ways; in some places they were obviously forming into lines; they seemed to occur everywhere where there was the inflammatory change.

The *kidney* showed dilatation of the blood vessels, with here and there haemorrhages. There were no changes in the renal epithelium.

The *liver* showed dilatation of the vessels which ran between the columns of cells forming a lobule. The portal veins were full of blood, and showed a marked leucocytosis, there being nearly as many white corpuscles as red; in places the leucocytes were seen outside the veins in the portal areas. The liver cells were pushed aside by the dilated capillaries; they showed marked vacuolation; there was an extensive subcapsular haemorrhage.

The *Pancreas*.—The blood vessels were dilated and full of blood, and there was some inflammatory exudation on the surface.

The *spleen* was normal except for some perisplenitis.

BACTERIOLOGICAL REPORT.

(By DR. CHARLES PORTER, formerly Lecturer on Bacteriology, University of Sheffield.)

A small piece of the greatly-thickened stomach wall from this case was received on September 19th, 1905.

The portion sent was found to be thickly coated on its inner aspect with a dirty-grey membrane, and from this films were made and stained by Gram's method. With the exception of a few clusters of staphylococci, the only organisms detected were streptococci.

Sections of the stomach wall, including the membrane, showed the same organisms in considerable numbers situated exclusively in the membrane.

The organisms isolated by cultivation were again streptococci and staphylococci, the colonies of the former far outnumbering the latter. The cultural characteristics of the cocci were those of *Streptococcus pyogenes* and *Staphylococcus pyogenes aureus* respectively.

The streptococcus was regarded as the organism chiefly concerned, and an attempt was made to estimate its virulence. For this purpose two small guinea-pigs weighing 120 grams each were employed. One was inoculated subcutaneously in the right groin with 1 c.cm. of a twenty-four hours broth culture of the isolated streptococcus, the other receiving 0.5 c.cm. intraperitoneally.

The animal inoculated intraperitoneally seemed to be little affected by the injection. Within twenty-four hours, in the guinea-pig inoculated in the right groin, the tissues in that region were found to be swollen and tender. Twenty-four hours later the swelling had extended along the side of the abdomen, as high as the edge of the ribs, and towards the middle line. At the end of three days the tissues over the lower part of the chest were also involved. During this time the animal was greatly out of sorts, but soon afterwards began to improve. The swelling gradually subsided, and at the end of eight days, with the exception of a small abscess in the middle line near the edge of the ribs, nothing was to be detected.

At the end of a fortnight both animals were killed. In the guinea-pig inoculated intraperitoneally nothing abnormal was found. In the other the abscess already mentioned was found to contain a small quantity of cream-coloured pus. Elsewhere there was nothing. The pus when examined was found to contain a considerable number of staphylococci, which were probably the cause of the abscess formation.

In the abscess cavity a few streptococci were found, but none elsewhere. The virulence of the *Streptococcus pyogenes* being notoriously variable, the organism found in the membrane was probably much more virulent than those tests would indicate, and it is almost certain that the conditions found in the stomach were produced by this organism.

REMARKS.

The total number of recorded cases (under 100) of this disease sufficiently indicates its rarity.

Excellent tabulated lists of the cases to be found in medical literature have from time to time been published both in this country and elsewhere. During the last decade the following three have appeared. As reference to these is easy it is unnecessary to do more than mention them here. At the same time it may be a saving of time and trouble to others if we mention how the cases recorded in these three tables stand in relation to one another.

In 1896 Leith¹ was able to collect 51 undoubted cases of the diffuse form of the disease, including 1 under his own observation. These are tabulated, and a brief description of the sex, age, occupation, symptoms, and *post-mortem* findings is added in each case. This paper is well worth perusal, as the whole subject is fully dealt with, and in addition a valuable bibliography is appended.

In 1900 Jacoby² collected 64 cases from literature and added 2 more from Elsenberg's clinic, making a total of 66 cases up to that date. Many of these cases are not included in Leith's list, but in those that are there is little or no difference as regards the details.

In 1903 Moynihan³ tabulated 81 cases. This is the largest complete list of the three, and contains all of those to be found in Leith's list and all but 4 in Jacoby's. Moreover, the chronological order of publication of the cases is followed more closely than in either of the others. In order to complete this list we will add here the 4 cases above referred to, and such others as we have been able to find references to in the literature published since the last case recorded in Moynihan's table, which is dated 1902.

APPENDIX.

Further Cases not included in Moynihan's List.

- Case 82. Chanutin. *Wratsch*, 1893 (quoted by Jacoby).
- Case 83. Derbeck. *Wratsch*, 1895 (quoted by Jacoby).
- *Case 84. Jacoby. *Inaug. Diss. Königsberg*, 1900.
- *Case 85. Jacoby. *Ibid.*
- Case 86. Schultz, H. *New York Path. Society*, November, 1901.
- Case 87. Berka. *Centralbl. für allgem. Path. und Path. Anat.*, Bd. xiv, 1903.
- *Case 88. Huguenin. *Rev. Méd. de Suisse Romande*, xxii, 1903.
- *Case 89. Simmonds, *Münch. med. Woch.*, 1903, p. 1445.
- *Case 90. Klenneberger. *Ibid.*, 1903, p. 1338.
- *Case 91. Hueter. *Ibid.*, 1904, p. 85.
- Case 92. Hopkins and Welr. *BRITISH MEDICAL JOURNAL*, 1904, vol. ii, p. 1406.
- *Case 93. Cotterill. *Scottish Med. and Surg. Journal*, 1905, xvi.
- *Case 94. Merkel. *Centralbl. f. inner. Med.*, 1905, xxvi, 257-262.
- *Case 95. Schwarz. *Wien. med. Woch.*, 1905, iv, 904.
- Case 96. Perrin and Blum. *Rev. Méd. de l'Est*, Nancy, 1905, xxxvii. (In this case the patient recovered.)

* References verified by us.—A. H. and G. S.

REFERENCES.

¹ Leith, *Edinburgh Hospital Reports*, vol. iv, 1896. ² Max. Jacoby, *Inaugur. Dissertation*, Königsberg, 1900. ³ Moynihan, *The Medical Chronicle*, November, 1903.

A SUCCESSFUL CASE OF THORACOPLASTY FOR THE RELIEF OF CHRONIC EMPYEMA.

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HAVING read the account of some most interesting cases of thoracoplasty in the *BRITISH MEDICAL JOURNAL*, December 10th, 1904, by Mr. Hamilton Ballance, I determined to try the operation on some of my chronic cases of empyema, in which the sinus had persisted for many months.

Edward A., aged 34, a labourer, first admitted in November, 1899, with phthisis, having been obliged to give up work on account of shortness of breath and cough. No family history could be obtained. Some weeks after admission he developed empyema on the left side; this was aspirated and about one pint of offensive pus withdrawn. The side soon refilled and the patient became very ill and hectic, with a high temperature. A piece of the ninth rib on the left side, about 1 in. long, was removed in the axillary line, and the empyema drained. The patient lived in the open air day and night; the wound healed rapidly and he gained weight. He was discharged in April, 1900. The man was readmitted in August of the same year, with signs of pus again in his chest on the left side; the old wound was reopened and several ounces of greenish offensive pus were let out. He again had outdoor treatment, his general health improved, and he was discharged February 1st, 1901, the wound in his chest having quite healed. Towards the end of March he tried to work, but the old wound reopened, and he was once again admitted in April. A tube was inserted into his chest; he took his own

discharge with the drainage tube still in. He was admitted once more in December, 1903, looking very ill and thin. His general health soon improved, but the old sinus showed no signs of closing. On June 16th, 1904, the cavity was curetted and washed out with an iodine solution. In August the wound began to heal, though still discharging freely. The patient had cavities at both apices of the lungs; he frequently coughed up sputa, which, however, contained no tubercle bacilli. The liver appeared to be enlarged (commencing amyloid disease?). His general health had not improved as on former occasions, though he gained slightly in weight; his heart was drawn to the left side of his chest. The sinus showed no signs of healing, his night sweats increased, and there was a rise of temperature every evening. He was anxious that something more should be done, and on February 1st, 1905, after explaining the danger of the operation to him, I decided to excise some ribs and give the man another chance of life. Every necessary precaution was taken before the operation. Brandy was given by the mouth and strychnine injected; he was clad in flannel and reated on hot-water pillows during the operation. Chloroform was first given, followed by A.C.E. mixture; the old discharging sinus was slit up, to allow the cavity to be well explored with the finger; the cavity was found to extend as far as the sixth rib; the pleura

The shaded portions show the ribs removed during the thoracoplasty; the non-shaded portion in the ninth rib represents the first piece of rib excised soon after admission. A, Vomicae; B, U shaped flap corresponding to the cavity.

was much thickened. A large U-shaped flap, corresponding to the cavity to be closed, was made; the flap was then raised and turned upwards, including skin, fat, and muscles. The incision of the flap commenced from the middle of the vertebral border of the scapula on the level of the sixth rib (see diagram). This extended downwards to the upper surface of the tenth rib, below the discharging sinus, finishing at the axillary border (see diagram). The ribs with their intercostal muscles were exposed and were removed after being shelled out of their coverings, dividing them anteriorly and posteriorly. About 3 or 4 in. of the seventh, eighth, and ninth ribs were removed. The remaining soft parts, which consisted of muscles, thickened pleura, and periosteum of the ribs, were cut away with scissors. The bleeding was not excessive, but a few vessels were tied. The visceral layer of the pleura was then exposed. It was covered with prominent, unhealthy granulations; these were freely curetted, and pressure was applied by means of swabs soaked in adrenalin. The patient at this stage suddenly collapsed, and the operation was finished as speedily as possible. The U-shaped flap of skin and muscles was brought down to cover the visceral pleura; the flaps were stitched together, the old sinus in the lower part of the flap was cut out, and a drainage tube inserted. The wound was hurriedly closed and the patient put quickly to bed and a saline injection given, after which he soon rallied.

The man's general health and condition rapidly improved; he gained 3 st. in weight, and was discharged July, 1906 looking fat and well.

A TYPHOID CARRIER OF TWENTY-NINE YEARS' STANDING.

By GEORGE DEAN, M.B., M.A.,
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THE following case seems worthy of record from its almost unique character, and it serves to illustrate and elucidate a number of points in connexion with recent advances in our knowledge of the pathology and etiology of enteric fever.

History of the Case.

Twenty-nine years ago Dr. W. T., a medical practitioner had as a young man, during a residence in the United States, a severe attack of typhoid fever. During the hungry stage of his convalescence, he suffered from dyspepsia on several occasions, and within three months of the period of his illness, he had an attack of very acute pain in the region of the liver, with a feeling of distension in the neighbourhood of the gall bladder.

Attacks of this character since recognized by him as biliary colic recurred about every three months for over a year. Since that time they have become less frequent, but every year one or more attacks occur, often during holidays, and are generally associated with over exertion, long bicycle rides or walks, and irregular meals. Jaundice has sometimes been a feature of these attacks. His bowels act regularly, and his evacuations are normal. With the exception of these attacks, his health has been otherwise excellent, and he has carried on a very heavy practice during the last twenty years without being a single whole day off duty through ill-health. In view of the recent work on typhoid fever, it occurred to me that the case might be one of cholecystitis typhosa, and that W. T. was possibly a typhoid carrier. On discussing the question with him, he readily put himself at my disposal for investigation.

Bacteriological Examination.

In selecting the samples for plating, any mucus present in the faeces was included. A platinum loopful of faeces was emulsified in a broth tube containing 5 c.cm. of broth. Three loopfuls were then placed on the first of a series of Petri's plates containing MacConkey's bile-salt-lactose-neutral-red-agar. By means of a glass rod the material was distributed over the surface of the medium, and the same rod was employed for the inoculation of the second and third plates of the series.

Three samples have been examined, and in all of them the typhoid bacillus has been demonstrated. The first sample gave only non-lactose fermenting colonies, all of which proved to be *B. typhosus*. The second sample gave about equal numbers of colonies of the typhoid bacillus and of *B. coli communis*, and in this case a few colonies of the *Bacillus faecalis alkaligenes* were also present. The third sample gave seventy colonies of the typhoid bacillus and one colony of *B. coli communis*.

That we were here dealing with the typhoid bacillus was shown as follows:

The bacillus is a highly motile rod; it does not liquefy gelatine and does not produce indol. It produces acid, without gas formation, in litmus-peptone-water media containing glucose, laevulose, galactose, maltose, dextrin, and mannite, and no change in arabinose, saccharose, lactose, raffinose, inulin, erythrite, and dulcitol; it produces acid in litmus milk.

The urine was examined but no typhoid bacilli were found. The bacillus is pathogenic for the guinea-pig. Three guinea-pigs were inoculated intraperitoneally with 0.5 c.cm., 1 c.cm., and 2 c.cm. respectively of a twenty-four hours' culture in broth. The guinea-pig which received 2 c.cm. died within twenty-four hours, the other two animals survived.

The bacillus is agglutinated by an antityphoid horse serum in a dilution of 1 in 10,000.

Agglutination Tests with Patient's Serum.

With the bacillus ordinarily used in the Institute for the Widal test the patient's serum gave an agglutination in a concentration of 1 in 25 but failed to do so in 1 in 50, and 1 in 100.

With the patient's own bacillus the patient's serum failed to produce agglutination even in 1 in 25. That the absence of this reaction with the patient's own serum is not due to the lack of suitable receptors in the bacillus is proved by the fact that it was capable of being agglutinated by immune horse serum.

Within the last two years a revision of our conception of many of the factors concerned in the epidemiology and pathogenesis of typhoid fever has become necessary, and this has been almost entirely due to the work of Förster and his collaborators in the Strassburg laboratories. That work is being confirmed on all sides at the present time. Formerly we pictured the typhoid bacillus as finding its way into the alimentary canal, multiplying there, and invading the tissues, chiefly the lymphoid tissues, of the small intestine and the spleen, and only secondarily and fairly late in the disease finding its way into the blood stream.