as an out-patient, would appear to be in the stage of resolution ; and Case IV, also seen as an out-patient, may be going to resolve or might progress to the fibrotic type of lesion seen in Case II.

It would appear that exposure to bagasse dust is capable of initiating a pathological process in the lungs, the complete resolution of which is possible with a return to normal (Jamison and Hopkins, 1941) as in Cases I and III, or which may progress to a lesion the nature of which is probably fibrotic—Cases II and IV. In this connexion it is noteworthy that Cases I and III had least and Cases II and IV most exposure to the dust in point of time.

Although bagasse contains silica in an amount capable of producing silicosis, the acute pneumonic phase of the illness which these workers experience is unlike any known form of silicosis previously described. Further, the men who at the final stage of the process are also exposed to a silica-containing dust are never ill. A pathogenic organism has not been isolated from the sputum in the acute stage of the disease, and an examination of 15 consecutive 24-hour specimens of sputum from Case II failed to isolate any yeast or fungus. It seemed possible that an allergic factor might be responsible for the disease, the workers becoming sensitized to a protein present in the dust of bagasse. Extracts for skin tests were therefore made as follows:

Twenty grammes of coarsely crushed bagasse was placed in 200 ml. of menstruum with 0.25% tricresol added, and allowed to stand five days with occasional shaking. Four extracts were made in: (1) N/10 NaOH; (2) N/10 HCl; (3) normal saline; (4) 30% alcohol in distilled water. After five days all were passed through a Seitz filter. Extracts 1 and 2 were neutralized with equal quantities of N/10 H₂SO₄ and N/10 NaOH respectively. In both a flocculent precipitate formed. This was used as a suspension. The others (3 and 4) were used as clear yellow fluids as they came through the filter. For each antigen a control was made of menstruum with 0.25% tricresol. The antigens so prepared were tested on Case II by the scratch technique, when all gave negative results. They were then retested by intradermal injection of 0.2 ml. Extracts 1, 2, and 4 all gave a wheal maximal in half an hour and thereafter subsiding, and a flare maximal in 36 hours measuring 35, 30, and 40 mm. respectively. The normal saline extract No. 3 gave no wheal, but a flare developed which reached a maximum of 40 mm. in 36 hours. It was also painless, whereas Nos. 1 and 4 were painful. Four laboratory workers, all of whom had handled bagasse and crushed it with the liberation of a quantity of fine light dust, were then tested with the saline extract by intradermal injection, and all gave negative results. Nine volunteers from the nursing staff who had never been in contact with bagasse were also tested, with negative results. Six employees at the factory were also tested. Four of these gave negative results; they had worked at various places in the factory but not at the bale-breaking machine, and two were as strongly positive as Case II, and were Cases III and IV. Of 20 individuals tested, therefore, the only three who gave positive reactions were Cases II, III, and IV. A similar saline extract was then made of light dust which had settled on ledges in that part of the factory where the board is sawn. This, as stated above, contains no protein, which is removed in process of manufacture. Tests with this extract made on Cases II, III, and IV all gave negative results.

It seems certain, therefore, that whole bagasse contains an antigen soluble in normal saline to which workers who inhale the dust can become sensitized. The acute phase of bagassosis is possibly an allergic response in the lungs to this antigen with, but more probably without, an infective element. The nature of the chronic pathological process is obscure. It might be due to: (1) a form of silicosis which supervenes upon the allergic phase during or after the latter's resolution; (2) a response on the part of the lungs to crystalline cellulose; (3) a chronic process of fibrotic nature occurring in tissues oedematous from their allergic response to the antigen. The conception of chronic allergy is foreign to pathological thought at the present time, but fibrosis is known to occur in lymphatic tissue oedematous for some time from any cause, and this explanation of the lung changes in these cases might be subsequently found to have a parallel in some of the more

common diseases of chronic nature whose aetiology is at present obscure, such as rheumatoid arthritis.

Opportunities for the study of the morbid anatomy of the condition have not yet occurred, and attempts to reproduce the disease in experimental animals have so far failed.

Summary

An industrial lung disease is described and a theory of its causation which may link it with more common chronic diseases is advanced. It is suggested that the disease should be called bagassosis and not bagasscosis, as it has formerly been named.

Our thanks are due to Dr. J. N. Deacon, superintendent of the hospital, for permission to publish this paper, to the members of the pathological and nursing staffs who acted as normal controls, and to the management of the factory for details of their manufacturing process and facilities freely granted for visiting the factory and performing tests upon some of their employees.

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INTRAMURAL INTESTINAL HAEMORRHAGE

BY

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The following is an account of an unusual case occurring in a woman who was operated on because of signs of an acute abdomen. The peritoneal cavity was found to be full of blood, the source of the haemorrhage being traced to a haematoma of the wall of the caecum which had ruptured.

Case Report

The patient, a married woman aged 51, was admitted to Newton Abbot Hospital on Feb. 1, 1941. There had been no former illness of note. On Jan. 30 she had had sudden acute pain over the lower abdomen, had vomited, and had had a little diarrhoea. The temperature and pulse were slightly raised, and there was some abdominal tenderness but no rigidity. On Jan. 31 the condition was unaltered except that no further vomiting had occurred and the diarrhoea had stopped. On Feb. 1 the pain increased, settling in the right iliac fossa, and the right lower abdominal quadrant showed both tenderness and rigidity. The temperature was 99° F. and the pulse rate 90. In the afternoon the temperature rose to 100° F. and the pulse rate to 120. Acute appendicitis was diagnosed (pelvic variety), and it was decided to do a laparotomy, a right paramedian incision being made on account of the patient's sex and the unusual features of the case.

Findings at Operation.—The peritoneal cavity was full of blood, as in a case of ruptured tubal pregnancy. On exploration, however, this cause was excluded, but in the right iliac fossa a lump was found which seemed to be attached to the caecum. As the latter was mobile it was possible to deliver it, along with the tumour, through the abdominal wound. It was then seen that the appendix was thickened and inflamed and that there was a considerable deposit of fat in and around the meso-appendix. A groove separated its base from the tumour, which was a plum-coloured swelling, measuring 2 by 1½ in., situated on the lateral wall of the caecum (see illustration). Its appearance was that of a subserous haematoma, and the site of escape of the blood into the peritoneal cavity was indicated by a ragged tear in the serous coat, 1½ by 1 in. in size. On section the interior of the mass was found to consist of blood clot, and careful examination revealed no perforation into the lumen of the bowel. Around the tumour and beyond its confines the caecal wall was normal.

Operative Treatment.—There was enough space between the ileo-caecal valve and the base of the appendix to allow of resection of that part of the caecal wall which contained the haematoma and the base of the appendix. This was done, and the caecal wall was repaired with layers of sutures, the abdomen being closed without drainage. Except for a slight rise of temperature for 3 days, convalescence was uneventful and the patient made a good recovery, leaving hospital on Feb. 19.

Morbid Anatomy and Histology.—As already mentioned, the naked-eye appearances of the tumour were those of a subserous haematoma. On opening the caecum several small worms were noted lying free in the lumen; these were afterwards identified as whip-worms (*Trichocephalus dispar*). Pieces of tissue were taken for microscopical examination from the centre of the tumour mass, and, after embedding and section, stained with haematoxylin and eosin. The sections of the appendix and intestine showed acute and chronic inflammation, oedema, and haemorrhage. The bleeding seemed to have infiltrated both muscular layers of the intestines and was also seen in the sub-peritoneal part of the appendix. The exact site of origin of the haemorrhage cannot be determined, and there was no evidence of tumour formation or of any specific granuloma in the sections examined (J. T. Quinlan).

Commentary

The condition described appears to be unusual, as a search of the literature failed to reveal an account of any similar case. The predominant feature was the large circumscribed haemorrhage in the wall of the caecum. Except for the inflamed appendix there were no other signs of infection, and no evidence of spread of infection along the base of the appendix to the caecum. Following upon the operation, investigations were made of the blood count, the bleeding, and the clotting time, but neither these nor other clinical manifestations gave any evidence of an underlying haemorrhagic diathesis. Moreover, the whip-worms, which were lying free in the lumen of the caecum, were clearly playing no part in the aetiology. These are common enough inhabitants of that organ. Three possibilities offer themselves as likely explanations, and these may be considered in turn.

Trauma.—There was no history of a blow on the abdomen or similar violent injury as one would have expected had the haematoma been caused by direct violence. Further, owing to the mobility of the caecum a lesser degree of injury, unnoticed by the patient, could scarcely have caused the haemorrhage.

Torsion of Caecum with Venous Congestion.—Embolism or thrombosis of the ileo-caecal artery could not be demonstrated at operation, and the naked-eye appearances did not resemble those of the case reported by Harris. If infarction was the cause it must have been in the terminal branch of the posterior division of the ileo-caecal artery. It is possible, however, that the acute inflammation of the appendix may have been associated pre-operatively with an incomplete torsion of the caecum, leading to venous congestion, capillary rupture, and haematoma formation, the condition of torsion then reducing itself before the abdomen was opened.

Infection.—The absence of any signs of an infective lesion involving either the caecum or the ileum has already been mentioned. I am aware, however, that haemorrhage into the bowel wall may occur in terminal ileitis, or "Crohn's disease," and it is possible that the findings in the above case might have some bearing on the causal factors involved in that condition. Jackman has cited instances of intramural haemorrhage in the disease. In these the terminal ileum was involved, and

the haemorrhages were invariably small, scattered diffusely in the submucous and interstitial layers of the bowel wall, and distributed over a considerable length of gut, their cause and spread apparently taking the lines of least resistance. Regional and terminal ileitis may also involve the caecum, and some authorities advocate removal of the latter along with the terminal ileum. The preponderance of opinion favours conservative measures. The caecum may become so thickened and fibrosed, however, that mechanical obstruction results, making excision necessary. Had the serous coat of the bowel not ruptured and no operation been performed in the above case the haemorrhage might gradually have been absorbed and been replaced by fibrous tissue, the resulting appearance being similar to that of long-standing ileitis. Although in regional ileitis the appearance suggests a chronic infection and the distribution and size of the haemorrhages differ from those seen in the present case, no causal organisms have been found, and it is possible that the infective element may be secondary, the primary lesion arising in some such way as in this case, through mechanical causes such as incomplete torsion of the bowel and haematoma formation.

Summary

An unusual case of haematoma of the caecum, arising without trauma and probably due to incomplete torsion of the bowel, with venous congestion, is described. The possibility of such an accident giving rise to the changes seen in terminal ileitis is discussed.

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CHRONIC LEG ULCER IN MYELOGENOUS RETICULOSIS

REPORT OF A CASE

BY

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The coincidence of chronic ulceration of the leg and splenomegaly was discussed by Witts (*Journal*, 1942, **2**, 309) when he described two instances of chronic leg ulcer associated with purpura haemorrhagica. From his report it appears that chronic leg ulcer has not been described in association with myelogenous reticulosis. Furthermore, Witts said that "mere size of the spleen is not significant, inasmuch as ulceration is absent in the gross splenomegaly of leukaemia, and present with much less enlargement." An instance of chronic leg ulcer and considerable splenomegaly in a patient suffering from myelogenous reticulosis is therefore here put on record.

Case History

The patient was a woman aged 72 who had been "off colour" for three months, and had had a purpuric eruption beneath the skin of the legs and upper part of the chest. She also complained of painful swellings of the joints of the hands, loss of weight, poor appetite, and severe constipation. When examined in Oct., 1940, petechial haemorrhages were numerous beneath the skin of the arms, hips, left shoulder, and back; some of the haemorrhages were ecchymoses. Splenomegaly was detected, the lower pole of the spleen being about two fingerbreadths below the left costal margin; there was slight enlargement of the liver.

A series of seven blood examinations made during Oct. and Nov., 1940, showed that the haemoglobin percentage lay between 60 and 70; the red cells averaged three millions per