BRITISH MEDICAL JOURNAL

LONDON SATURDAY MAY 20 1939

DISORDERS OF THE SMALL INTESTINE*

BY

SIR EDMUND SPRIGGS, K.C.V.O., M.D., F.R.C.P.

Ruthin Castle Clinic

(WITH SPECIAL PLATE)

The small intestine is the essential part of the alimentary tube. Health can be maintained or life can be endured without the stomach or the colon, and without the function of the gullet; but a good piece of the small bowel must remain. In structure it is primitive yet complex, made up nearly all of active cells, secreting, absorbing, or moving, with a rich blood and nerve supply and a minimum of binding fibres. It curls, twists, pales, and flushes as it mixes, digests, and chooses the foodstuffs and passes on what is left. It is responsive to the rest of the body through messages carried in nerves and blood, but can be as independent as any organ, keeping in life and on duty when almost all else has failed.

The vital importance of the small bowel, with its expanse of absorbing cells, is shown by the marasmus which follows if too much of it is removed, by the intense toxæmia set up by acute enteritis, cholera, or enteric fever, and by the disaster of obstruction. The effects of faulty absorption may be seen in coeliac disease and in infantilism from tuberculous strictures and some cases of chronic ileitis. It is not surprising that if it is interfered with in any other way persistent and distressing symptoms should arise. Except for such conditions, and general infections like tuberculosis, the small intestine has a remarkable immunity as compared with other parts of the alimentary tube. Regional ileitis and carcinoid tumours, both uncommon, seem to be the only diseases peculiar to it.

In this brief review it is not proposed to discuss any disease fully. A more detailed illustrated survey was published in 1937. A few words should be said about "flatulence," "wind," and "distension," for these are the commonest symptoms complained of in intestinal disorders, except perhaps constipation; and distension causes more distress in the small than in the large intestine.

[The lecturer then described the composition and pressure of intestinal gases (Boycott and Dannant, 1907-8; Lloyd-Jones and Liljedahl, 1934; Wangenstein, 1937), and the circulation in the gut (Spriggs, 1931); and continued:] For these reasons wind is a feature of any delay of bowel movement resulting in irregular spasms and inhibitions, as in disorders of the stomach or gut, including disturbance from unwise food or drink, and con-

stipation; and most of all of inhibition of the bowel after operations or with obstruction. Wind is also a feature of poor circulation in the bowel from heart disease, portal cirrhosis, arterial disease, as angina, and the arteriosclerosis of elderly people. If a patient complains of wind, and there is not an excess of gas in the stomach or bowel, the sensation is generally due to an attempt of the alimentary tube to move away some lesion or irritation, either in itself or, more rarely, reflex from another organ, such as the gall-bladder or kidney. In each case, whether eructation relieves for a time or not, the gas is not the cause. Further search for a diagnosis must therefore be made and treatment directed accordingly.

Most disorders of the small bowel, as met with in practice, apart from gastro-enteritis and obstruction, are either at the upper end from ulcer and its operative treatment, or at the lower end from the results of inflammation or operation in the appendical area. The rarer affections of the main part of the jejunum and ileum are, in order of frequency, diverticulosis, duodenal ileus, tuberculosis, regional ileitis, secondary growths, intussusception, primary growths, actinomycosis, and foreign bodies. I propose to consider the groups in that order.

Duodenal Ulcer

The commonest disease of the small intestine is duodenitis and duodenal ulcer. It occurs mainly in the male; thus in 360 cases admitted to the Ruthin Castle Clinic there were about nine men to one woman. This complaint is one of the forms of peptic ulcer; it belongs to the stomach as much as to the intestine, and will not now be described. It may perhaps be remarked that over thirty years ago I published what I believe was the first series of cases of peptic ulcer which were treated in this country, in St. George's Hospital, by feeding from the beginning (Spriggs, 1907a, 1907b, 1909, 1910). The graduated diet was modified from the more robust one used by Lenhart; and I have prescribed it, with the addition of the olive oil suggested by Walko (1902) and Cohnheim (1904) and other modifications, ever since (Anderson, 1929). Cases with haemorrhage were also fed successfully, with frequent small quantities, a teaspoonful or so at a time. W. Langdon-Brown (1908-9) published another series soon afterwards. The Danish physician, E. Meulengracht (1933), has confirmed this principle, especially in cases with haemorrhage, beginning with

* An abstract of a British Medical Association Lecture delivered at Sheffield on February 10, 1939.

rather fuller meals of soft food, and has set forth anew the arguments for feeding as against what he calls the inanition treatment.

Disorders of the Jejunum after Gastro-enterostomy

The surgical treatment of duodenal ulcers which have proved resistant to medical measures has restored health to a great number of people. It has also brought to the physician sufferers from disorders of the small intestine following upon gastro-enterostomy; though now that that operation is being done with more discrimination I am not seeing so many of such cases. In 166 consecutive patients admitted with a gastro-enterostomy, reviewed by R. P. Picton Davies, 151 sought relief from symptoms ascribed to the operation. Out of forty-nine others in whom that operation was advised by us for gastric or duodenal disease, four returned with symptoms, making a series of 155 cases seeking relief after gastro-enterostomy. That group of forty-nine gives 8 per cent. of failures. In Luff's analysis of 2,609 operations by eighty-six surgeons (Short, 1932) the failures were given as 5 per cent. But I find modern surgeons put it higher—from 10 per cent. upwards. Seventeen years ago Mr. Marxer and I published a review of fifty-one of these unfortunates, and later experience has confirmed most of what was then concluded (Spriggs and Marxer, 1922). A detailed diagnosis is called for by means of a careful history, conning of symptoms, observation, and experience. Delicate radiology is essential, and may be aided by the gastroscope.

[The various complications which may follow gastro-enterostomy were then described, with illustrations.]

On examination of the faeces after gastro-enterostomy there is often a moderate deficiency in the absorption of fat; in ten cases the loss was found by A. J. Leigh to be not above 15 per cent. (Spriggs and Marxer, 1922). Other foods, even in diarrhoea, are well absorbed as a rule. Wasting, when present, is due, therefore, to less food being taken on account of discomfort, and not, as the patient is apt to assume, to lack of its digestion. The not infrequent appearance of a little sugar in the urine is ascribed to over-rapid absorption, due to the food passing in bulk straight into the intestine. I still see an occasional patient with a gastro-enterostomy in whom diabetes has been wrongly suspected.

This series of 155 may be regarded as severe cases; most had suffered long and had tried many methods before admission. Medical treatment, founded on the condition present, relieved two-thirds of the patients. I have described in more detail measures which may be used (Spriggs and Marxer, 1922). The diet needs to be worked out for each person; it is often mainly solid, but sometimes liquid. Fat is usually not well borne. Constipation is not uncommon, and its correction is a simple measure which may give remarkable relief.

Further surgery is advised if thorough medical treatment fails and the patient is unable to live a normal life; and especially if there is evidence of resistant ulceration, bile regularly in the stomach, irritation from food lying between stoma and pylorus, or if the loops are twisted or adherent, with delay. In a few cases in which the duodenum was healthy the parts were restored to their natural state. A second operation was done in one-third of the cases—namely, forty-nine of the 155. Eleven patients had three operations, three of them four. One has had five, and has borne them well. Of eleven deaths occurring in the whole series within about two years of review five were after operations, two from perforation,

two from haemorrhage, one from carcinoma at the stoma, and one from anaemia, achlorhydric but not macrocytic, nine years after gastro-enterostomy.

Jejunal ulcers are reported to be rarer after partial gastrectomy than after gastro-enterostomy, whereas anaemia is commoner. From Luff's analysis (Short, 1932) of 2,130 gastrectomies it was concluded that ulcer developed in 0.6 per cent. Here again the estimate is higher in personal conversation with surgeons of experience. My own series is a small one—fifteen cases—and the impression given has been favourable. One case, however, perforated five months later, at a time when the patient was faced with serious business anxiety; he recovered after operation, and is under treatment.

So much is unknown about the first causes of peptic ulcers, and their relation to local inflammation, gastric chemistry, and to nerve and blood supply, that it cannot be supposed that we have approached finality about their prevention and treatment.

Intestinal Disorders arising from Mechanical Interference

There is a general similarity between disorders of the small intestine after gastro-enterostomy and those which arise from mechanical interference with the jejunum or ileum in other parts of the abdomen. These cases form a large if amorphous group, not mentioned in systematic works, but calling for more time and thought than many diseases that are fully described. The interference was often, though not always, towards the end of the ileum and due to post-operative adhesions, as after appendicectomy, ovariectomy, or an anastomosis. Other causes were appendicitis without operation, glands, tumours, volvuli, herniae, and peritonitis.

The intestine is tolerant of adhesions. It is tolerant also of interference with its lumen by gradual pressure. But if either nutrition or muscular contraction is hindered symptoms will arise which are troublesome, though often long unrecognized as arising from the small bowel. I have records of forty such cases, of which twenty-two had been operated upon. These puzzling patients complain of flatulence, pain, or discomfort, about the navel and to the right, or sometimes to the root of the mesentery on the left, gurgling, nausea, poor appetite, diarrhoea, or constipation. The discomfort may have a food relation. Thus in seven it was referred, after food, to the right iliac fossa. The signs are distension and tenderness in the area affected and poor nutrition. An incessant chronic discomfort in the abdomen is accompanied by nervous phenomena, and some of these folk are labelled neurasthenic, whereas they are the subjects of a mild chronic partial obstruction of the small gut.

DIAGNOSIS

The main matter is to exclude common disorders of other organs, such as the stomach, colon, and appendix. The last has often been removed. The physician has also to satisfy himself as to the value to be put upon the complaint of pain. If the complaint is consistent and persistent, and if after watching the patient I believe in the pain, cause for it sooner or later is almost always found. Especially difficult are cases in which there are intervals of freedom from symptoms. One introspective young man gave a history of acute discomfort and left-sided distension to which were added phobias about food and other matters, tending to confine the attention of the physician to the psychological or even psychotic field. No one but he himself had observed the distension. The symptoms and signs were said to come on later in the

day. A special examination was therefore made at the time of complaint, whereupon a loop of small bowel was demonstrated lying beneath a temporary volvulus of the sigmoid. Operation led to complete relief from the discomfort.

Radiology.—The recognition of the cause in many other cases has been made possible since the radiology of the small intestine has been developed. Not so long ago very little was seen of the bowel between the duodenum and the caecum. O. A. Marxer uses for the jejunum and ileum a dextrin suspension of barium. The patient is kept in a room adjacent to the x-ray room, and observations are made at frequent intervals—for example, from fifteen minutes to an hour, or oftener if special features are to be observed. Fig. 2 (see Plate) shows a normal jejunum and ileum.

TREATMENT

The treatment varies for each case. The lines to be followed become clear when it has been established that the symptoms are not due to colitis or nerves but arise from the jejunum or ileum. In about half the patients the interference with the small gut was moderate and non-progressive. In those cases relief was obtained by medical measures—poultices, massage, faradism, exercise, and a belt or binder when the intestine seemed to be suspended. A diet without fruit or greens is given at first with vitamins, and then those foods are cautiously added. Liquid food favours distension. Paraffin, belladonna, sulphocarbolate of soda, kaolin, and dilute hydrochloric acid, and on occasion pituitrin, are prominent among helpful medicines, with a regulated life, and moderation in alcohol and tobacco. Even in severer cases, with great dilatation of the gut, as above an anastomosis, such treatment may relieve far more than would at first be expected. Fig. 3 illustrates such a case, of which the history was as follows:

Case I.—A woman aged 56. At 40 she had appendicectomy for constipation and distension, and at 42 colectomy, which gave relief. Multiple arthritis in last two years. On admission complained of heartburn, "feeling poisoned," abdominal pain, worse after food, and distension, relieved by passing flatus; daily loose stools with paraffin and a suppository; rheumatic pains and stiffness; cough. Weight, 5 st. 13 lb. Diagnosis: gastric superacidity, great dilatation of terminal ileum above the anastomosis; rheumatoid arthritis. Treatment: three simple meals a day, with sieved greens but no fruit; olive oil before meals, paraffin, belladonna; gentle abdominal massage, poultice for pain, and a mixture containing 15 grains each of sulphocarbolate and citrate of soda. After six weeks no heartburn or "poisoned feeling," more energy, abdomen less distended, softer, and more comfortable. Pain rare, and relieved by a poultice and belladonna. To continue the regime at home.

In others operation is advised. Diet and other medicines are in vain if the proper movements of the ileum are prevented. I do not ask the surgeon to reopen the abdomen for post-operative adhesions unless there is evidence of such interference with function, preferably at an ascertained spot. In this series of forty, eight were operated upon with relief.

INCIDENCE OF AFFECTIONS OF THE SMALL INTESTINE

In the above two groups the disorder of the small intestine has been imposed upon it from without, mostly at the upper or the lower end, either by disease of neighbouring structures or by operation. I have dealt with those groups first because they are the most prominent disorders of the small intestine in the daily work of a gastro-enterologist. The main parts of the jejunum and

ileum, except for sharing in a general gastro-enteritis, are, as already mentioned, seldom the seat of an intrinsic disorder which affects health. At Ruthin Castle, excluding peptic ulcer and its complications, also the secondary mechanical deformities above discussed, and acute obstruction, out of 8,900 patients of all kinds affections of the duodenum, jejunum, and ileum were recorded in 265—about 3 per cent. The affections found were:

Diverticula, duodenum	..	..	..	176
" jejunum	..	..	..	20
" ileum	..	..	..	33
" Meckel's	..	..	..	5
				234
Duodenal ileus	..	..	..	11
Tuberculosis	..	..	..	9
Regional ileitis	..	..	..	4
Foreign bodies	..	..	..	3
Intussusception	..	..	..	3
Actinomycosis	..	..	..	1
				265

If duodenal pouches are excluded, affections of the jejunum and ileum were recorded in eighty-eight patients only, 1 per cent. of the whole.

Diverticulosis

Diverticula of the small intestine furnish much the largest group. These are fairly common in the duodenum, less so in the jejunum and ileum. The *duodenal pouches* varied from a tiny protrusion to a bag over four inches long. We have seen them grow in size in the course of years. Most of them do not give rise to symptoms, but some do (Spriggs, 1937). These symptoms are as follows. A feeling of fullness, discomfort, or pain, having a similar time relation to food as that of duodenal ulcer, but usually without food relief. The pouch may be tender. Severer and rarer symptoms are a more constant ache, nausea, and vomiting. I have seen also haematemesis and jaundice from pressure on the common duct. A pouch may penetrate and affect the pancreas. O. A. Marxer and myself (1920-1, 1925-6) have published detailed accounts with radiographs.

Treatment is often successful in allaying symptoms. It is "directed to the lubrication, cleanliness, and proper action of the bowel, and the health of the body generally." A plain diet is given, not excluding greens and fruit if well chewed or sieved, paraffin, a pure culture of *B. acidophilus* in sterile milk, kerol or sodium sulphocarbolate, carminatives as needed, and attention to the colon. Regular rests and walks, faradism, or gentle abdominal exercises, but not abdominal massage, are also prescribed as needed. A few severe cases have been treated by operation. The pouch is not obvious, lying behind the peritoneum. It should not be tucked in, but excised, or a short circuit made.

Jejunal pouches are much less common. We have seen twenty cases. They are usually large, like the duodenal ones, and are relatively more often the cause of disturbance. Thus in fifteen of the patients, some of whom also had a duodenal pouch, flatulence, abdominal discomfort, nausea, and eructation were complained of. Three had headaches and two diarrhoea. The chief sign is intermittent distension. I have had patients with a number of largish jejunal pouches whose symptoms made them miserable, but these were moderated by treatment similar to that outlined for duodenal diverticula. Haemorrhage occurred in two. Operation was advised in one, and the bleeding was found to have come from a duodenal pouch that was also present. A gastrojejunostomy, made below all the pouches, gave permanent relief (Spriggs and

Marxer, 1925-6). Occlusion with inflammation of a pouch causing obstruction has been described (Fraser, 1933-4). Fig. 1 of the Plate illustrates large and small jejunal pouches in the following case.

Case II.—A man aged 64. At 34 he had three appendical operations; at 42 repair of abdominal hernia. Has been dieted and treated for indigestion with various diagnoses. On admission complained of constipation, weakness, loss of weight, flatulence, eructations, and distension, worse when "stomach empty," wakes him in night. Diagnosis: arterio-sclerosis; jejunal diverticula, large and small; moderate anaemia and punctate basophilia. Treatment: lacto-vegetarian diet, small varied dose of paraffin three times a day before food. Blaud's pill, liver extract, gastric "self-lavage" with weak alkaline solution, faradism to abdomen. Progress: in five weeks much less flatulence, though still some; gained 18 lb.; the pouches were seen with x rays to empty better than on admission.

The punctate basophilia persisted at later visits, as did some anaemia. My colleague, Dr. J. H. Anderson, had therefore an analysis made of the drinking-water of the patient's house, in which lead was found.

Diverticula of the ileum, and indeed of the lower jejunum, approach in character those in the colon—that is, they are small, and in the course of their development an irritative prediverticular state can sometimes be recognized. These little pouches have been detected in the terminal part now in thirty-three patients. They have not been seen to retain their contents as in the colon, but evidence of inflammation about them—for example, adhesions—has been observed in a few. The symptoms are of a different order from those arising from the duodenum or jejunum. Over a third of the patients complained of wind, discomfort about the navel or in the iliac fossa, griping, and irregular loose motions; these symptoms were not otherwise explained. In four there was local pain and tenderness. In diagnosis other causes of irritation of the terminal ileum need to be distinguished, and among these are inflammation extending from the colon or appendix, caecal growth, tuberculosis, regional ileitis, and actinomycosis. These disturbances yielded to treatment by regular habits and paraffin. Some also received intestinal douches. Paraffin is valuable in any local irritation of the lining of the small intestine and probably of the appendix as well, when inflammation has not gone too far. In one case discomfort recurred on relaxation of treatment. The appendix, which we had thought innocent, was removed elsewhere, in vain. On re-examination the diverticula and irritation of the terminal ileum were still present, and on resuming the simple regimen the symptoms again ceased. In seven other cases the appendix had been removed before admission, in three recently and without relief. Indeed, although that organ can be demonstrated radiologically with a careful technique in 85 per cent. of people, as O. A. Marxer showed twenty years ago (Spriggs and Marxer, 1919), its excision, without a proper examination, is still often the first step taken in any obscure or chronic abdominal disorder.

Meckel's diverticulum occurs in about 2 per cent. of humans, and should have been there in 120 out of 6,000 x-ray examinations; or, as earlier examinations paid less attention to the small intestine, in twenty of the last thousand. It was detected five times in this series, and is probably not easily seen with x rays unless it is diseased. In two of these, excision led to relief of symptoms.

Tuberculosis

Ulceration secondary to phthisis was suspected several times and proved in a few patients. We used to think

that tuberculous ulceration was necessarily a final stage, as indeed it often is. I have seen in later years a clinical recovery from symptoms. In three patients the small intestine was involved in a tuberculous tumour—two of the ileo-caecal region and one of the transverse colon. In each there was a short history of acute intermittent pains becoming more continuous; and no phthisis. A movable mass could be felt in one of the ileo-caecal cases. The lesions were demonstrated by radiographs, and recovery followed resection.

Regional Ileitis or Crohn's Disease

This is a chronic local inflammation of the jejunum and ileum, generally the lower ileum; the affected part or parts become thick, oedematous, and rigid, and then narrow, ulcerated, or fistulous. The symptoms may simulate inflammation of the appendix, which has usually been removed without benefit, diverticulosis of the terminal ileum above described, and chronic enteritis or colitis. Wasting follows and infantilism is recorded, cured by resection (Logan and Brown, 1938). Sometimes a macrocytic anaemia develops if resection is not done (Brock, 1939). These cases call to mind the anaemia recorded after multiple tuberculous strictures. The lesions can be demonstrated by an x-ray examination specially directed to the small intestine.

The description of Crohn *et al.* (1932) has made clearer some obscure cases. I remembered at once two former patients, and two others have been admitted since. Chronic pain and distress were pronounced in all, with wasting and anaemia. In one a partial resection had been done of what was believed to be a tuberculous induration, but on section of tissue there was no evidence of that disease. The complaint apparently recovered for a time, but death took place with diarrhoea four years after operation. In another case I advised operation, but was not present. Three patches of "hyperplasia" were found in the middle of the ileum. They were assumed to be tuberculous and were not resected. A patch is not necessarily tuberculous because it has fine granules on the surface: these may not be tubercles. Under the microscope, also, giant cells alone are not evidence of tuberculosis unless there is the typical picture of a tubercle, or acid-fast bacilli are demonstrated.

Recovery may follow a short circuit or resection. I should like humbly to suggest that it may be of value to the patient for the physician to be present at any operation which he advises. The patient regards an operation as a defined procedure, and does not know that that consultation held when the parts are exposed may be the most important of all. In cases of doubt at operation the mucous membrane should be examined.

Duodenal Ileus

There were eleven cases of chronic duodenal ileus, sometimes a perplexing condition, especially because symptoms may be intermittent, coming on at periods of overtiredness or strain, just as do the symptoms associated with a more general visceroptosis. Distension and vomiting occur. A partial obstruction at the duodeno-jejunal junction can be detected with radiographs, in the erect position; if the duodenum is dilated, that is confirmatory evidence, but it may sometimes distend a good deal without obstruction at the flexure. In a typical case symptoms cease for the time in the knee-elbow position or by simply lying supine or prone. Tonic treatment, with rest, a holiday, and a belt, relieves some. A severe case may need a gastro-enterostomy. In one such the flexure

was kinked above an aberrant branch of the mesenteric artery (Spriggs and Marxer, 1937).

Intussusception and Actinomycosis

We have seen three cases of intussusception of the small intestine. In one the jejunum passed at intervals into the stomach through a gastro-enterostomy. This caused a burning scarified feeling which occurred on and off for four years. It was relieved by some foods, and always by a rest and holiday with general treatment. This patient has now been free of the sensation, and, at observations, of the intussusception, for six years. The second patient gave a four-years history of sudden nausea, vomiting, and pain, and on one occasion melaena. She had been treated for duodenal ulcer without benefit, and came to the clinic for investigation. Fortunately, an attack occurred in the x-ray room and the intussusception was seen. The infolding of the upper jejunum reduced spontaneously, and at operation was found to be due to a small adherent gland. Adhesions were separated, and there was no recurrence. In the third case, which is under observation, the terminal ileum passes into the caecum, with mild discomfort.

Actinomycosis involving the ileum occurred in a man of 28 who had had large amounts of fluid, containing the fungus, taken from the peritoneum before admission. Intensive treatment with iodide had given relief. The lesions of the intestine could be seen in the radiographs. With a quiet regimen and withdrawal of morphine the symptoms improved. A haemorrhagic cyst then developed about the pancreas after a trauma—namely, hitting the ground hard with a mashie, which caused acute pain. This was operated upon successfully. But after some months fresh pains developed, and a year later it was reported that death had followed repeated operations.

Growths and Foreign Bodies

Primary growths of the small bowel are rare, and are varied in nature. A short summary of those which have been observed is contained in a paper to which I have referred (Spriggs and Marxer, 1937). Secondary growths are usually at the later stage of a general dissemination. Pressure or extension from a neighbouring growth is not uncommon. Pain may be reflected towards the root of the mesentery and up to the left hypochondrium.

In one patient a gall-stone caused acute obstruction. In two others tapeworm and roundworm respectively were detected in the terminal ileum by O. A. Marxer with the aid of radiographs. The symptoms disappeared with appropriate treatment.

Summary

The acute diseases of the small intestine include gastro-enteritis, typhoid fever, and acute obstruction.

Most of the chronic disorders met with in practice are due to peptic ulcer and its treatment by anastomosis with the jejunum, or to mechanical interference with the lower ileum from inflammations or operations in that region. Patients in the second group have not infrequently been labelled colitics or neurasthenics. A detailed clinical and radiological study is needed to determine the nature and site of the lesion. If an exact diagnosis can be made much relief is given by medical means in most, and by surgery in others.

Chronic intrinsic diseases of the small intestine occurred in 3 per cent. of a series of 8,900 patients, and were, in order of frequency, diverticulosis, duodenal ileus, tuberculosis, regional ileitis, secondary growths, intussusception, primary growths, actinomycosis, and foreign bodies. If

duodenal pouches are excluded the frequency of an intrinsic disease of the jejunum and ileum was 1 per cent.

The symptoms and treatment of each group are briefly reviewed.

REFERENCES

- Anderson, J. H. (1929). *Lancet*, 1, 1347.
 Boycott, A. E., and Dannant, G. C. C. (1907-8). *J. Physiol.*, 36, 283.
 Brock, J. F. (1939). *Lancet*, 1, 72.
 Cohnheim, P. (1904). *Z. klin. Med.*, 52, 110.
 Crohn, B. B., Ginsburg, L., and Oppenheimer, G. D. (1932). *J. Amer. med. Ass.*, 99, 1323.
 Fraser, I. (1933-4). *Brit. J. Surg.*, 21, 183.
 Langdon-Brown, W. (1908-9). *Clin. J.*, 33, 109.
 Lloyd-Jones, O., and Liljedahl, E. M. (1934). *Med. Rec.*, 139, 320.
 Logan, A. H., and Brown, P. W. (1938). *Proc. Mayo Clin.*, 13, 335.
 Meulengracht, E. (1933). *Ugeskr. Laeg.*, 95, 1257. (Reported in *Lancet*, 1935, 2, 1220.)
 Short, A. Rendle (1932). *Index of Prognosis*, Bristol.
 Spriggs, E. I. (1907a). *Med. Chir. Trans.*, 90, 283.
 — (1907b). *Clin. J.*, 30, 222.
 — (1909). *British Medical Journal*, 1, 825.
 — (1910). *Ibid.*, 1, 1216.
 — (1931). *Quart. J. Med.*, 24, 540.
 — (1937). *Proc. roy. Soc. Med.*, 30, 1213.
 — and Marxer, O. A. (1919). *Lancet*, 1, 91.
 — (1920-1). *Brit. J. Surg.*, 8, 18.
 — (1922). *Lancet*, 1, 725.
 — (1925-6). *Quart. J. Med.*, 19, 1.
 — (1937). *Lpool. med.-chir. J.*, 45, 159.
 Walko, K. (1902). *Cbl. inn. Med.*, 23, 1113.
 Wangenstein, O. H. (1937). *Bowel Obstructions*, London.

INDUSTRIAL INCAPACITY AND MODERN MEDICINE*

BY

DONALD STEWART, M.D., M.R.C.P.Ed.

Medical Officer, Metal Group, Imperial Chemical Industries Limited

The greater part of incapacitating sickness in this country is probably due to factors over which industry has little or no control. We have to remember that the workman spends only one-third of his life at work, and that during the remainder of his time powerful influences having no direct connexion with industry can affect his health. We know, of course, that injury and occupational disease can result in absence from and incapacity for work, and that other industrial factors, such as long hours, poor lighting, noise, and fumes, may in themselves be a direct cause of sickness, but it is impossible with our present knowledge to estimate what proportion of the total sickness of any section of the population is due wholly or partly to such conditions.

Incidence of Sickness

There is great difficulty in obtaining any accurate figures of incapacitating sickness in our various towns and districts, and a similar difficulty in obtaining sickness rates in different firms and factories. In the majority of cases they simply do not exist. Speaking generally, however, there is an average absence from work among the insured population of Great Britain of ten days for men and twelve days for women annually, estimated to be equivalent to an entire year's work of some 600,000 persons. These figures do not cover those absences of three days or less for which sickness benefit is not paid, and they include not only industrial workers but commercial, domestic, and other employees.

In the recent report of the Department of Health for Scotland (1939) more accurate figures are available. The

* The second of two Milroy Lectures, delivered at the Royal College of Physicians, February 23 and 28, 1939. The first lecture was published in last week's issue, at page 963.

SIR EDMUND SPRIGGS: DISORDERS OF THE SMALL INTESTINE

FIG. 1.—Case II. Man aged 64. The jejunum is studded with large diverticula. A distal loop shows a group of small ones (see arrows); minute ones are present still lower.

SIR EDMUND SPRIGGS: DISORDERS OF THE SMALL INTESTINE

FIG. 2.—A woman aged 57. A strial picture of jejunum and ileum, the latter showing slight hypertonus in the lower loops.

FIG. 3.—Case I. A woman aged 56. Radiograph taken in the prone position seven and a half hours after a barium meal. Great dilatation of the terminal ileum above a lateral anastomosis (arrow) to the descending colon.

PHILIP ELLMAN: HEALING BY NATURAL RESOLUTION IN PULMONARY TUBERCULOSIS WITH OR WITHOUT CAVITATION

FIG. 1.—Case I. Showing a small cavity in the right infra-clavicular region and scattered exudative infiltration in the middle and lower zones of the left lung.

FIG. 2.—Case I. Showing complete healing by natural resolution after bed rest under sanatorium conditions for eight months.