curved needles can be used, from the finest to the coarsest made for the sewing machine.

The two blades come asunder in a moment by turning the T-screws, and can be cleaned easily (Fig. 2). They are, I think, best sterilised for use by lying in strong spirit. The two or three reels, too, can be stored, charged with silk, in bottles of spirit. But the silk should previously be boiled in 1 in 20 absolute phenol solution before being wound wet on the reels.

The needle is designed for the smaller sizes of silk; the larger size needle will carry a fairly strong thread, quite enough so for a radical cure of hernia. But the reels will not carry much of the thicker sizes of silk; and, indeed, the latter would not run easily through the needle eye. But the smaller sizes do so easily, and as the reels can be put in position in a moment, if one is used up a fresh one from the bottle can be inserted. Each handle carries three reels, either with different sizes of silk or with a reserve quantity on one in case the first is used up. One reel will carry eight yards of stout thread, and of course very much more of the finer sorts. But it is for the use of the latter that the instrument was designed.

The principle of self-feeding needles is, of course, not new, as we have Sir Thomas Smith's for fine silver wire, and the late Mr. Greig Smith's for thread, but the present instrument is designed to meet objections which most surgeons have felt to these contrivances. I have shown my working model to Messrs. Meyer and Meltzer, who have now copied it for the benefit of any surgeons who may feel disposed to give it a trial. It has three reels instead of two as in Fig. 1. It only weighs a fraction over 3 ozs.

Like all sewing machines it requires some slight practice to render its use rapid and easy. This I have had myself in many cases, and find it very satisfactory and very simple. It saves much time, and the accuracy with which needles so held can be placed in the tissues is much greater than when the fingers alone are used. But it is well to emphasise again the fact that we are apt to draw the threads too tightly unless we are careful.

A CONTRIBUTION TO THE SURGERY OF HEPATIC ABSCESS CAUSED BY THE BACILLUS TYPHOSUS.

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So rare is the occurrence of hepatic abscess in enteric fever that Lannois,¹ on the authority of Schultz, of Hamburg, tells

us that it occurs only once in 36,080 cases.² Although they may arise as metastatic abscesses originating from some external focus of suppuration, or from the formation of typhoid ulcers in the biliary passages, most of the few cases on record have resulted from an infective suppurative pylephlebitis by direct extension from the intestinal ulcers. Such cases are reported by Lannois,³ Romberg,⁴ Asch,⁵ Buckling,⁶ Osler,⁷ and others. Such, too, was the origin of the case to which I shall presently refer; and all, with the exception of this last, were fatal. That some of these abscesses may now with propriety be treated by surgical methods is apparent from the following.

C. B., a female child of 5 years, had a mild attack of enteric fever followed by symptoms of a relapse. On December 8th, in about the eighth week of the disease from its commencement, Mr. Dacre asked me to see the case in consequence of the occurrence of a rigor, but for which no cause could then be assigned. The patient was considerably emaciated, but the breathing was quiet and the pulse fairly strong. The temperature, which had been markedly fluctuating for some weeks previously, was 104.6° at the time of examination.

A second rigor occurred on December 11th, and about a week later the cartilages of the seventh, eighth, and ninth ribs on the left side were found slightly everted, but not thickened. This condition appeared to be due to a swelling in the left lobe of the liver, which could be felt in the epigastrium about one inch below the ensiform cartilage. The swelling, which was tender on pressure, was regarded as an incipient pyæmic abscess.

A succession of rigors occurred on December 22nd, 23rd, and 30th, and on January 1st, each rigor being followed by marked collapse, and the general condition became one of great gravity. The temperature is shown by the accompanying chart.

Towards the end of this period the swelling in the epigastrium increased very rapidly, and on January 1st the sharp edge of the enlarged liver could be felt about midway between the ensiform cartilage and the umbilicus. No pulsation was detected over the swelling, no fluctuation

could be felt, and no friction sound could be heard. There was no displacement of the heart, and the right lobe of the liver was not enlarged in the axillary line. The child complained of pain, but tenderness was not now a marked feature. The general emaciation was extreme, but as the lungs and other organs appeared to be free from pyæmic infarction an operation was urgently advised, and in this Dr. Shingleton Smith and

Mr. Dacre concurred. Chloroform was administered on January 3rd. A vertical incision 2 inches long was made just to the left of the mid-line over the prominent part of the swelling. On opening the peritoneum it was found that the parietal and visceral layers were slightly adherent below and partly to the right of the incision. These adhesions were left undisturbed. An exploring needle was then introduced into the liver substance, and when about half an inch from the surface it entered a cavity, from which some thin brownish fluid was withdrawn. By means of a continuous stitch of fine silk the parietal peritoneum was sewn to the surface of the liver so as to surround an area of about 1 inch in diameter, the exploring needle occupying the centre. Sinus forceps were then passed in through the puncture as the exploring needle was withdrawn, and on opening the blades so as to tear through the liver substance some ounces of a thin brownish fluid escaped, followed by a thick flocculent yellowish (bile-stained) purulent fluid. Altogether about 5 or 6 ounces of fluid escaped, the cavity appearing to be about the size of a cricket ball. A rubber drainage tube $\frac{3}{4}$ inches long and one-third of an inch in diameter, was then inserted, and the wound dressed with boric lint and Gamgee tissue. After evacuation the swelling in the epigastrium diminished to about one-half of its former size, the drainage tube emerging from the abdominal wall about 2 inches below the ensiform cartilage.

An agar culture of the fluid was taken at the time of operation, and was found to contain actively motile typhoid bacilli (*vide infra*).

At first the fluid which escaped in considerable quantity from the tube was of a brownish colour, and mixed with purulent flocculi and mucus. After about ten days it was watery, bright yellow or greenish from bile, with a slight amount of mucus and no visible pus. About three weeks after the operation, however, this was interrupted by a sudden discharge of pus, which lasted three days, but by February 3rd the wound was practically healed except for a few threads of the silk ligature, which were seen coming through the abdominal wall.

The temperature after operation was subnormal, and the child made a steady and uneventful recovery, so that in about two months from the time of operation she was fat and well.

Beyond expressing a preference for hepatotomy in one stage, I do not propose to enter upon the details of its well known methods of procedure, but it is desirable to state that the fortunate position of the adhesions, found in this case between the liver and the parietes, made me decide to operate in the manner above described, rather than to make a longer incision and break down these most useful adhesions by packing the wound with sponges in the ordinary way.

The result of the case is most encouraging in more ways than one. Here was a patient suffering from repeated rigors, with distinct manifestations of pyæmic infection. The first metastatic focus, however, was in an accessible situation, and operation prevented the spread of infection, for it cannot be doubted that, had the child escaped the danger of the bursting of the hepatic abscess into the general peritoneal cavity, death would probably have occurred from the formation of secondary infective foci.

The bacteriological examination of the fluid removed at the time of operation was kindly undertaken by Dr. Symes. Direct microscopic examination showed short bacilli with rounded ends. Agar stroke and plate cultures showed a few colonies of staphylococcus pyogenes aureus, and many colonies of short bacilli with rounded ends. The bacilli grew in broth, causing cloudiness of the medium, and were actively motile. There was no formation of indol, curdling of milk, or formation of gas in gelatine, but there was a characteristic Widal's reaction with typhoid serum, 1 in 20. There can be no doubt, therefore, that this organism was the bacillus typhosus of Eberth-Gaffky.

The only other cases which I can find of hepatic abscess in which the presence of the typhoid bacillus was demonstrated is that of Lannois,² to which reference has already been made, but in his case gelatine was liquefied by the organism. This, however, he attributes to an impure culture.

That the relief of tension may diminish inflammation by restoring the vitality of tissues which have been subjected to the pressure of inflammatory products is a matter of common knowledge; but, apart from this, it appears to me that the mere relief of tension has a marked influence on the destruction of some of the various organisms capable of producing suppuration. In the case narrated above the abscess was rapidly increasing before operation, and a culture of the fluid taken at the time of operation was found to be swarming with typhoid bacilli; and yet three days after operation—before any antiseptic had been applied to the abscess cavity—a second culture revealed only one colony of the typhoid bacillus. This rapid diminution in the number of the bacilli cannot be attributed to the antiseptic action of the bile itself, for the fluid removed at the time of operation was also bile-stained.

The same deterring influence on the growth of the bacillus coli communis by the relief of tension is repeatedly seen in

cases of suppurative appendicitis. We may not know why these organisms multiply so rapidly when tension is great, but the indication for treatment by surgical means is obvious.

That relief of tension should prevent the absorption of the deleterious products of bacterial growth is intelligible enough, but why does that same relief of tension check the growth of the organisms themselves? Is it due to the replacement of stagnant fluid by a more or less actively-moving secretion of fresh fluid, and that this constant exudative stream prevents the development of the organisms? If this is so, the question of tension is only of secondary importance, although relief of tension is necessary before a healthy secretion of fluid can take place.

Granting, however, this explanation of the fact, it raises the question as to whether we are right in so frequently treating intraperitoneal suppuration by means of antiseptic flushing, which may do harm in other ways. Would it not be wiser to content ourselves with the relief of tension only, and thus leave the powerful phagocytic and exudative capabilities of the peritoneum to fight their own battles unimpaired by the endothelium-destroying influence of "flushing the abdomen"? Time and further experience will show.

I have been unable to find a record of any other case of hepatic abscess in enteric fever successfully treated by operation, but the above illustration is full of hope for those rare occasions on which this complication is likely to arise.

REFERENCES.

¹ *Rev. de Méd.*, November, 1895; quoted in *Med. Rec.*, 1896, xlix, 924. ² The same paper as quoted in *Gould's Yearbook*, 1897, gives a different frequency of occurrence. ³ *Loc. cit.* ⁴ *Berl. klin. Woch.*, 1890, No. 9; quoted in *Waring's Diseases of the Liver*, 1897, p. 81. ⁵ *Berl. klin. Woch.*, No. 51; quoted in *Med. Times and Gazette*, 1883, i, 16. ⁶ *Waring's Diseases of the Liver*, 1897, p. 81. ⁷ *Trans. of the Assoc. of Amer. Phys.*, 1897, xii, 382. ⁸ *Loc. cit.*

A CASE OF OPERATION FOR PERFORATED GASTRIC ULCER.*

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History.—The patient was a widow, aged 35 years. Twenty years ago she had suffered for two years from persistent pain in the gastric region, which was aggravated by taking food. This disappeared, but for eighteen years she had been subject to attacks of pain of a neuralgic character, which occupied various situations—head, face, side, etc.—came on at irregular intervals, and were relieved by quinine. About the beginning of July, 1897, an attack of apparently the usual character came on. It was, however, noticed by Dr. O'Hara that the paroxysms had a distinct relation to the times of taking food, occurring about three hours after meals. Vomiting after food took place twice. Under dietetic treatment the symptoms were becoming less acute, when, on July 20th, 1897, she took a small quantity of porridge and milk for supper at 9 p.m., and at about 10.30 retired to bed, and fell asleep. Before 11 she was awakened by a sharp pain in the abdomen, which she recognised as more severe than any she had previously felt. It increased in intensity when she got out of bed. Dr. O'Hara saw her at 1.30 a.m. She had then great pain on the left of the epigastric region, and had vomited twice since the seizure. There was some rigidity of the abdominal muscles, and no alteration in normal liver dullness. The pulse was 80, and the temperature normal. She got one-sixth of a grain of morphine hypodermically, and $\frac{3}{4}$ iv of brandy by the rectum. At 1.30 p.m. on July 21st she was complaining of some pain in the epigastric region, and of inability to lie down, preferring a half-sitting posture in bed. Her pulse was 104, her temperature 101°, and her abdomen was considerably distended and tympanitic. As the pulse and temperature had been getting worse hour by hour, it was decided to operate at once.

OPERATION.

Accordingly chloroform was given by Dr. Mullan, and I proceeded to open the abdomen, Drs. O'Hara and Currie assisting. A median incision in the epigastrium allowed

* Read before the Surgical Section of the Royal Academy of Medicine in Ireland.