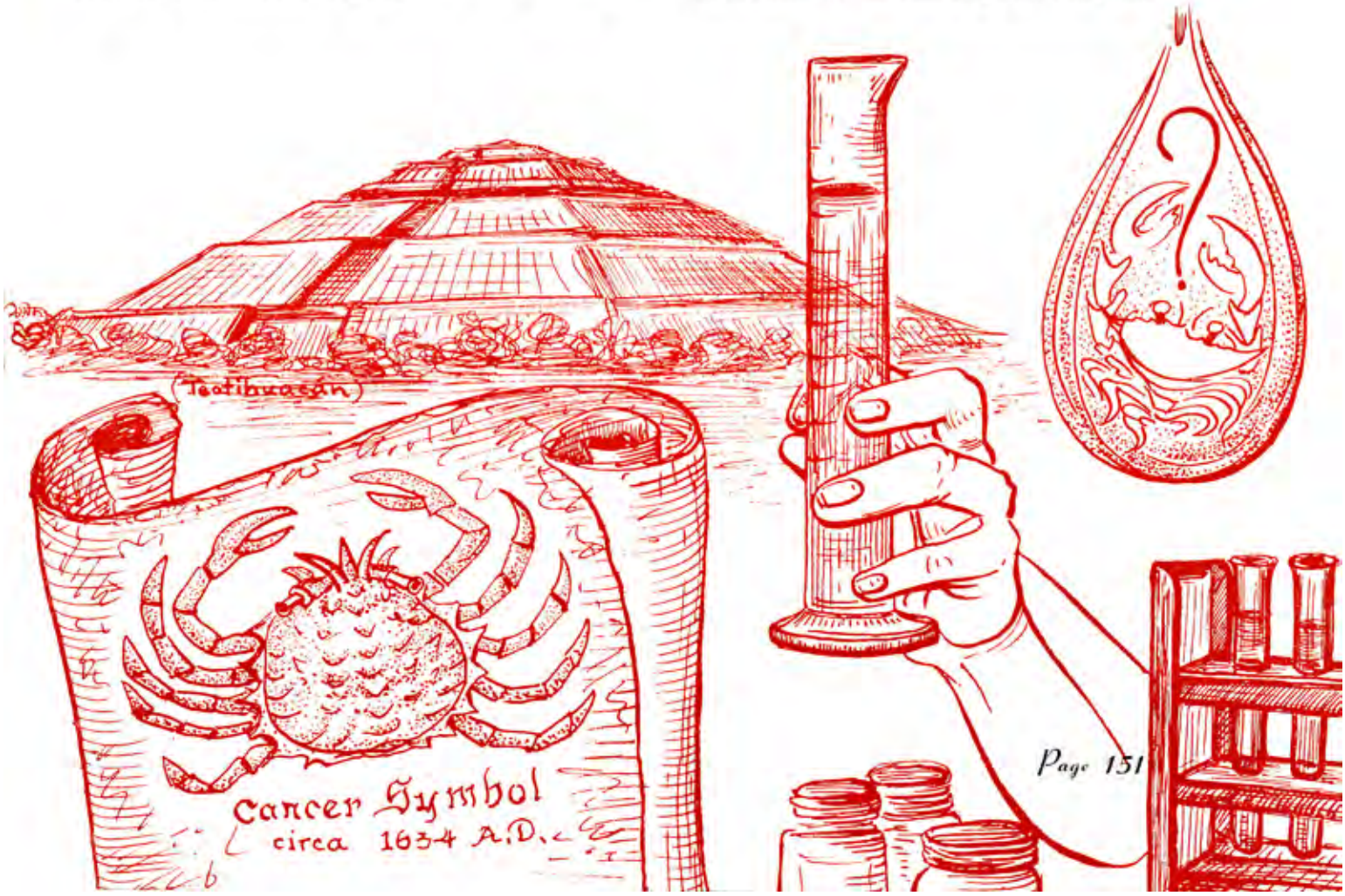
Hugo F. Elmendorf, Jr., M.D., San Antonio, Texas: I have seen a young girl five years old with intussusception. Intussusception in the small bowel may be due to a malignant tumor. This was a submucosal lesion, polypoid almost in nature, sessile in type, which produced the intussusception.

Dr. Regato: Meckel's diverticulum is, next to tumors of the small intestine, the second most frequent cause of intussusception in the adult. Ectopic tissue in Meckel's diverticulum has been reported in as many as two-thirds of the cases; the most common ectopic tissue found is gastric, but pancreatic, colonic and rectal tissue have also been observed (Stewart).

References

Stewart, D. E.: Meckel's Diverticulum. Surgical Staff Seminars, Minneapolis Veterans Hospital, **3**:204-223, 1947.

Harkins, H. N.: Intussusception Due to Invaginated Meckel's Diverticulum. Ann. Surg. **98**:1070-1098, 1933.



11. Carcinoid of the Ileocecal Junction

Contributed by EUGENE BRICKER, *M. D.*, Saint Louis, Missouri

THE PATIENT was a 66-year-old man who in August 1952 complained of intermittent abdominal cramping pain of two years' duration and of lower abdominal swelling for the past two months. On physical examination peristaltic movements could be observed through the abdominal wall: on palpation there was a sensation of fullness but no discrete mass. The nine-hour roentgenogram revealed a large dilatation of a loop of terminal ileum with apparent obstruction at this level.

Dr. Swenson: The best I can make out of this case is that it is a lesion at or near the ileocecal junction. I cannot tell whether it is actually within the tip of the cecum or in the terminal ileum. The write-up here says "there is a large dilatation of a loop of terminal ileum with apparent obstruction at this level." The obstructing lesion is probably best described as "at the ileo-cecal region." Here a number of possibilities come up. An inflammatory process involving the appendix or cecum could be responsible, or a carcinoid of the ileum. I favor tumor. A Meckel's diverticulum might be in some way associated with this process.

Whatever the case, there is no way of being certain from this one film, as to the exact diagnosis. I favor a probable carcinoid just on the basis of the known incidence of this lesion in this area.

Dr. Swenson's impression: CARCINOID OF THE ILEUM.

Roentgenologic Impressions Submitted by Mail

Carcinoid	29
Carcinoid of ileum	13
Carcinoma of cecum	12
Inflammatory lesion	11
Blank	32
Others	18

Dr. Regato: Dr. W. Christensen of Salt Lake City, Dr. F. Gorishek of Los Alamos, and Dr. R. W. Ludwick of Denver, suggested that the obstruction was possibly due to a carcinoid.

Dr. Weber: I wasn't sure what portion of the intestinal tract was depicted on the film. I took it to be the right iliac fossa lesion for there was evidence of obstructing ileocecal lesion there. That was the best I could do. I thought too that one ragged looking shadow projected over that lower dense mass of barium was probably the tip of the caecum. When obstruction of this degree exists in any tubular organ that has a muscularis, then the problem of eliciting roentgenologic elements that are in any way diagnostic is greater than in any other situation; the radiologist's reputation is likely to sink to rather low levels sometimes because he tries to make a good diagnostic guess in the face of a large number of possibilities that can cause the obstructing syndrome we have. In such lesions as are found in the pylorus and lesions of the colon that one may examine with opaque enema, if one cannot penetrate the obstructed area, we can only say that there is obstruction; one can make a good guess as to what the obstruction might be on the basis of statistical frequency of lesions found in that area.

Operative findings: In August 1952 surgical exploration revealed a rounded tumor 2.5 cm in the wall of the intestine at the ileo-cecal junction. A resection of the ileum and right colon was done for what was thought to be carcinoma. In cut section the tumor appeared finely granular and light brown in color.

Dr. Meissner: The section shows intestinal muscularis, but no mucosa and there is no orientation of the intestinal wall. The muscularis is diffusely infiltrated with uniform-sized cells containing a vesicular, round nucleus. The cells are usually arranged in solid clusters of 40 or 50, but at times they show a glandular pattern and even seem to be secreting a scanty amount of mucus. There is practically no cellular or nuclear pleomorphism, no mitoses are found. With silver stain some of the cells contain Argentoffin granules. In spite of the relatively quiescent appearance of the individual cells, there is considerable invasion throughout the muscle. Tumor cells surround nerves, and are present in lymphatic vessels, but none are found in blood vessels.

This is a carcinoid tumor, an argentaffinoma. The only problem in diagnosis is the decision as to whether it is benign or malignant. It is interesting that while carcinoid tumors, no matter where they occur, all seem quite similar in pattern, their potentialities of metastasis vary markedly with the primary site. All show local invasion to some degree and the inherent malignant nature of all carcinoid tumors has been emphasized by Pearson and Fitzgerald. Carcinoid tumors arising in the appendix rarely metastasize while about one-third of carcinoid tumors arising elsewhere in the gastrointestinal tract metastasize. They may arise from anywhere in the gastrointestinal tract in addition to ileum and appendix.. Horn has reported a series in the large bowel. We have seen one arising in the ampulla of Vater and giving rise to biliary obstruction! The most common sites of metastases are mesenteric lymph nodes and liver, but distant metastases may occur. It is noteworthy that even with widespread metastases, the patient may live for years without significant symptoms, and that death caused primarily by a carcinoid tumor is rare. Since it is impossible from the histologic appearance alone to predict a benign or malignant clinical course, the non-commital term of "carcinoid tumor" is often preferred by pathologists.

One additional point of interest: the majority of tumors popularly called "bronchial adenomas" are quite similar to carcinoid tumors of the intestine and have similar slow growth rates of primary tumor and metastases. They sometime also contain Argentoffin granules.

Dr. Meissner's diagnosis: CARCINOID TUMOR of the small bowel.

Histopathologic Diagnoses Submitted by Mail

Carcinoid (argentaffinoma)	146
Others	3

Additional microscopic findings: Twelve out of nineteen regional nodes were found to be metastatic. Eleven other proximal and distal nodes were not invaded.

Leo Lowbeer, M. D., Tulsa, Oklahoma: Do the tumor cells of the bronchial adenoma stain with lipid as the identical carcinoid tumors of the intestine which notoriously are yellow in color?

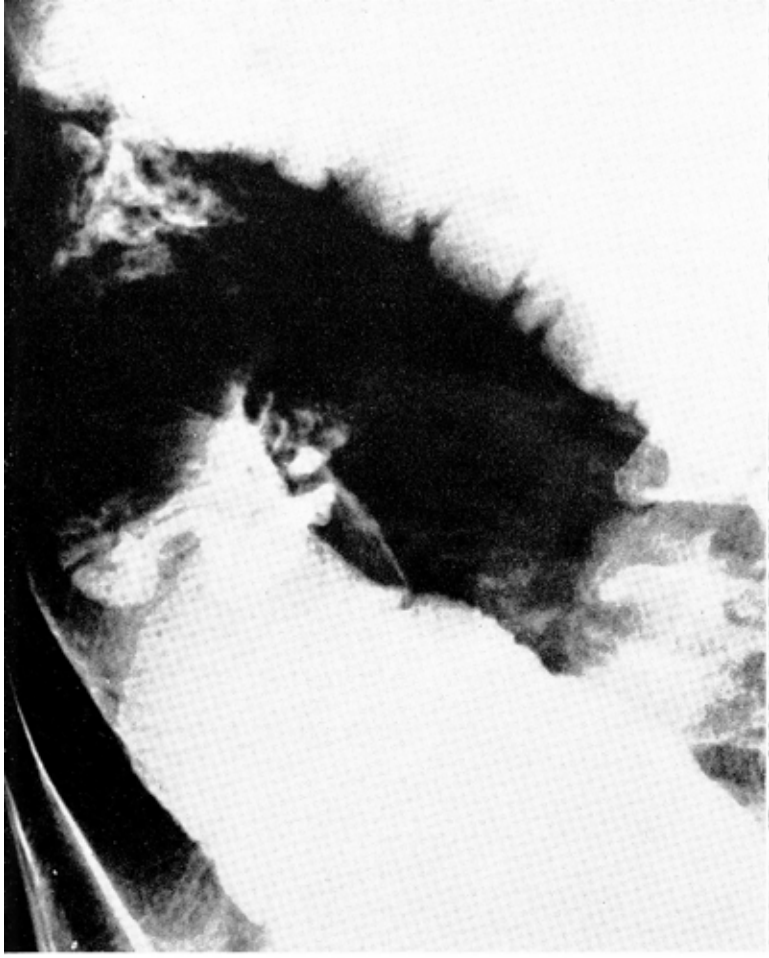


Fig. 1—Poor reproduction of roentgenogram with dilatation of the terminal ileum at point of apparent obstruction.

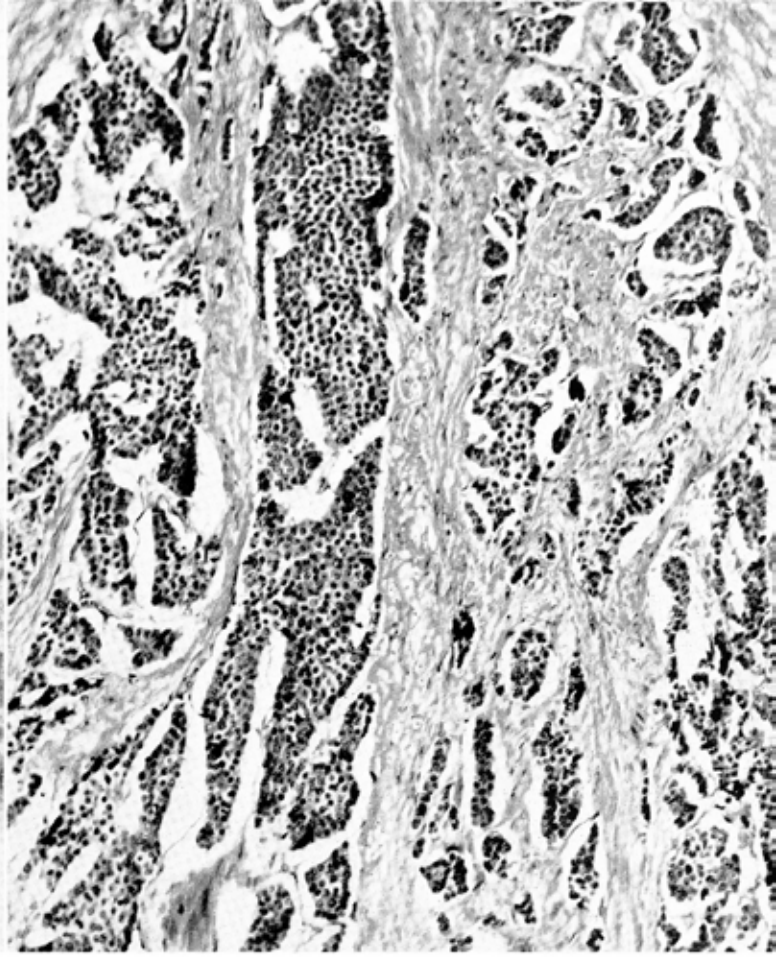


Fig. 2—Photomicrograph of carcinoid tumor. Although individual cells are uniform in size and appear relatively quiescent, there is considerable invasion of the muscularis.

Dr. Meissner: I have never seen them stained specifically for lipid content. However, many of the bronchial adenomas do have a yellow color that suggests the yellowness of the lymphoid tissue on cut sections. They are not as yellow, however, as the carcinoid tumors of the intestinal tract.

F. P. Bornstein, M. D., El Paso, Texas: There is another interesting thing to be said about the relation between the adenomas of the bronchus and the carcinoid in the small intestines. As Willis has observed, these tumors sometimes appear as part of teratomas of the ovary. I once went over the series that had been published and about four of these carcinoids I found were teratomas associated with respiratory mucosa and the other ones were associated with intestinal mucosa.

M. Wheelock, M. D., Chicago, Illinois: If we make a diagnosis of these tumors at the time that the surgeon is operating, we follow a commitment of stating that they are malignant and require reasonably wide excision with the possible exception of those found in the appendix. A study of cases was made at Hines Hospital; they had 25% of their rectal and colonic carcinoids metastasize. I think these tumors are definitely more malignant than one has been led to believe in the past. I recall that someone referred to this particular entity as a malignant carcinoid and Dr. Ackerman objected very strenuously to the term, stating that all carcinoids are malignant. At the Mayo Clinic they analyzed a large series of their cases and they refer to all of these lesions as adenocarcinomas. I think Dr. Dockerty objects strenuously to the use of the word carcinoid.

M. J. Smith, M.D., Santa Fe, New Mexico: We recently had a carcinoid of the ileum with nodes found in the abdomen following surgical removal of as much of the mass as was possible. The question of radiotherapy then came up and we didn't know how to answer it and in the literature available to us possibly over the last ten years; the concensus was against it. We can only find one case in the recent literature and that was in a surgical journal in which the patient had been treated with radiotherapy and one didn't quite know the dose and the result was quite equivocal. I wonder if Dr. Regato can enlighten us. Have you had any experience with radiotherapy with this condition?

Dr. Regato: A very intriguing question indeed Dr. Smith, but I have no experience with radiotherapy of carcinoids. The difficulty involved in radiotherapy of such tumors is that patients might live many years and die of something else, even though they have an abdominal dissemination of such a tumor—it is difficult to take credit for any radiotherapy that is given unless it is verified at autopsy that the patient died of something else. It is very difficult to establish with certainty whether radiotherapy can sterilize the tumor. I wouldn't be surprised that it does, but that is only conjectural.

H. B. Hunt, M. D., Omaha, Nebraska: When I was an intern I had a case of carcinoid treated quite intensively with radiotherapy and it did modify the course, but I certainly would be delighted to have the surgeon handle all carcinoids.

Dr. Swenson: I would like to comment that we recently saw a case of carcinoid of the ileum in the mother of one of our residents. She was first operated upon for relief of obstruction and carried on two or three months with recurrence. She then was given radiotherapy with as far as we could tell no curable results at all—it seemed to hasten her demise.

H. F. Elmendorf, Jr., M. D., San Antonio, Texas: I had an opportunity to train under Dr. Charles Martin of Dallas,

who is known as the low-intensity radium needle man. I had an opportunity to see two cases treated with low-intensity radium needles: he might as well have kept the needles in the safe.

O. A. Neely, M. D., Lincoln, Nebraska: I would like to take issue with the tendency to call these carcinoids *adenocarcinoma*. I always considered them neurogenic tumors arising from the plexus of Meissner and Auerbach and I believe their clinical behavior substantiates that viewpoint. I would like to have some of our pathologists either deny or support that contention.

Dr. Meissner: I think the most common concept regarding the origin of these tumors is that they arise from argentaffin cells which are perhaps related to the neurogenic system but not the same as the plexi of Auerbach and Meissner. However, I would object also to the use of adenocarcinoma for these tumors. Just as I don't think we should lump all skin cancer as squamous carcinoma. We have basal cell carcinomas of the skin which are quite different from the squamous cell carcinomas. I think in the intestinal tract we have an adenocarcinoma such as we have seen earlier here and we can have a carcinoid type. Perhaps we don't want to call them carcinoids, perhaps argentaffinoma would be better, but we must distinguish them from the other more common types of adenocarcinomas. That has been one big fallacy in our interpretation of bronchial adenomas. At first we called them all malignant and then we called them all benign and we are just beginning to realize now that they are all malignant but they are not malignant like bronchogenic carcinomas, they are malignant on a much lower order. I think these tumors conform to glandular arrangement and they may even form mucus. I can find no mucus in this particular tumor but Stout and others have shown that these may contain mucus which I think proves that they come from the intestinal side rather than from the plexus of Meissner or Auerbach. If you want to call them adenocarcinoma I think they should be called by some differentiating name so that they are not considered by the surgeon the same as the common adenocarcinoma of the bowel.

References

Horn, R. C. Jr.: Carcinoid Tumors of Colon and Rectum. Cancer, **2**:819-837, 1949.

Masson, P.: Carcinoids, Am. J. Path. **4**:181-212, 1928.

Pearson, C. M. and Fitzgerald, P. J.: Carcinoid Tumors—A Re-emphasis of Their Malignant Nature. Review of 140 cases. Cancer, **2**:1005-1026, 1949

12. *Lobular Hyperplasia of the Brunner's Glands*

Contributed by JAMES O. BOLEY, M. D., Kansas City, Kansas

THE PATIENT was a 55-year-old man in January 1950 when he gave a history of postprandial epigastric pain of ten years' duration; milk caused vomiting and for this reason an "ulcer" diet had been abandoned. In recent days there had been mild hematemesis and tarry stools. Physical examination and laboratory findings revealed only marked dehydration; there was no anemia. On fluoroscopy there was normal peristalsis and free fluid in the stomach but no apparent duodenal ulcer. There was "irritability" and obstruction of the second portion of the duodenum with 50 per cent gastric retention after four hours.

Dr. Swenson: The distal portion of the duodenum and proximal jejunum are involved by a diffuse, inflammatory process involving both the lumen and the mesentery. The history that "milk caused vomiting and made the pain worse" would suggest the possibility of an allergy with an associated inflammatory process.

A diffuse inflammatory or neoplastic process in the wall of the duodenum seem to be the most likely thing. Purely a guess, I shall say it is a primary carcinoma of the duodenum arising peri-ampullary.

Dr. Swenson's diagnostic impression: (1) CARCINOMA OF THE DUODENUM. (2) A diffuse inflammatory process.

Roentgenologic Impressions Submitted by Mail

Malignant tumor	43
Stenosing ulcer	17
Inflammatory lesion	12
Benign tumor	10
Ran out of guesses!	1
Others	23

Dr. Regato: Dr. P. J. Hodes, of Philadelphia, favored a stenosing ulcer as the cause of obstruction. Dr. Hymer L. Friedell, of Cleveland suggested a carcinoma.

Dr. Weber: I can only say that I perceive nothing in this lesion to indicate that it is a neoplastic one: this constriction has a conical character to it, comes to a very sharp point; I am sure something went through it, presumably the lumen was very narrow or very irritable. We are probably dealing with some sort of an inflammatory tumefaction, a non-neoplastic tumefaction, on the order of nonspecific tumefactive enteritis, some of those odd types of erythrocytic tumors or something of that nature. I am just guessing on the basis of experience with some of the rarer cases that come to my own personal attention.

Operative findings: In January 1950 an exploratory intervention revealed the presence of a dimple on the outside of the duodenum, corresponding to the point of attachment of a soft non-ulcerated and lobulated mass 5 x 3.5 x 2 cm. There were two small projecting nodules at the point of attachment of the main mass.

Dr. Meissner: This lesion is composed of a lobulated overgrowth of mucus-secreting glands. The gland overgrowth seemingly lies within the intestinal wall and its irregular lobulations push in a non-invasive fashion against adjacent stroma. Over one surface there is a superficial ulceration where the growth has pushed against mucous membrane and apparently has protruded into the intestinal

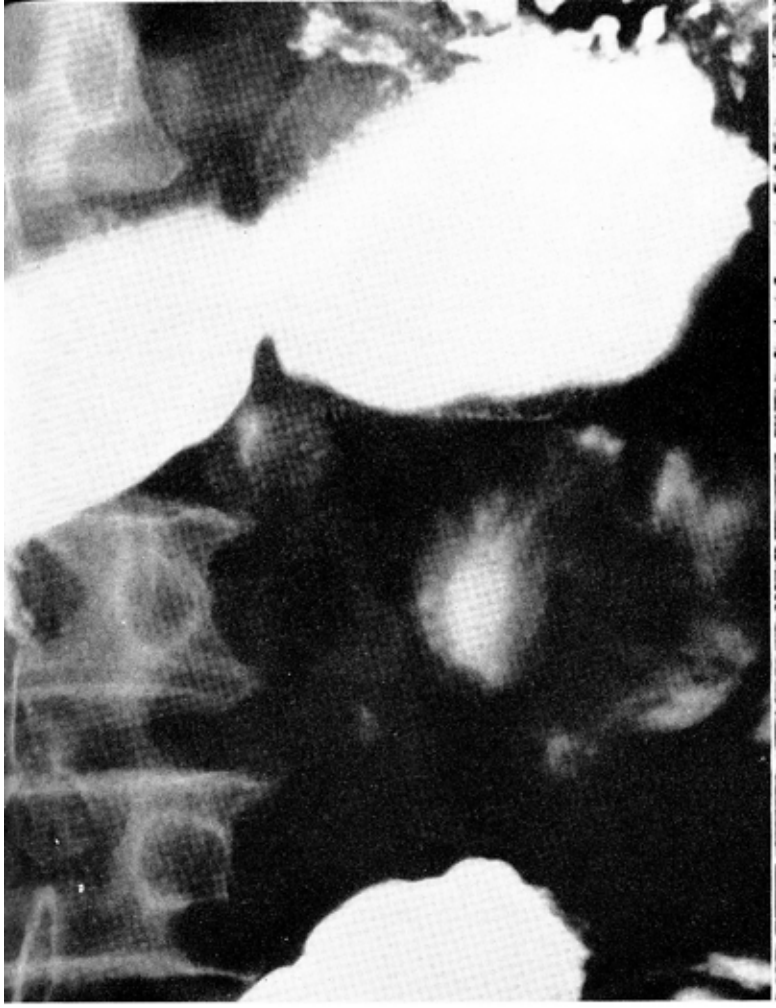


Fig. 1—Roentgenogram showing obstruction of second portion of duodenum.

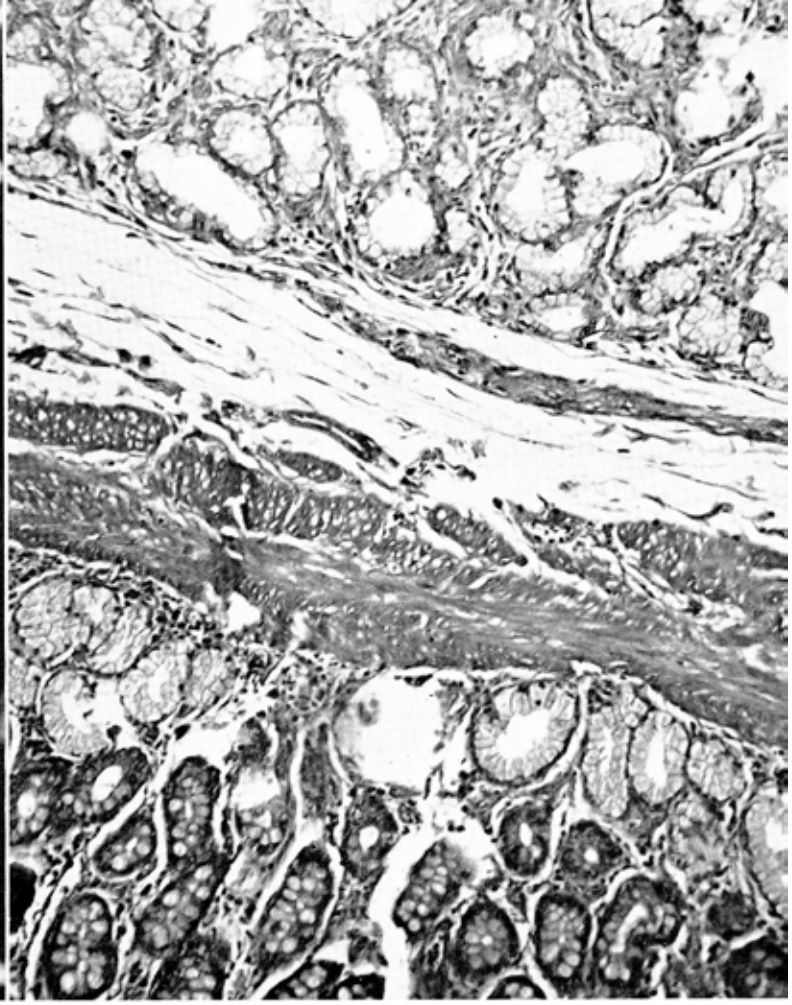


Fig. 2—Photomicrograph of lobular hyperplasia of Brunner's glands. Normal epithelium of duodenum with Brunner's glands is seen in one-half of the field, whereas the hyperplastic glands are seen in the opposite half. Note resemblance of the hyperplastic glands to the normal Brunner's glands.

lumen. The individual gland spaces are branching and coiled and are lined with cuboidal cells which frequently stain for mucus with the mucihematin stain. The individual gland cells are uniform in size, in shape and have regular nuclei without demonstrable mitoses. The glands are proliferating in the intestinal wall, and often show an intimate relationship with smooth muscle strands.

The glands of this lesion resemble those of duodenal glands or the glands of Brunner. These glands normally begin to appear just distal to the pylorus, where they are most numerous, and gradually disappear as the jejunum is approached, although at times they may be present in the first portion of the jejunum. They are lobulated, branching tubular glands which secrete mucus and which have as their main distinguishing feature the fact that the majority of the gland lies beneath the muscularis mucosae, a feature not present in any other intestinal gland. Other than mucus secretion, their exact function is not understood.

The glands of Brunner occasionally give rise to polypoid hyperplasias, or hypertrophies, which proliferate in a lobular fashion mimicking the normal lobulated growth pattern. The distinction between such hyperplasias and benign adenomas is a difficult one; probably most proliferative growths of Brunner's glands are hyperplasia rather than neoplasia. Carcinoma arising in Brunner's gland is a possibility; I have never seen one nor have I found one reported from other laboratories.

Dr. Meissner's diagnosis: LOBULAR HYPERPLASIA OF BRUNNER'S GLANDS.

Histopathologic Diagnoses Submitted by Mail

Adenocarcinoma	42
Adenocarcinoma of Brunner's	26
Adenoma of Brunner's	38
Heterotopia	24
Hamartoma	8
Others	27

Dr. Regato: Dr. Peter A. Herbut, of Philadelphia, submitted a diagnosis of adenoma. Dr. R. Willis, of Leeds, and Dr. E. Rojas, of Mexico City, suggested a diagnosis of adenomyosis. Dr. D. Brachetto-Brian of Buenos Aires, Dr. M. Neely of Lincoln, Nebraska, and Dr. L. Lowbeer of Tulsa, Oklahoma, made a diagnosis of adenocarcinoma. Dr. E. L. Benjamin, of Santa Barbara, submitted: HYPERPLASIA NODULARIS CIRCUMSCRIPTA GLANDULARUM DUODENI, a term first used by Feyter (1934) and quoted by Robertson.

A voice: I would like to ask Dr. Meissner a question regarding the incidence and location of these tumors. My impression is that most of the Brunner's gland adenomas are described in the bulb and upper portion of the duodenum. Isn't this rather low for this sort of tumor?

Dr. Meissner: I have never seen a lesion exactly like this. This is different from the usual heterotopic Brunner's gland or pancreas that we see in the distal end of the stomach and in the first portion of the duodenum. This is much more of a hyperplasia or overgrowth and I am not surprised for that reason that many would want to consider this as a true neoplasm. I think that this would be low for the usual type of heterotopic epithelium.

M. Wheelock, M. D., Chicago, Illinois: I had made a

diagnosis of adenocarcinoma of Brunner's glands: from the description and the photomicrographs which Dr. Meissner has presented he certainly makes several definite points against this lesion being malignant. I think that I see three different segments on that photomicrograph which were definitely encapsulated and which according to the basic diagnosis should at least designate an adenoma. I could see it on the neoplastic rather than the hyperplastic side but certainly I am wrong in calling it an adenocarcinoma. I just wondered if Dr. Meissner wouldn't consider adenoma a little more seriously in view of the fact that there are these three separate isolated nodules or capsules.

Dr. Meissner: I think one would have to conclude then that perhaps there were three different adenomas. Wouldn't it be just as easy to say that there are three foci of adenomatous hyperplasia? I certainly wouldn't want to quibble with the diagnosis of adenoma. As I said a few minutes ago I don't think we can often tell the difference between a benign neoplasm and a hyperplasia. We could tell it if we could follow it for long enough to see what it is going to do. In regard to this one point I consulted Willis' new book to see what he said about the diffeernce between hyperplasia and true neoplasia. He says that hyperplasia is an overgrowth in response to something, either a purposeful response or stimulated by some endocrine reaction. Now I don't know what sort of response is going on here that could stimulate this to hyperplasia so perhaps for that reason one must call it an adenoma. I could go along that far.

Subsequent history: The patient was last seen in good health in August 1953; he eats well and feels well, he has regained weight and strength.

References

Hudson, G. W. and Ingram, M. D. Jr.: Adenoma of Brunner's Glands. Am. J. Roentgenol. **67**:777-780, 1952.

Robertson, H. E.: The Pathology of Brunner's Glands. Arch. Path. **31**:112-130, 1941.

13. *Undifferentiated Carcinoma Involving the Ileum*

Contributed by JOE M. PARKER, M. D., Oklahoma City, Oklahoma

THE PATIENT was a 49-year-old man in August 1946 when he developed sudden, severe, spasmodic epigastric pains accompanied by vomiting; there had been a progressive weight loss of 20 pounds in the preceding six months. On physical examination an indefinite mass could be palpated in the right lower abdominal quadrant; occult blood was found in the stools and there was moderate anemia. The roentgenograms revealed considerable dilatation of the ileum and delayed emptying.

Dr. Swenson: This film shows some dilated jejunum with a filling defect at the end of the dilated segment which I think is most likely a jejunal carcinoma, but that seems too ordinary a diagnosis for such a group of cases as this. A teminal ileitis, or some queer mesenteric lesion might be two other good guesses.

Dr. Swenson's diagnostic impression: CARCINOMA OF THE JEJUNUM.

Roentgenologic Impressions Submitted by Mail

Malignant tumor of ileum	48
Benign tumor	8
Non-neoplastic lesion	25
Others	20

Dr. Regato: Dr. F. Gorishek, of Los Alamos, Dr. R. W. Ludwick of Denver, and Dr. Milo Harris, of Spokane, all suggested an obstructive malignant lesion of the small bowel.

Dr. Weber: I note an extrinsic constricting lesion. It appears to be a rather short lesion and if one would just take that again, that semicircular segment that is seen on the pictures here beyond the dilated portion of the intestine: I also think it is the jejunum from its pattern; it certainly looks like a malignant mucous membrane or internal relief pattern; but my hunch is that possibly dealing with something outside the intestine which has invaded the loop of intestine from the outside.

Operative findings: In June 1946 an exploratory laparotomy was done: a hard nodular mass 8 cm in diameter was found in midileum and a smaller mesenteric mass was adherent to the ascending colon. A resection of 34 cm. of ileum and of the ascending colon was carried out, although the colon was not found invaded.

Dr. Meissner: This is a tumor which is diffusely invading the intestinal wall. Much of the intestinal mucosa is ulcerated by the tumor, but to a large extent the tumor lies external to the mucosal layer. The individual tumor cells grow mostly in an undifferentiated structural pattern, only occasionally forming an irregular gland space. Individual tumor cells show much pleomorphism and irregular, often giant nuclei, are common; mitoses are numerous. The tumor cells at times lie in lymphatics.

This is an undifferentiated, highly malignant tumor. It is of epithelial origin as shown by the cohesiveness of the cells and by the occasional gland formed by the tumor cells. It is consistent with a primary tumor in this location. However, relatively few carcinomas of the large or small intestines are of such a high degree of malignancy histologically, and I would therefore suspect that this tumor may be an extension into the intestinal wall rather than originating at this site. The fact that the tumor lies predominantly in the wall rather than in the mucosa supports further this view. Such a highly malignant tumor is more in keeping with a primary cancer of the stomach, lung or testis, but it is impossible from this material alone to go further than the diagnosis of anaplastic carcinoma.

Dr. Meissner's diagnosis: ANAPLASTIC, UNDIFFERENTIATED CARCINOMA INVOLVING ILEUM.

Histopathologic Diagnoses Submitted by Mail

Adenocarcinoma	73
Carcinoma, unclassified	42
Metastatic squamous carcinoma	27
Carcinoid	12
Metastatic melanoma	5
Others	3

Dr. Regato: Dr. L. V. Ackerman, of Saint Louis, and Dr. A. P. Stout, of New York, favored the possibility of a primary carcinoma of the intestine. Dr. M. B. Dockerty, of Rochester, Minnesota, and Dr. F. Leidler, of Houston, were inclined to believe that this is a metastatic squamous cell carcinoma. Dr. P. A. Herbut, of Philadelphia, submitted a diagnosis of carcinoid carcinoma.

Subsequent history: The patient was last examined in 1952 when he had regained weight and was in excellent condition except for an incisional hernia. In June 1953 he wrote that he remained well.

References

Golden, R.: The Radiologic Examination of the Small Intestine. Philadelphia, 1944, J. B. Lippincott Co.

Pridgen, J. E., Mayo, C. W. and Dockerty, M. B.: Carcinoma of the Jejunum and Ileum Exclusive of Carcinoid Tumors. Surg. Gynec. & Obst. **90**:513-524, 1950.

Fig. 2—Surgical specimen showing mesenteric mass adjacent to cecum.

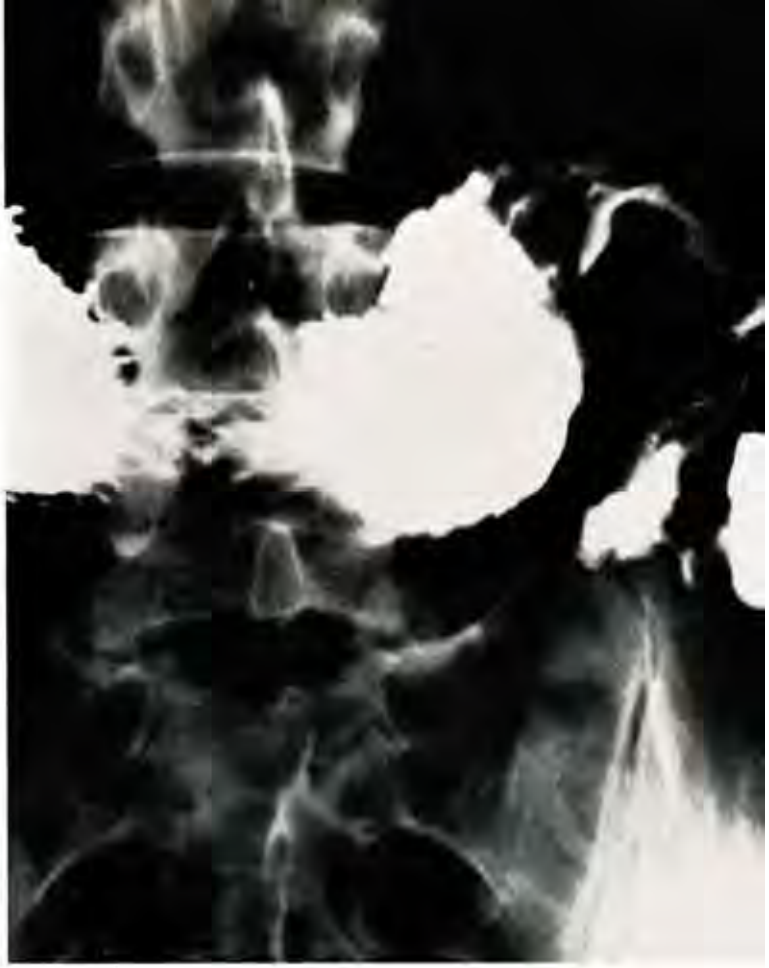
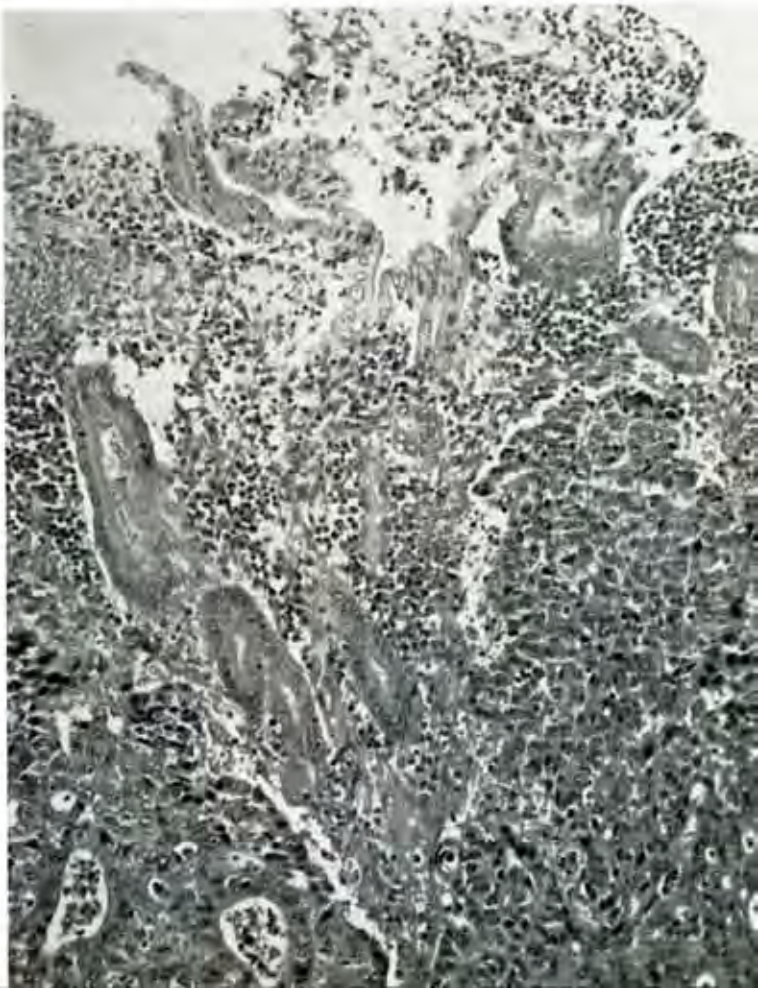


Fig. 1—Roentgenogram showing considerable dilatation of the ileum.

Fig. 3—Photomicrograph of anaplastic carcinoma. Tumor cells nearly completely replace the mucosa and are growing in an undifferentiated structural pattern, only occasionally forming an irregular gland space.



14. Low Grade Malignant Tumor of the Ileum

Contributed by MALCOLM B. DOCKERTY, M. D., Rochester, Minnesota

THE PATIENT was a 61-year-old man in September 1942 when he complained of abdominal pain and constipation; there was also pollakiuria, nycturia, urinary incontinence and a recent loss of 20 pounds in weight. On physical examination a right inguinal hernia and a right lower abdominal mass were found. Hemoglobin was 8.9 grams per cent. The roentgenograms showed an extracolic collection of opaque material.

Dr. Swenson: This I believe to be either a tremendous dilatation of the ileum between two "skip areas" of ileitis, as in the previous case, or there is a fistulous tract between the small bowel and bladder, and most of this barium is within the bladder or within the hernial sac. There might have been an ileitis of some standing with fistulous openings, or one which included a combination of jejunocolonic-vesical fistula. A tumor of the mesentery and gut wall might be the underlying process and it could be either carcinoma or sarcoma.

Dr. Swenson's impression: (1) TUMOR OF THE SMALL BOWEL, type undetermined.

Roentgenologic Impressions Submitted by Mail

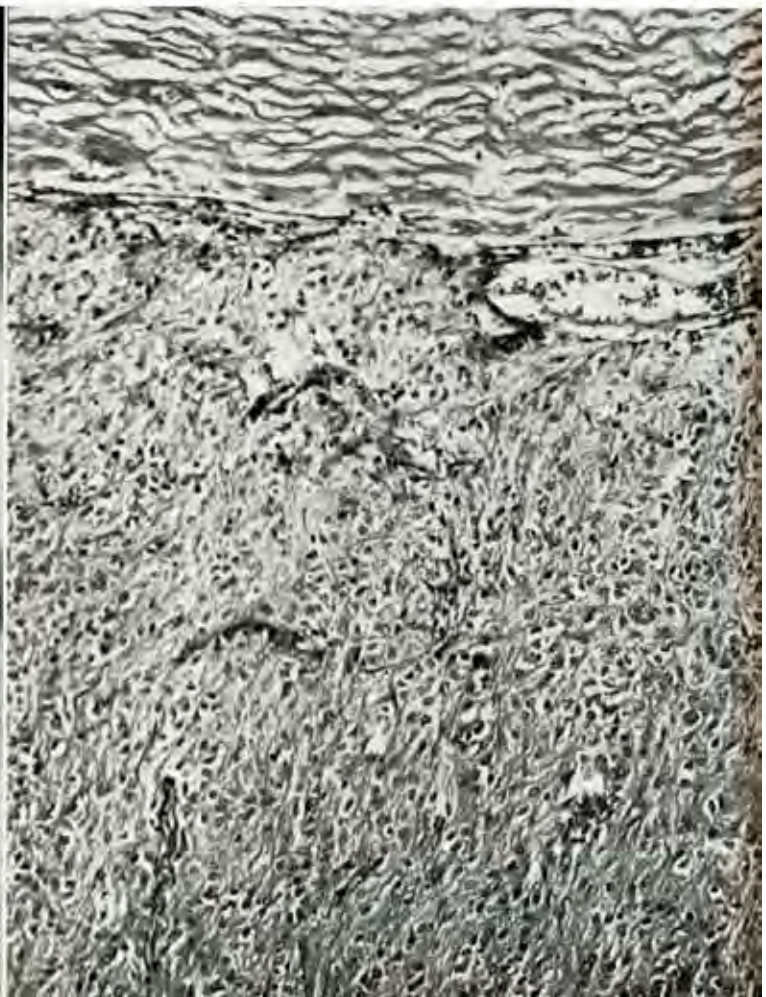
Ileovesical fistula	34
Non-neoplastic lesion	30
Malignant tumor	24
Perivesical abscess	15
Others	10

Dr. Regato: Most authorities recognized an abnormal pouch and theorized that it was due to an abscess or diverticulum but cautiously avoided a definite diagnosis.

Dr. Weber: I think it is fair to assume that the source of this opaque material was opaque material given by mouth, possibly for a previous examination of the stomach, and on that basis then I think your interpretation is entirely correct, that you are dealing with an intestinal abdominal cavity fistula and that the cavity is circumscribed. A perforation has taken place and most frequently that will occur from a

Fig. 1 — Roentgenogram showing extra-colic collection of opaque material.

Fig. 2—Photomicrograph of low-grade malignant tumor, unclassified.



primary lesion in the intestine: in my experience the most common type of lesion which will do this is not carcinoma but some other type of tumor which is active enough to cut such a hole in the intestine and allow such a thing to happen.

Operative findings: In September 1942 a surgical intervention revealed the presence of a 15 cm cyst-like mass attached to the mesentery of the pelvic colon and to the ileum. A resection was carried out. The tumor appeared to arise from the wall of the ileum and had a small fistulous opening into the bowel.

Dr. Meissner: This lesion is a uniform overgrowth of stellate-shaped cells which have uniform vesicular nuclei. There is no purposeful arrangement to the cells and there is no portion of intestinal wall that is present to allow for growth orientation. Intercellular substance is scanty. No mitoses are found nor is there any degree of cellular pleomorphism. Over one surface the lesion shows considerable ulceration, but this zone cannot be identified as mucosa. On the opposite surface there is a layer of fibrous tissue which is focally infiltrated by the cells of the overgrowth.

The individual cells are stained inadequately to allow a proper examination and I must claim this as my main excuse in being unable to arrive at an intelligent differential diagnosis. The lesion is, I believe, a tumor rather than a hyperplasia. The roentgenograms and the clinical course are consistent with this diagnosis. The cells are more than inflammatory cells and because of their low grade invasive nature must be considered as malignant. My best diagnosis is low grade malignant tumor, unclassified.

Dr. Meissner's diagnosis: LOW GRADE MALIGNANT TUMOR, unclassified.

Histopathologic Diagnoses Submitted by Mail

Reticulum-cell sarcoma	23
Leiomyosarcoma	14
Neuroblastoma	12
Vascular tumor	11
Leiomyoma	10
Malignant melanoma	10
Paraganglioma, ganglioneuroma	8
Liposarcoma	7
Rhabdomyosarcoma	6
Neurofibroma, neurilemoma	5
Sarcoma	6
Fibrosarcoma	4
Carcinoma, Hodgkin's, mesothelioma, etc.	35
I don't pretend to know	1

Dr. Regato: Dr. Isadore N. Dubin, of Washington, D. C., suggested the possibility of a hemangiopericytoma or of a glomus tumor. Dr. H. K. Giffen, of Omaha, suggested angioblastoma. Dr. Aegerter of Philadelphia, made a diagnosis of malignant mesenchymal tumor. Dr. Dorothy Russell, of London, questionably suggested ganglioneuroma. Dr. M. Neely, of Lincoln, Nebraska, made a diagnosis of Hodgkin's, and Dr. R. Willis, of Leeds, proposed anaplastic carcinoma. Most of the experts blamed the poor quality of the slide for their vacillations. Dr. M. B. Dockerty, whose case this was, made a diagnosis of leiomyosarcoma but added that his sections had shown more mitotic activity than the one now submitted.

W. L. Lehman, M. D., Portland, Oregon: Dr. Meissner alluded to the fact that this might be a leiomyosarcoma; does he use anything other than hematoxylin and eosin for detection of myofibrils, and does he feel that it is necessary to be certain of their presence in a tumor for the diagnosis of leiomyosarcoma?

Dr. Meissner: I don't think they are necessary if you have the other criteria. I think they would be necessary in a lesion such as this. The stain we have found is the best for myofibrils is the phosphotungsic acid hematoxylin. That brings them out very well although occasionally you may be able to see them quite well on routine stains especially the Masson stain. We don't think one needs to find myofibrils to make a diagnosis of smooth muscle tumor but if you find them it certainly helps.

Subsequent history: The patient has remained well for over ten years. He was reported well in April 1953.

M. Wheelock, M. D., Chicago, Illinois: I thought this was a ganglioneuroma; my impression that some of those cells which constituted a great portion of the neoplasm did have processes streaming out from them in an elongated fashion in three or four different forms radiating out from the cells. I notice that there were a few others also thought it was a ganglioneuroma. Inasmuch as the patient has survived for years, would this militate against a diagnosis of malignant tumor?

M. Pijoan, M. D., Espanola, New Mexico: I would like to know if the symptoms of frequency during the day and night disappeared after treatment.

Dr. Regato: The assumption is that the tumor had produced some irritation of the bladder causing the pollakiuria and nycturia. I am sorry that I have no information as to whether or not the treatment resulted in symptoms. I suppose so, because he couldn't live ten years with those two conditions.

F. B. McGlone, M. D., Denver, Colorado: I wonder if Dr. Swenson would comment on some of the early diagnostic methods that could be used in finding lesions in the small bowel. Most of the cases presented today have been obviously ready for the surgeon—they have been obstructive lesions. The good results from therapy that have been obtained in these cases have been due to the fact that the lesion was not dangerous, not because it was discovered early. I wonder if Dr. Swenson would comment on some methods for earlier detection of lesions of the small bowel.

Dr. Swenson: I have a sneaking feeling in the bottom of my left ventricle that many of the lesions seen today have been accidental discoveries in the routine gastrointestinal examination. A lot of these diagnoses were found and determined by "retrospectoscopic" inspection of the films. A careful radioscopic and radiographic study may require half a day of the patient's time—one can use a cold mixture of barium to expedite the flooding of the small bowel. The only way to visualize every inch of the small intestine is by taking films every half hour. A great number of these lesions are too small to produce a defect on obstruction; others may be extraluminal and consequently not demonstrable. In cases of obstruction, after the patient has been decompressed by tubing, it is sometimes interesting to inject a small amount of barium at the site of obstruction in an effort to outline the lesion. A small bowel enema is helpful at times in the visualization of the entire footage. In cases of intestinal bleeding, I believe that the radiologist is under moral compulsion to utilize any or all methods in an effort to find the cause.

F. B. McGlone, M. D., Denver, Colorado: I would like to ask Dr. Swenson if he thinks the five-hour follow-up radiogram is of any value. It has always been my impression that the yield is very small and that you ought to do an adequate small intestinal study instead of an incomplete study of this nature. Another procedure now no longer in vogue was that of having the patient take two ounces of barium at around 3 o'clock in the morning the day of his examination; I think that it did not contribute any more than possible interference with the proper examination.

Dr. Swenson: The so-called six-hour examination has been for the most part discarded by radiologists in the country. I don't believe it is of any use other than to show a possible obstruction, certainly not any small lesion. As far as the emptying time of the stomach is concerned, you can

usually get a pretty good idea if there is going to be any six or 24-hour retention by the way the stomach acts when you first look at it. Of course, I suppose there is some advantage in looking for lesions that would obviously be missed otherwise, like calcium shadows in the soft tissues, etc., but to study motility of the bowel, I think it is worthless.

L. M. Pascucci, M.D., Tulsa, Oklahoma: We should not forget the use of reflex filling of the terminal ileum. I think you can get a very good demonstration of a good part of the small bowel that way; sometimes I purposely keep on filling the small bowel following a barium enema. Of course, if a lesion is suspected a proper small bowel series should be done.

Dr. Swenson: I agree that the reflux filling of the small bowel is sometimes very valuable, but it should always be followed up by barium by mouth. One of the reasons I do not allow the patients referred for barium enema on a certain morning to have breakfast that day is because I think that the absence from breakfast enables one to fill the terminal ileum better. For some reason or other it is much easier to force barium into the ileum on the patient who has not had breakfast.

W. P. Stampfli, M.D., Denver, Colorado: We were puzzled by the word "pollakiuria" given as a symptom and after consultation with others concluded that it meant the same as "polyuria"; is that correct?

Dr. Meissner: The meaning of the words pollakiuria and nycturia puzzled us also; for a while we though that perhaps if we deciphered their meaning we could reach a definite diagnosis.

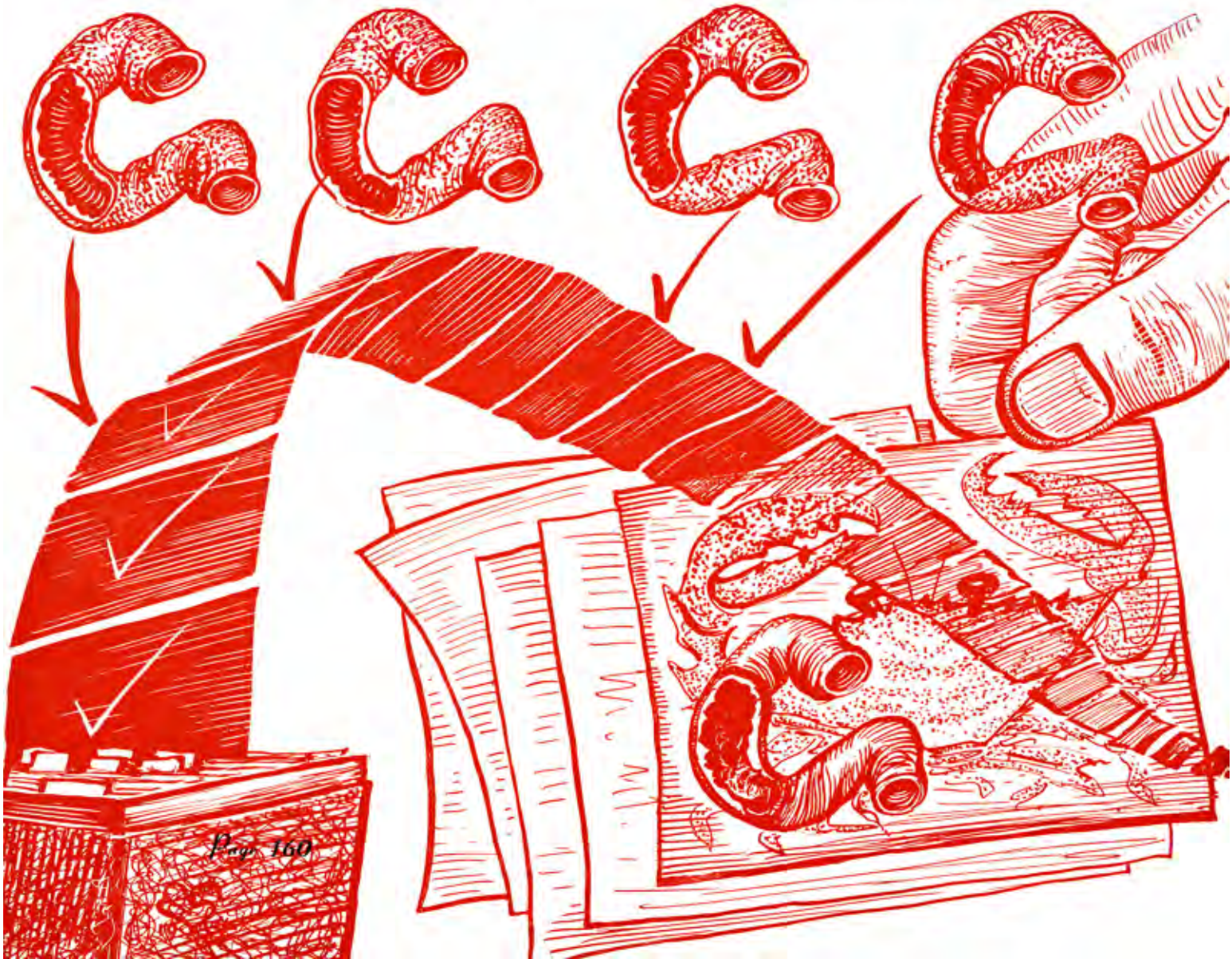
Dr. Regato: Semantics is indeed an important part in every man's life; we probably have violent dislikes, prejudices, disagreements and misunderstandings, in medicine as in international politics, because of the varied meanings attached to the same words. The meaning of *pollakiuria* (from the Greek pollakis—often) is frequent micturation, commonly referred to as "frequency"; the latter word is not a medical word and does not specify *what* is frequent. Polyuria means abundant urination not necessarily frequent. *Nycturia* is frequent micturation during the night; the character of being frequent is not implied in the word nocturia. I am well aware of the discomfort which is experienced when one finds that a word does not mean what we wish, or what we thought, it meant; our natural tendency is to have others accept our meanings. Usage also has authority over ethymology; the trouble with meaning established by usage is that it is seldom general, thus leading to further confusion.

References

Friedman, J. and Rigler, L. G.: A Method of Double-Contrast Roentgen Examination of the Small Intestine. Radiology **54**:365-379, 1950.

Hodges, F. J., Rundles, R. W. and Hanelin, J.: Roentgenologic Study of the Small Intestine. II. Dysfunction Associated With Neurologic Diseases. Radiology **49**:659-674, 1947.

Hodges, F. J., Rundles, R. W. and Hanelin, J.: Roentgenologic Study of the Small Intestine. I. Neoplastic and Inflammatory Diseases. Radiology **49**:587-602, 1947.



15. *Primary Lymphosarcoma of the Jejunum*

Contributed by HYMER L. FRIEDELL, M. D., Cleveland, Ohio

THE PATIENT was a 64-year-old man in January 1945 when he complained of anorexia, asthenia and occasional nausea and vomiting of six months' duration; there had been a 40 pound weight loss. A firm cylindical mass could be palpated in the lower abdomen. The roentgenograms showed a 10 cm segment of the distal jejunum which was devoid of folds and appeared to contain some polypoid irregularities on its walls.

Dr. Swenson: The involved segment in this case is wider than the normal lumen; this suggests lymphosarcoma or a similar infiltrating process. The mucosal pattern gives one a cobblestone pattern—an abnormal appearance which suggests infiltration within the wall, either inflammatory or neoplastic. In this case neoplasm seems the most likely, and if it be neoplasm, some variety of lymphoma is perhaps the best possibility. According to the roentgen criteria this should be lymphosarcoma.

Dr. Swenson's impression: (1) LYMPHOSARCOMA, JEJUNUM.

Roentgenologic Impressions Submitted by Mail

Adenocarcinoma of jejunum	61
Lymphosarcoma	29
Carcinoid	21
Non-neoplastic	15
Others	8

Fig. 1—Roentgenogram showing polypoid irregularities of the distal jejunum and flattening of folds.

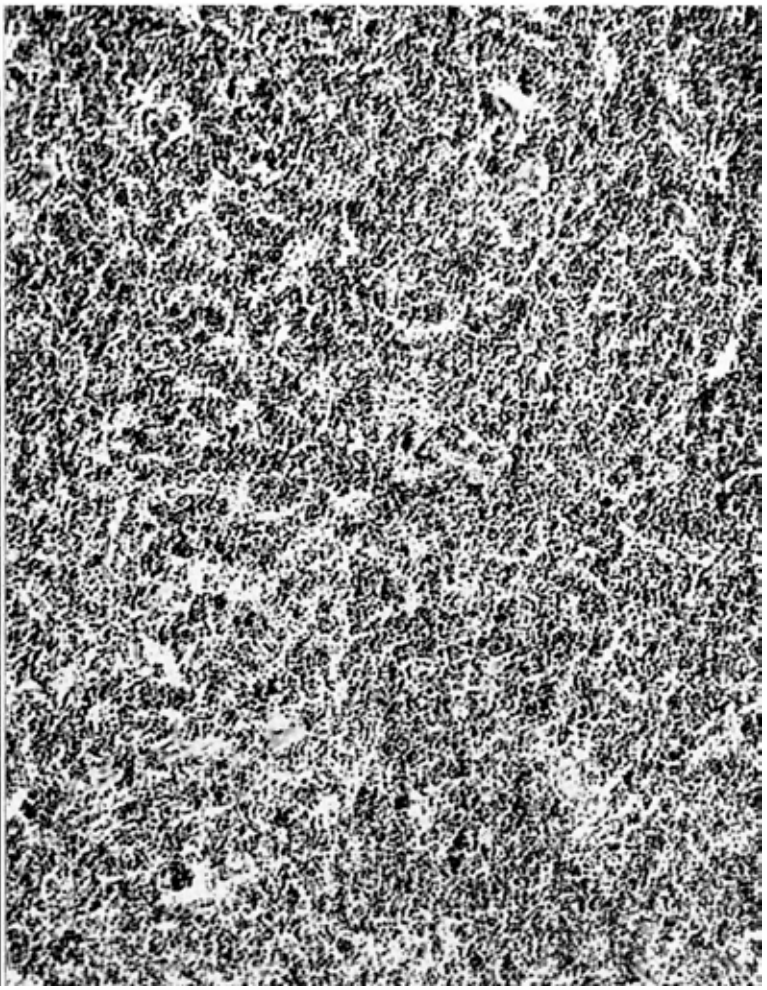
Dr. Regato: Dr. J. A. Campbell, of Indianapolis, and Dr. L. Henry Garland, of San Francisco, also suggested lymphosarcoma of the jejunum.

Dr. Weber: I felt reasonably sure that we are dealing with neoplasm, but it is not the standard picture in my estimation for adenocarcinoma or carcinoma of the upper intestine; it is an elongated lesion, but it does show a rather abrupt demarcation, and suddenly we go into a change in pattern. Like Dr. Swenson I interpreted the change in the pattern as something that was going on underneath the mucosa, there is no ulceration, growths or anything we can see that would reveal a destructive type of lesion. Analyzing what would produce that kind of a picture, I think that some type of lymphoblastoma in that segment constitutes a very good guess.

Operative findings: In February 1945 a resection of the distal jejunum was done.

Dr. Meissner: No normal structures of the intestinal wall can be identified. The tissue is composed of a few blood vessels and strands of collagenous stroma which are surrounded by sheets of uniform, small cells with little cytoplasm and with dark round nuclei. Except for being slightly larger, the cells appear identical to the average lymphocytes.

Fig. 2—Photomicrograph of malignant lymphocytoma. The tumor is composed of sheets of uniform small cells with little cytoplasm and with dark round nuclei. The cells appear identical to, but slightly larger than, lymphocytes.



They form no purposeful arrangement, although in some foci there is a tendency to a rounding up of clusters of the cells resembling an abortive attempt at formation of secondary lymphatic nodules. Silver stains show a minimal amount of reticulin interspersed fairly uniformly throughout the tumor. There are no zones of necrosis or fibrosis. There are no multinucleated cells.

The differential diagnosis here is largely a matter of nomenclature as to the type of lymphoid tumor. Other small-celled tumors such as neuroblastoma and Ewing's tumor need hardly be mentioned as a differential possibility. Tumors composed of adult or nearly mature lymphocytes are usually classified as small cell lymphosarcomas or as malignant lymphocytoma.

Focal tumors composed of lymphocytes may occur as primary lesions of the gastrointestinal tract or as a manifestation of a generalized lymphoma or leukemia. The diffuseness of the growth of the primary intestinal lymphomas, so evident microscopically, accounts for the smoothing of the rugal folds giving the mucosa the appearance of having been injected with paraffin. Mucosal ulcerations are frequent but superficial. The tumors, when primary in the intestinal tract seem to arise in the lymphatic tissue of the mucosa and submucosa and are more common in the ileum than in the jejunum. They are more frequent in males, and may occur at any age. The tumor need not be a lymphocytic type, any type of lymphoma may occur such as Hodgkin's disease, giant follicle lymphoma, reticulum cell sarcoma, etc. The most noteworthy point about these tumors is that there is practically no correlation between the pathological type or extent and the expected clinical course. Even with regional lymph node involvement, the five-year survival rate is surprisingly high, much higher than would be expected from comparably developed carcinoma.

Dr. Meissner's diagnosis: MALIGNANT LYMPHOCYTOMA of the jejunum.

Histopathologic Diagnoses Submitted by Mail

Lymphosarcoma	132
Leukemia	9
Myeloma	4
Hodgkin's	5
Others	6

Dr. Regato: Dr. A. P. Stout, of New York, and Dr. L. V. Ackerman, of Saint Louis, also made a diagnosis of lymphosarcoma. Dr. B. Bachetto-Brian, of Buenos Aires, suggested a diagnosis of soft tissue myeloma. Dr. Mark Wheelock, of Chicago, and Dr. R. Johnson, of Columbia, Missouri, suggested a diagnosis of leukemic infiltrate. Dr. M. B. Dockerty, of Rochester, Minnesota, commented that patients with malignant lymphomas of the small intestine seldom survive, suggesting that either they are secondary, or unlike lymphosarcoma of the stomach, they disseminate early.

Subsequent history: Following operation the patient received roentgentherapy and appeared improved. He expired in 1948, approximately three years after operation. No other details were given.

W. L. Lehman, M.D., Portland, Oregon: Ruling out leukemia or a secondary growth, is there an indication for postoperative radiotherapy in a case of primary lymphosarcoma of the small intestine?

Dr. Regato: Apparently lymphosarcomas of the small intestine may at times present the same relatively benign or curable course of other lymphosarcomas. Drs. Marcuse and Stout reported a series of 13 patients with lymphosarcoma of the small intestine of which three had lived, apparently well from five to fourteen years after surgical treatment. My feeling would be to apply postoperative roentgentherapy only in case that there is evidence of incomplete excision; the problem here being the extent of the area to be irradiated and the possible damage done if the irradiation were not needed.

References

Faulkner, J. W. and Dockerty, M. B.: Lymphosarcoma of the Small Intestine. Surg. Gynec. & Obst. **95**:76-84, 1952.

Marcuse, P. M. and Stout, A. P.: Primary Lymphosarcoma of the Small Intestine. Cancer **3**:459-474, 1950.

Marshall, S. and Meissner, W. A.: Sarcoma of Stomach. Ann. Surg. **131**:824-837, 1950.

Wheelock, M. C., Atkinson, A. J. and Pizzo, A.: Lymphosarcoma of Ileum. Gastroenterology **15**:158-161, 1950.

16. *Adenocarcinoma of the Jejunum*

Contributed by SHELLEY A. SWIFT, M. D., Salt Lake City, Utah

THE PATIENT was a 55-year-old man in April 1953 when he complained of asthenia and recurrent episodes of nausea and vomiting of one year's duration. An ulcer diet had had no effect on the symptoms; there had been "some" weight loss. On physical examination there was epigastric tenderness to palpation but no mass could be felt. There was occult blood in the stools and anemia. The 30-minute roentgenogram showed a 3 cm area of annular constriction in the proximal jejunum.

Dr. Swenson: Here there is a definite napkin-ring-like constriction in the jejunum which is not obstructing and in which we are fortunate to have a ring-like contour which makes a constant defect and thus becomes apparent without producing complete obstruction. The most likely possibility here is an annular carcinoma of the jejunum with a lot of fibrogenic elements within it; I'll interpret this as a carcinoma and be surprised if it turns out to be anything else. The indications are the same in any event—that of surgical exploration. The only other thing that I am immediately reminded of by looking at this is one case of a simple ulcer in the ileum which I once had the opportunity to see in Doctor Golden's laboratory, the cause for which was never determined.

Fig. 1—Roentgenogram showing annular constriction of the proximal jejunum.

Dr. Swenson's impression: (1) ADENOCARCINOMA OF THE JEJUNUM.

Roentgenologic Impressions Submitted by Mail

Adenocarcinoma of jejunum	85
Carcinoid	8
Others	12

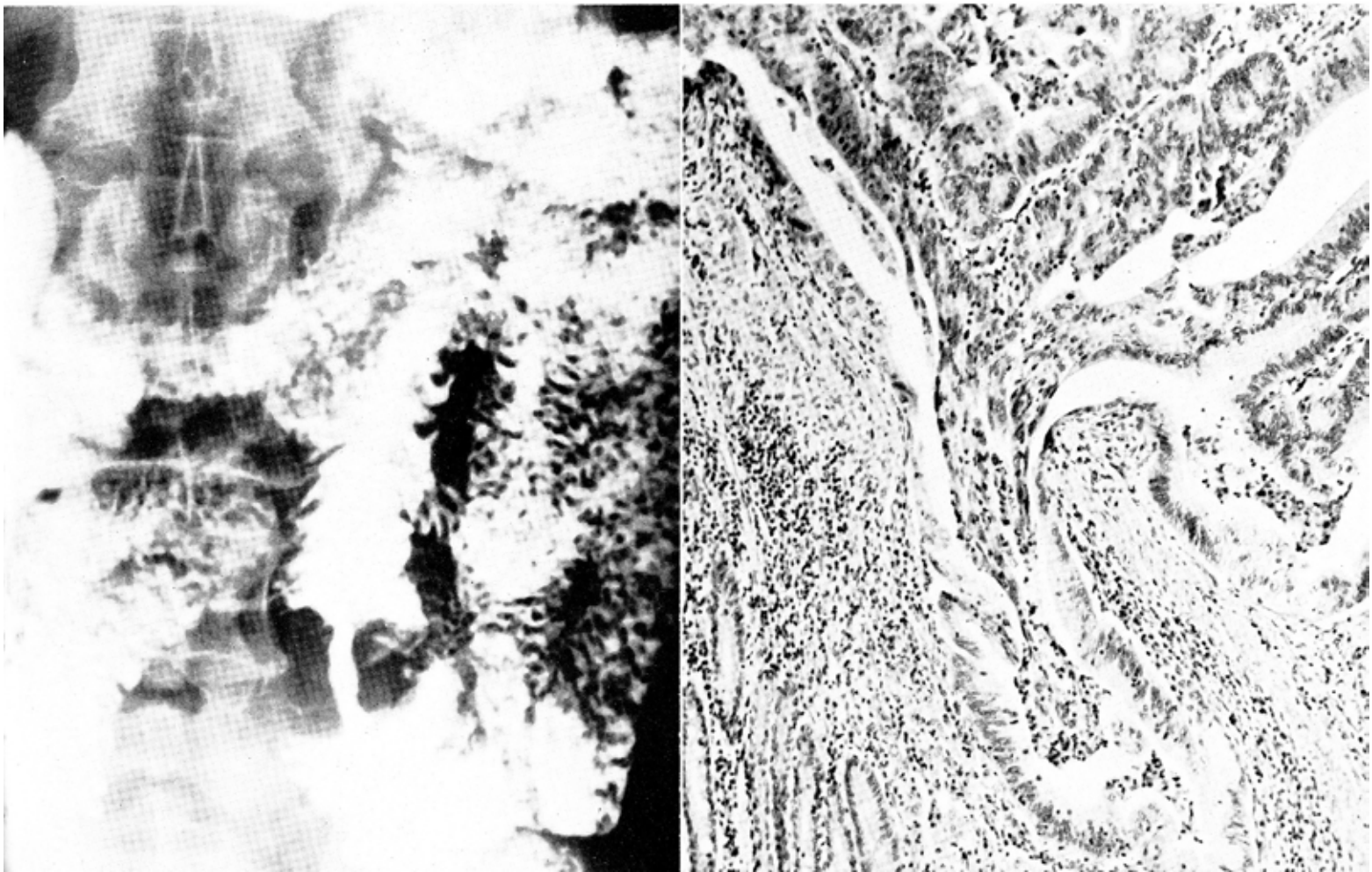
Dr. Regato: With few exceptions the experts made a radiologic diagnosis of primary adenocarcinoma of the jejunum.

Dr. Weber: This is the classical picture of a well-developed, frank adenocarcinoma—carcinoma I should say—of any tubular organ with a muscularis and a mucous membrane.

Operative findings: In May 1953 a resection of 9 cm of jejunum was done; this area contained an anular tumor; there were no enlarged nodes.

Dr. Meissner: This is a tumor involving a segment of small intestine. The tumor forms a gradual transition between itself and the normal adjacent mucosa, suggesting that the tumor is arising at this site rather than representing an extension or a metastasis from elsewhere. The tumor forms numerous glands which are irregular in size and shape.

Fig. 2—Photomicrograph of adenocarcinoma of jejunum. The well-differentiated glandular tumor is invading and replacing normal mucosa.



often coalescing. The individual gland cells are frequently mucus-secreting, mostly tall columnar. Mitoses are very common. The tumor extends not only through a considerable portion of the mucosa, but also through the entire muscularis out to the serosa. No blood vessel invasion is found, although the tumor is present in lymphatic vessels.

This is a typical or "average" adenocarcinoma of the small intestine. These tumors, while not apparently of a high degree of malignancy as far as undifferentiation is concerned, nevertheless have a poor prognosis. This can probably be explained chiefly because they are extensive and bulky at the time the diagnosis and definitive operation is performed. Tumors that have extended through the intestinal wall, as has this one, are in a late stage and cure is uncommon.

Mosley and Stone recently in a report of a case of carcinoma of the jejunum briefly reviewed the literature on such tumors and found that adenocarcinoma is about three times as common as sarcoma in the jejunum and that anemia may be as severe as it is in gastric cancers. The prognosis is poor, only about 12% five-year survivals because of the extensiveness of metastases at time of operation. The upper jejunum seems to be involved more than the lower jejunum, while in the ileum it is the distal portion that more frequently has cancer. Cancers of the small intestines are distinguished primarily for their rarity rather than for any unusual growth characteristic or growth potentialities. For practical purposes, they grow as the more familiar carcinomas of the colon. Metastases are, as would be expected, through lymphatics to regional lymph nodes and through the blood stream to the liver.

Dr. Meissner's diagnosis: ADENOCARCINOMA OF JEJUNUM.

Histopathologic Diagnoses Submitted by Mail

Adenocarcinoma	159
Real ducky!	1

Dr. Regato: Dr. M. Wheelock, of Chicago, and Dr. R. Lattes, of New York, made also a diagnosis of adenocarcinoma but pointed out evidence of its origin in a pre-existing benign lesion.

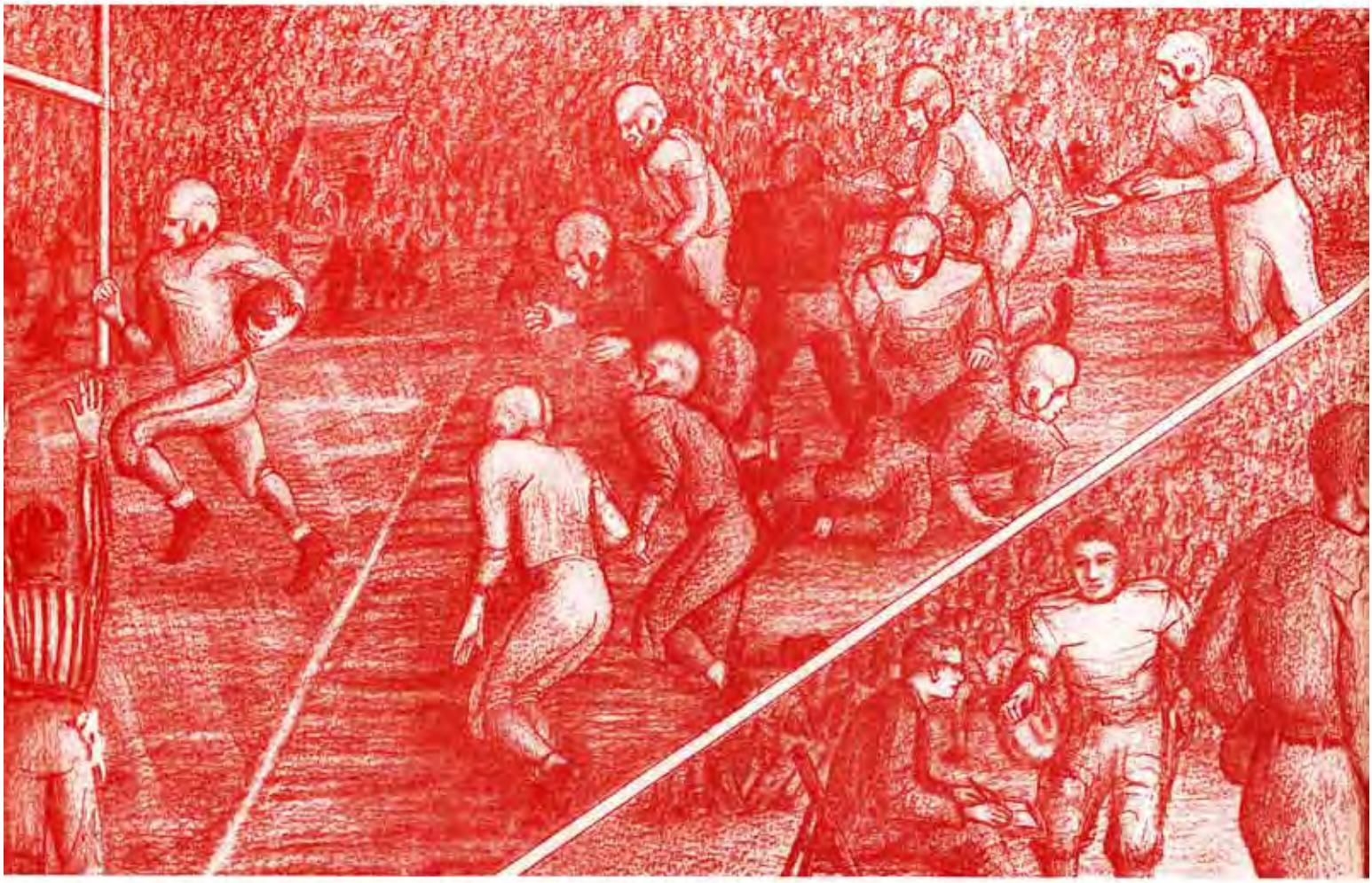
No audience participation in the discussion of this case.

Subsequent history: In July 1954 the patient was reported as remaining well.

References

Jenkinson, E. L., Pfisterer, W. H. and Seitz, E. R., M. D.: Primary Tumors of the Small Intestine. Radiology 55:12-19, 1950.

Mosley, A. L., Jr. and Stone, C. S., Jr.: Primary Carcinoma of the Jejunum; a Case Report. The Mason Clinic Bulletin, 7:59-63, 1953.



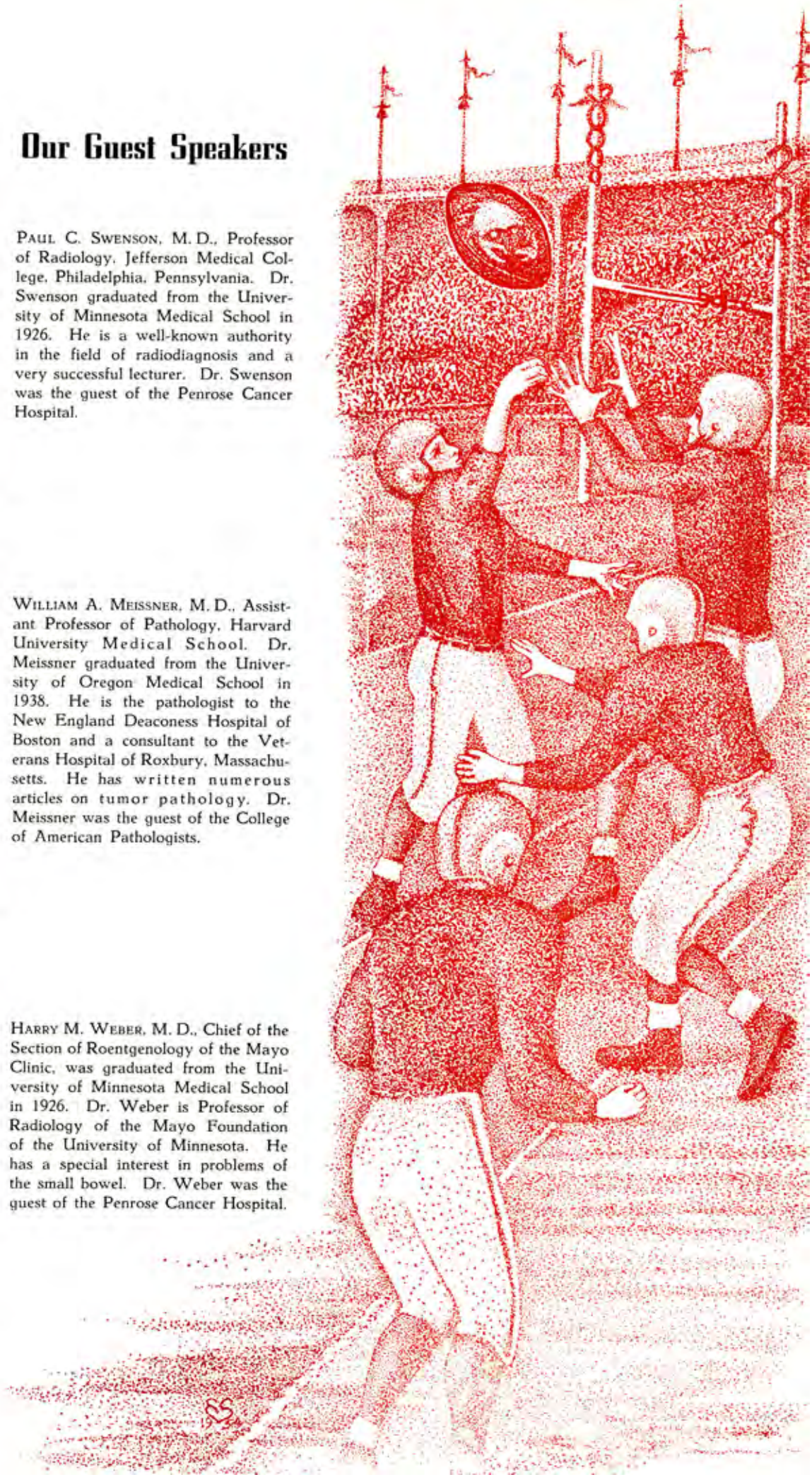
EDITOR'S NOTE: "In the frenzy of the applause for the lad who made the touchdown, the crowd often forgets the seasoned player who threw the neat forward pass."

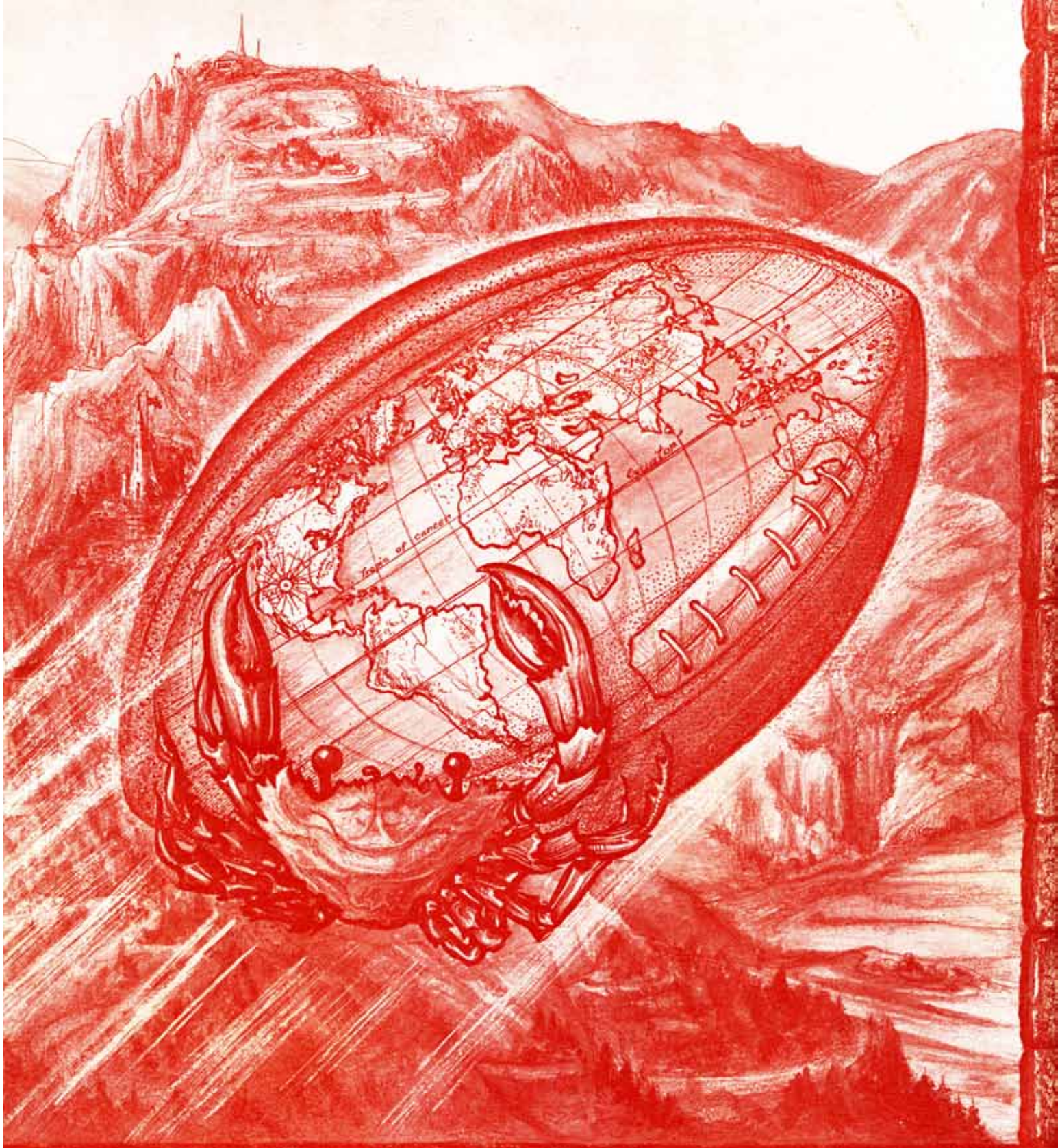
Our Guest Speakers

PAUL C. SWENSON, M. D., Professor of Radiology, Jefferson Medical College, Philadelphia, Pennsylvania. Dr. Swenson graduated from the University of Minnesota Medical School in 1926. He is a well-known authority in the field of radiodiagnosis and a very successful lecturer. Dr. Swenson was the guest of the Penrose Cancer Hospital.

WILLIAM A. MEISSNER, M. D., Assistant Professor of Pathology, Harvard University Medical School. Dr. Meissner graduated from the University of Oregon Medical School in 1938. He is the pathologist to the New England Deaconess Hospital of Boston and a consultant to the Veterans Hospital of Roxbury, Massachusetts. He has written numerous articles on tumor pathology. Dr. Meissner was the guest of the College of American Pathologists.

HARRY M. WEBER, M. D., Chief of the Section of Roentgenology of the Mayo Clinic, was graduated from the University of Minnesota Medical School in 1926. Dr. Weber is Professor of Radiology of the Mayo Foundation of the University of Minnesota. He has a special interest in problems of the small bowel. Dr. Weber was the guest of the Penrose Cancer Hospital.





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