SURGICAL REPORT FOR THE ROYAL ARSENAL,
WOOLWICH. YEAR, 1905-6.

By Lieutenant-Colonel S. F. LOUGHEED, C.M.G., and Majors J. C. JAMESON, E. M. PILCHER, D.S.O., and H. N. DUNN.

Royal Army Medical Corps.

Officers who are interested in surgery cannot fail to have been struck by the improvement in the nature and scope of operative work in the Army within the last few years. The accounts of cases which find their way into our Journal go some way to establish this fact, but it is after all only from detailed reports of routine work that a satisfactory judgment can be formed. To the curious in such matters information full and complete can doubtless be gained from official reports and case-books, but we think it desirable that a popular (if we may use the term) and interesting account of important cases, of surgical technique, as carried out in various centres, of results, and above all of personal opinions, should occasionally be sent to the Journal, so that the Service generally may be aware of what is being done, profitable discussion encouraged, and a healthy rivalry established. With this end in view we have prepared the following brief account of our surgical experiences during the year 1905-6, at the Royal Arsenal, Woolwich.

During the past year (1905-6) 166 operations were performed, contrasting with 88 for the year 1903-4, and 56 for the year 1904-5, and we hope to prove that the present year shows an increase not less in interest and importance than in the number of the operations performed. Possibilities for surgical work have been much enlarged since 1904 by the advent of the nursing sisters. Before these ladies came, surgeons at the Royal Arsenal were to some extent deterred from undertaking serious surgical procedures from disinclination to expose their patients to the risk of possibly indifferent, though well-intentioned, after-treatment and of septic infection; for it must be acknowledged that even trained nursing orderlies cannot be quite trusted to carry out the necessary, but often petty and wearisome, details of antiseptic preparation and procedure.

From a study of the operations performed it is plain that the possibilities above referred to have by no means exhausted even the region of general surgery. In those departments which are usually considered to belong to the specialist a fruitful field lies open, especially as regards the surgery of the eye, and of the throat, nose and ear.

The small number of beds available places, at present, a limit to
surgical expansion. More space has, however, been promised; but at present twenty beds are available, and of these a certain proportion must always be kept empty for accidents. Moreover, accident cases occupy beds longer than do ordinary successful operation cases on an average, a fact especially true in the case of burns, of which we see a fair number. Fifteen beds for general surgery is no excessive provision for so large an establishment as the Royal Arsenal, the medical department of which has in truth outgrown its accommodation. This result is, of course, due in great measure to that widening of the limits of surgical interference in what were formerly considered medical cases, with which we are all familiar. Indeed, our experience has been that of all other hospital establishments.

Of the 166 cases of operation, 32 were for injury and 134 for disease. The proportion of disease to injury, therefore, is more than as four to one, and seems to justify the setting aside of no more than five out of twenty beds for cases of accident.

The following list gives the nature and number of the operations performed:

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Trephining for injury to cranium</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Removal of parotid tumour</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Enucleation of eyeball</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Removal of new growths from the face</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>Stacke's operation for otitis media</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Extraction of carious teeth</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Removal of glands and cysts of neck</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>Amputation of fingers and cellulitis of hand</td>
<td>6</td>
</tr>
<tr>
<td>9</td>
<td>Injuries and diseases of forearm and arm</td>
<td>15</td>
</tr>
<tr>
<td>10</td>
<td>Diseases of thoracic and abdominal variaries</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>Laparotomy for appendicitis</td>
<td>18</td>
</tr>
<tr>
<td>12</td>
<td>Radical cure of hernia</td>
<td>19</td>
</tr>
<tr>
<td>13</td>
<td>Gastro-enterostomy</td>
<td>3</td>
</tr>
<tr>
<td>14</td>
<td>Cholecystostomy</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>Suture of perforating ulcer of stomach</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>Urethrotomy for stricture of urethra</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>Lithotomy</td>
<td>3</td>
</tr>
<tr>
<td>18</td>
<td>Operation for varicocele</td>
<td>4</td>
</tr>
<tr>
<td>19</td>
<td>Operation for hydrocele</td>
<td>5</td>
</tr>
<tr>
<td>20</td>
<td>Drainage of inguinal abscess</td>
<td>2</td>
</tr>
<tr>
<td>21</td>
<td>Circumcision</td>
<td>1</td>
</tr>
<tr>
<td>22</td>
<td>Removal of hemorrhoids</td>
<td>29</td>
</tr>
<tr>
<td>23</td>
<td>Operations on fistula and ischial rectal abscess</td>
<td>9</td>
</tr>
<tr>
<td>24</td>
<td>Operations on fissure of the anus</td>
<td>4</td>
</tr>
<tr>
<td>25</td>
<td>Removal of growths round the anus</td>
<td>2</td>
</tr>
<tr>
<td>26</td>
<td>Diseases and injuries of the lower extremity</td>
<td>15</td>
</tr>
<tr>
<td>27</td>
<td>Operations on varicose veins</td>
<td>9</td>
</tr>
</tbody>
</table>

Total 166
Anæsthetics were administered 166 times, happily without any casualties. Ether alone was given 89 times, Clover’s inhaler being used in all cases. Chloroform alone was given 62 times, the method employed varying with the personal taste of the administrator. In the majority of cases the open method was used, but in a certain proportion Junker’s inhaler was used, and a trial was made of a new inhaler, introduced to the profession recently by Mr. Vernon Harcourt. The general opinion of this inhaler seems to be that it is very slow in inducing anaesthesia and perhaps somewhat uncertain in maintaining it, but a further trial may demonstrate its superiority. Chloroform followed by ether was given in five cases, eucain in one case, and in nine the nature of the anaesthetic is not stated.

Some of the more interesting of these cases are described below.

(1) *Trepining for Injury to Cranium* (Lieutenant-Colonel Lougheed).—G. G., aged 19, had a fall on a kerbstone in the streets of Woolwich on February 16th, 1905, receiving a contused wound in the right temporal region, in front of and above the ear. No fracture was detected at the time and the wound healed without trouble in a fortnight. He was admitted into hospital on April 12th, 1905, complaining of pain in the region of the scar. He had had fits occasionally for the past three weeks, which began as a tremor in the left hand and went on to unconsciousness. He was dull and incapable of mental work. The scar was adherent to the bone beneath, but not tender to the touch. On April 12th the scalp was reflected backwards by a semi-lunar incision, exposing a slight depression beneath the old scar. A disc of bone was removed which was a quarter of an inch thick and adherent to the dura mater. The opening in the bone thus made was enlarged with a Hoffmann’s gouge, and the dura was incised in a T-shaped manner and found firmly adherent to the cerebral cortex. The vessels at this point were numerous and congested. The adhesions between meninges and cortex having been separated fully, the incision in the dura was closed by a few interrupted silk sutures. The disc of bone was not replaced. The scalp was united by silk-worm gut, without drainage. Union occurred *per primam* and he had no more fits for some months. His mental condition improved markedly and he could converse quite intelligently, and stated that he felt quite well. This improved condition lasted about six months, when he again relapsed into his former condition of headaches with Jacksonian seizures. These commenced simultaneously.
in the left arm, leg, and side of face. It was not considered advisable to interfere surgically again.

(2) Removal of a Rodent Ulcer (Lieutenant-Colonel Lougheed).— W. D., aged 59, had a rodent ulcer of some years' standing at the outer canthus of the left eye. The growth involved the outer half of the lower lid and about one-eighth of an inch of the upper lid, and was about seven-eighths of an inch in its greatest length and about three-quarters of an inch across. An incision was first made round the growth and about a quarter of an inch from it, and the growth removed. It was free from the tarsal cartilage. A flap was then cut and its edge along its concave margin united to the cut edges of the skin and conjunctiva at the free margin of the eyelid. The convex margin was fixed by one or two sutures without tension, and the whole healed soundly by first intention.

(3) Stacke's Operation for Otitis Media (Major Pilcher).—W. D., aged 28, had had a discharge from the right ear for many years past. Pus had burrowed into the space behind the angle of the jaw, in which situation an abscess had formed and was opened, leaving a discharging sinus. The pus was very foul. On examination, nothing could be seen but granulations, the membrana tympani and ossicles having completely disappeared. The ear was turned forward by the usual incision behind the pinna, and the antrum exposed as a very small cavity after chiselling through very dense bone. The cavity was opened into that of the tympanum, which latter space was thoroughly curetted. The lining of the external auditory meatus was split and packed backwards into the large common cavity formed as above. There was much troublesome oozing from the mastoid vein. Healing was slow, owing, no doubt, to the density of the bone, but the case did well subsequently. The hearing was considerably improved.

(4) Removal of Glands and Cysts of the Neck.—As usually happens, these operations depended for their interest upon the operative and dissectional difficulties encountered. The history, progress and termination presented nothing unusual. Two were performed upon the same individual, an old man of 53, the glands being tubercular. He also had a fistula in ano of an intractable kind, probably due to the same cause. The glands had suppurated and lay along the course of the internal jugular vein, from the wall of which they were peeled by a cautious dissection. Healing was prolonged. Another case had a mass of glands removed from the upper part of the neck behind the angle of the jaw. The fourth was a large cyst containing pus on the right side of the neck, the
walls of which were very thick and intimately adherent to surrounding parts. It was removed, as well as a small cyst on the left side of the neck, and healing was uneventful.

(5) Amputation of Fingers and Cellulitis of Hand.—Of these operations eight were for spreading cellulitis of the hand and forearm, following a septic wound opening one of the sheaths of the flexor tendons. Prolonged and careful massage, after healing, restored a satisfactory amount of use to the fingers in most cases. But at the best these cases are far from satisfactory. Our experience is that they most often occur in middle-aged men with albuminuria or of an alcoholic habit, and that such cases present almost insuperable obstacles to the limiting of the spread of infection and to subsequent healing with a useful member. Of the remaining cases, six were amputations of fingers for crushes, and the last an attempt to set free a nerve involved in the scar of a crushed finger, which was causing severe pain. The attempt was unfortunately unsuccessful, and the finger was eventually amputated.

(6) Injuries and Diseases of Forearm and Arm.—Two of these cases were injuries to the shoulder-joint; an anaesthetic being given in one case to reduce a dislocation, in the other to break down adhesions. A third case had two operations performed upon it. The first was for the opening and draining of a large abscess in the axilla. There was a good deal of contraction and puckering of the scar, and as the man complained of pain down the arm on the inner side, and it was thought that some filaments of the intercostal humeral nerve were involved, the scar was removed at a second operation with the scar tissue lying immediately below it, and all contracted bands divided. The fifth operation was for the removal of an exostosis near the lower end of the right radius. The patient, a lad of 15, had had a separation of the lower epiphysis of the radius a year before, with premature union of the epiphysis and consequent arrest of growth of the radius. The exostosis was successfully removed with a chisel. The sixth case was a very unusual form of dislocation of the left elbow joint, the radius and ulna being completely displaced inwards and the prominent inner edge of the trochlear surface of the humerus presenting an almost insuperable obstacle to reduction. The man had been caught by the hand in a revolving band and carried up to the pulley over which the band passed. When he reached this point the hand and arm received a sudden twist as the band passed over the pulley, and he was set free with a dislocated elbow. Reduction was effected by manipulation.
under chloroform after the exertion of a considerable amount of force. The subsequent progress of the case was good, a freely movable joint resulting.

(7) Laparotomy for Appendicitis.—Of the eighteen cases dealt with, Lieutenant-Colonel Lougheed operated upon eight, and of these he writes as follows: "Of these cases seven were operated upon in the cold stage, usually after the subsidence of the second attack. If any tumour could be felt the usual procedure was to cut down upon it by an oblique incision parallel with the fibres of the external oblique muscle and about 1¼ inches internal to the anterior superior spine of the ilium. The aponeurosis of this muscle was split up and the internal oblique and transversalis divided in the same direction. In cases where no distinct tumour was present the skin incision was made parallel with the outer border of the rectus muscle. The anterior layer of the rectus sheath having been divided to the full extent of the skin wound, the belly of the rectus was drawn inwards towards the middle line and the posterior layer divided in a similar way to the anterior. The peritoneum was also opened vertically and its cavity thus reached. When the peritoneal cavity was opened and no pus found, the mesoappendix was ligatured and divided up to the base of the appendix. The appendix was then crushed about half an inch from its base, ligatured and removed. The mucous membrane of the stump was usually touched with a red hot needle or with a drop of pure carbolic acid, and the stump was buried in the cecal wall by a purse-string suture and returned into the abdomen. The peritoneum and abdominal muscles were united in separate layers by silk sutures and the skin closed by silkworm gut. In cases where pus was found, it was removed on dry sterile swabs, great care being taken to protect the peritoneum from soiling by packing, and a gauze drain was inserted for forty-eight hours. This was then removed and the wound usually healed in about a week. In none of these cases was the pus cavity irrigated by any antiseptic, this proceeding being considered inadvisable, owing to the danger of diffusing septic matter over the peritoneum, and of increasing the risk of septic absorption and general peritonitis. In two of these cases considerable difficulty was experienced in removing the appendix on account of its being situated behind the cecum, its distal extremity reaching high up behind the ascending colon, to the wall of which it was firmly bound by old adhesions. In three cases faecal concretions were found in the appendix, one of them being of large size. In one case the lumen of the appendix was stenosed...
in two places. In most of them the walls were much thickened and the mucous membrane swollen and ulcerated in spots. One case was operated upon in the hot stage about twenty-four hours after the onset of symptoms. It was of a fulminating nature, and, although no pus was found, about 1\(\frac{1}{2}\) inches of the distal end of the appendix were deeply congested and almost gangrenous. It was amputated and treated by the invagination method, and made an uninterrupted recovery. All these eight cases made a sound recovery with practically no rise of temperature, and were, after a period of convalescence, discharged to duty. In no case up to the present time has there been any sign of a hernial protrusion through the scar."

Colonel Lougheed's general remarks apply equally to the remaining ten cases, which were dealt with by Majors Jameson, Pilcher and Dunn, and it is only necessary to add as regards the cases individually: (1) That the vertical incision through the outer border of the rectus was used in seven cases. (2) That pus was found in five cases, in all of which the appendix was removed after careful removal of the pus on dry swabs. One of these cases died on the fourth day after operation from heart failure. This case was one which presented great difficulties in diagnosis, the only objective sign being rigidity of the right rectus muscle. An abscess was found deep down in the pelvis. (3) That in one case tubercular glands were found in the mesentery, and the appendix was found firmly bound down behind the caecum, surrounded by an abscess containing curdy pus. There can be no doubt that this was a case of tubercle of the appendix. The abscess was drained and no attempt was made to separate the appendix. The man improved considerably on medical treatment, but a sinus remains. (4) That one case had reached the desperate condition of general peritonitis due to perforation of the appendix. The abdomen was opened, the appendix removed, and the whole abdominal cavity thoroughly washed out, gauze wicks being inserted in various directions. He died on the fifth day after the operation.

(8) Radical Cure of Hernia.—Eighteen cases were operated upon, in one of which, unfortunately, suppuration took place, and a second operation was performed to remove the stitches. The operation usually performed was Bassini's, the aponeurosis of the external oblique being split up as far as the internal ring, the sac isolated from the structures of the cord, transfixed (after opening it to make sure it was empty), ligatured and cut away, the conjoint tendon united to Poupart's ligament by two, three, or more silk
sutures, and the aponeurosis closed over the cord by silk sutures. In six cases Halsted’s method of uniting the aponeurosis beneath the cord was adopted. In three of these a slight bulging was noted at the end of the year a little above and outside the situation of the internal abdominal ring. These are by no means the only cases of partial failure with Halsted’s operation which have been noted here. It would seem that too direct an opening is left through the wall of the abdomen by this method of suture. All these cases healed by first intention except one, and silk was used in all but one case. The exception, which suppurated, had McEwen’s operation performed upon him and silk was used. Fifty-four days after the operation he was put under chloroform and all the sutures and the ligature on the sac were removed. The wound then healed soundly, and when inspected at the end of the year (i.e., in April, 1906) there was no sign of recurrence. The question of recurrence of the hernia in these cases was naturally the most interesting point. A man has a right to ask that if he submits to the inconvenience of an operation he shall have a reasonable assurance of being free from his defect. Our experience shows that, taking cases of all kinds and at all ages, he would be a bold surgeon who could give any such assurance. A precautionary routine of three weeks in bed after operation, and three to four weeks before going back to work after leaving hospital, was followed in all cases. An inspection of cases took place in April, 1906, and in three cases recurrence was noted. These results cannot be called good, but it is to be noted that the failures all occurred in connection with one method of operation, all the rest being up to the present successful.

Hernia in its relation to the Workmen’s Compensation Act comes under frequent consideration at the Royal Arsenal. If certified to be due to the nature of a man’s work it may be made the basis of a claim to injury pay and to compensation. Cases where a congenital sac exists might be fairly ruled out of court, but they are rare, and when present not always easy to recognise. On the other hand, a hernia suddenly forced down by a powerful strain might be considered admissible, but here again there are difficulties. We have never been able to satisfy ourselves that such an occurrence is possible in the absence of a congenital sac. Continuous laborious strain, like continuous lifting of heavy weights, may conceivably cause the gradual formation of a hernia, the existence of which is only observed when the sac has attained a certain size. But it is just in these cases that a man’s foreman
hesitates to supply the needful certificate that the injury was caused at and by the work performed. The medical officer has no means of testing the man's reaction to the nature of his work on the spot; indeed, his opinion is not asked for till the mischief is done. So that to do justice to the workman and to the public who employs him, is not at all an easy matter. Our practice is to refuse admission to the Arsenal to all men with hernia, and then to judge each case that arises on its merits, taking the nature of the man's work into consideration, and practically refusing to consider any hernia as arising suddenly.

(9) Gastro-enterostomies—Lieutenant-Colonel Lougheed writes the following notes of the three cases of jejunostomy: "A. C., aged 42, had suffered from symptoms of pyloric obstruction for many months and was losing flesh. I had the advice of Mr. Bidwell, of the West London Hospital, in this case. He considered that it was probably of a non-malignant nature, and advised a gastro-jejunostomy. Upon opening the abdomen by a vertical incision, \(\frac{1}{2}\) an inch to the left of the middle line, I found a mass about the size of a closed fist occupying the situation of the pylorus. It was fixed and evidently malignant, for enlarged glands could be felt in the transverse fissure of the liver. A posterior gastro-jejunostomy was performed. A posterior row of mattress sutures and the corner sutures were passed and tied. An anterior row of sutures were passed, but not tied until the openings of suitable size (i.e., capable of admitting the tips of three fingers) had been made in the stomach wall and intestine and all bleeding points secured. Two or three sutures were passed between the distal part of the jejunal loop and the nearest part of the stomach to prevent kinking, and the viscera were returned into the abdomen. The peritoneal incision was united with interrupted silk sutures, as were also the aponeurosis of the abdominal muscles in separate layers, and the skin was closed with silkworm gut. The wound healed by first intention, and the temperature never rose above normal. There was no vomiting and no dyspeptic symptom after the operation, and he was discharged from hospital on July 27th to go to a convalescent home. When seen at the end of August he had gained 5 lbs. in weight and had a sound scar and no return of his symptoms. He remained well during September, but in October he began to lose weight and the tumour in the epigastrium was enlarging, but he had no vomiting. During October and November he had abdominal pains and lost flesh rapidly. He died on December 7th, but up to his death had no vomiting. In this case
of cancer of the pylorus the man's life was prolonged by many months, and his end made much more tolerable than if he had not been operated upon.

"W. H., aged 51, had a history of dyspepsia, vomiting and pains after food, and occasional attacks of hæmatemesis and melæna for more than two years. The stomach was much dilated and no tumour was found. A diagnosis of gastric ulcer was made, and after keeping the patient in bed for a week and washing out his stomach daily with boric solution, which brought away some material of a ground-coffee appearance, a posterior gastro-jejunos-tomy was performed on August 9th, in the manner described in the account of the previous case. The coats of the stomach were found to be considerably thickened, and there was much venous oozing when the stomach and intestine were opened. On the night of the operation the patient was very excited and got out of bed suddenly. He vomited much for the first twenty-four hours, but notwithstanding these drawbacks he made a good recovery. The wound healed per primam, and he had no subsequent vomiting, nor any return of his old symptoms. During the next two months he gained about 2 st. in weight, and said he felt better than he had ever been. A hernial protrusion formed at the abdominal scar, owing no doubt to the post-anæsthetic vomiting and to his getting out of bed on the first night. He was fitted with an abdominal belt, which keeps the viscera in place, and he has performed his ordinary duties up to the present date (September 1st) without any return of his former symptoms; as he says himself, 'he feels perfectly well.'

"H. B., aged 36, had a history of chronic dyspepsia for many years, which had become much worse lately. He had attacks of hæmatemesis and melæna on three or four occasions, and periodic vomiting, and pain after taking food. On admission into hospital, on September 1st, he had just recovered from a very acute attack of hæmatemesis, in which he states that he vomited some quarts of dark blood. The stomach was washed out with boric lotion for five days, and on September 6th a posterior gastro-jejunos-tomy was performed in the same manner as in the two previous cases. The opening in the transverse mesocolon was made of considerable size and stitched at several places to the stomach wall so as to avoid subsequent hernia in that direction. Two 'kink' stitches were placed in the distal part of the jejunal loop. No marked thickening of the pylorus was found, nor was much dilatation of the stomach present. The abdominal incision was closed in the usual manner.
He recovered quickly from the operation and had a good deal of nausea but little vomiting after the anaesthetic. The subsequent history was very favourable. Temperature remained normal and the wound healed by first intention. His weight three weeks after the operation was 8 st. ½ lb., when he was sent to a convalescent home. He was sent to duty on December 9th, having had no vomiting or dyspepsia since the operation, and his weight then was 9 st. 2 lbs. He has remained at work ever since, and continues quite free from all his old troubles. The abdominal scar is quite sound."

(10) Cholecystostomy (Major Pilcher).—This was performed on A. E., aged 30, on September 17th. He gave a history of several attacks of acute pain, evidently due to gallstone impaction. He presented all the usual symptoms of jaundice, and had a hard, tender swelling about the size of an orange in the situation of the gall bladder. There was moderate fever. An incision was made along the outer border of the right rectus from the ribs to the umbilicus, the muscle drawn inwards and the peritoneum opened. An enlarged and inflamed gall bladder presented, and after being carefully packed round with gauze, was tapped with a trocar and cannula and then incised. About 6 ozs. of pus were evacuated, and what looked like a cast of the entire mucous membrane of the gall bladder. There were no actual gallstones in the pus, but masses of a creamy pultaceous material, which it is probably correct to consider as either gallstones in the making or gallstones softened in the pus, were present. The liver was then pulled well up and the ducts examined carefully for stones, but without result. There were no adhesions found. The opening in the gall bladder was then stitched to the upper part of the abdominal opening in the way recommended in Cheyne and Burghard's work on surgery, i.e., so that, as contraction takes place in healing, the edges of the opening in the gall bladder are turned inwards, peritoneum meeting peritoneum, and thus the healing of the biliary fistula is promoted. The wound in the abdominal wall was closed in the usual manner in the lower part, the upper part being left open and a drainage tube inserted into the gall bladder. Recovery was very rapid and satisfactory, jaundice disappeared, stools and urine became normal, food was well taken and digested, and by October 9th, the day on which the patient returned to work, the fistula had completely healed and he had gained considerably in weight. He has been seen at intervals since, and relief from all symptoms but occasional dyspepsia continues. The abdominal wound remains sound.
(11) Suture of Perforating Ulcer of Stomach (Major Pilcher).—S. P., aged 32, was washing a floor on the afternoon of February 10th, 1906, and while stretching forwards felt something give way in his abdomen. This was followed by severe pain, and he came to hospital in the evening, some four or five hours later. There was then no collapse, and the pulse was good; but the respiration was embarrassed, and there was abdominal pain with spasm of the right rectus muscle. He was anaesthetised and the appendicular region first explored by a vertical incision along the outer border of the rectus. The appendix was found to be healthy. The abdomen was then opened in the middle line above the umbilicus, and there was immediately an escape of fluid and gas, and, on further search, a perforation was found on the anterior wall of the stomach in the vicinity of the pylorus. The coats of the stomach were infiltrated and friable for an inch round the perforation, so that to find a part of the wall which would stand the tension of stitches was by no means easy. Finally the opening was securely closed by two tiers of Lembert’s sutures, and the abdomen thoroughly washed out with sterile salt solution. A drainage tube was passed through the lower opening in the abdominal wall and brought out behind through Petit’s triangle, and the upper wound was partially closed, several gauze wicks being left in it, passing both to the wound in the stomach wall and also in different directions among the intestines. All the efforts to exclude sepsis from the abdominal cavity, however, proved unsuccessful. Temperature fell and the pulse-rate rose on the third day after the operation, and there was increasing meteorism and dyspnoea. He died on February 15th, 1906. There was an obscure history of dyspepsia and pain after food of some years standing, but no haematemesis or melena. Rupture took place in the afternoon, and therefore not long after the heaviest meal in the day, when gastric digestion was at its height and the acidity of the gastric contents well marked. Complete evisceration and washing of each separate coil of intestine, as recommended by Cheyne and Burghard, might have availed to completely cleanse the abdomen, but short of this a very thorough cleansing was carried out. Evisceration means very complete cleaning, but it also means possibilities of fatal shock and difficulties sometimes in the return of distended intestine. The soiling of the peritoneum being only partial, it was considered that the ordinary method of washing out would be sufficient in this case.

(12) Urethrotomy for Stricture of the Urethra.—Of these operations four were performed. Three were internal urethrotomies and
were performed by Colonel Lougheed, who gives the following account of them: "A. W., aged 37, was admitted on August 24th, with retention of urine and a history of urethral stricture for some years. No instrument could be passed, and the bladder was tapped suprapubically. After warm baths and sedatives a filiform bougie was introduced into the bladder and an internal urethrotomy was performed with Teevan's instrument, and two fibrous strictures divided in front of the triangular ligament. A No. 16 silver catheter was then tied into the bladder, and this organ was then washed out daily for four days, after which the catheter was removed. He had no rise of temperature and the subsequent progress was good. He had a full stream on micturition, and a No. 15 sound passed without difficulty daily for some time after he had resumed work. He attended once weekly for a couple of months to have a large sound passed, and he is now quite well.

"W. G., aged 44, was almost a similar case. An internal urethrotomy was performed on September 18th. Three strictures were successively encountered and divided by Teevan's instrument. The subsequent progress was very satisfactory, and he returned to duty cured, and has remained well up to the present time.

"R. E., aged 46, was admitted on December 4th on account of old-standing stricture with spasmodic retention. No instrument could be passed, but urine came away after a hot bath. He had much cystitis and some blood in the urine. He was kept in bed and put on urotropine for ten days, during which time urine dribbled away. An internal urethrotomy was then performed with Teevan's instrument, the stricture divided, and a large silver catheter tied into the bladder. Severe shock and collapse followed about 11 p.m. on the night of the operation, with some hemorrhage from the penis. His bladder was thoroughly washed out, and as his pulse was very small about three pints of normal saline solution were infused into the median basilic vein. This did him a little good, and the slight bleeding ceased. His pulse gradually failed, although he was freely stimulated. He died twenty-eight hours after the operation. He had no rigors or rise of temperature after the operation. No post-mortem was allowed, so that the condition of his kidneys could not be ascertained. His symptoms would point to some poison (possibly choline) generated in the system after the traumatism of the operation, lowering his blood pressure and ending in death."

The fourth case was one of external urethrotomy performed after Syme's method, and was under the care of Major Pilcher. A. D.,
S. Lougheed, J. Jameson, E. Pilcher and H. Dunn 257

aged 52, an old soldier, had a very hard stricture with a fistulous opening in the perineum. Some years before Sir Henry Howse had operated upon the stricture, and the fistula was probably in the track of his operation wound. It was found possible at the operation to use a Syme's staff, which was accordingly passed and cut down upon in the usual manner, traversing the scar of the previous operation and including the fistulous track. The stricture was divided from behind forwards, the staff withdrawn, and a No. 14 silver catheter tied in for four days, and the bladder washed out daily. Since then a No. 14 sound has been passed with decreasing frequency, and the man has now no trouble of any kind.

(13) Lithotomy.—This case was operated upon by Colonel Lougheed, who gives the following account:

"C. K., aged 30, had several calculi removed by litholapaxy at St. Peter's Hospital in December, 1904, and again in July, 1905. On admission his urine was very foetid and contained blood, mucus, and phosphates, and was passed every few minutes with much pain and tenesmus. He was kept on urotropine and had the bladder washed out daily for three weeks. As the condition did not improve, an operation was considered advisable. With a sound, calculi were easily detected. A suprapubic operation was not considered advisable, on account of the danger of infecting the cellular tissue above the bladder by the foetid urine; nor could proper drainage be established, or rest given to the bladder by this route. A lateral lithotomy was accordingly performed on December 20th, and thirteen calculi removed, weighing altogether 427 grains in the dry state. One calculus was embedded in a pouch, and its free surface was extensively facetted from the rubbing of the others. It weighed 152 grains. A large flat phosphatic deposit was with some difficulty removed from the area of the trigone. After the removal of as many calculi as could be felt with the finger, the bladder was thoroughly washed out and some phosphatic débris got rid of. The patient became very excited on the night of the operation, and sat up in bed and removed his dressings. He had some bleeding from the perineal wound, which continued at intervals until January 2nd, when the bladder was washed out through the wound, and its cavity explored with the finger. No more calculi could be detected. As the bleeding continued, a rigid tube was passed through the wound into the bladder and iodoform gauze packing introduced all round it fairly tightly. This allowed the urine to come away and stopped the bleeding. When this tube was removed, on January 8th, bleeding recurred, and the wound was again packed in a similar
This was left in for a few days, and the bleeding did not recur on its removal. The subsequent progress was very satisfactory. The wound healed soundly in a fortnight, and he passed his urine normally, all cystitis disappearing. He put on about 2 stones in weight during the next two months, and returned to work on March 24th, quite well and without any cystitis or phosphates in his urine. He remains quite well up to date (September 3rd), his urine being quite clear, and his weight 10 st. 4 1/2 lbs.”

(14) Operation for Varicocele.—The high operation recommended by Sir William Bennett was done in all cases. All healed by primary union and no further trouble was experienced.

(15) Operation for Hydrocele.—In two cases there was an old-standing hydrocele of the tunica vaginalis, which had been frequently tapped. In one the sac extended up to the external ring, and there was no communication with the abdominal cavity. In these the sac was isolated and cut away close to the reflection of the parietal layer on to the testis and epididymis, and the skin was closed. In the fourth an encysted hydrocele of the cord was dissected out bodily and removed. In the fifth a remarkable cystic condition existed on both sides in connection with a double vaginal hydrocele. A number of small cysts, having apparently no connection with the tunica vaginalis, or with each other, were found in the vicinity of the globus major. They were probably dilated accessory tubules of the epididymis, possibly those called Kobelt’s tubes. They were removed with the parietal layer of the tunica vaginalis on both sides. All these cases healed by first intention and gave no subsequent trouble.

(16) Drainage of an Inguinal Abscess.—(Major Pilcher). E. W. came to hospital with a large abscess pointing above Poupart’s ligament. There was the scar of an old operation in the left inguinal region, which he said had been performed, for “obstruction,” six years before in Charing Cross Hospital. So far as he knew, no tumour was found and nothing had been removed. He was anaesthetised on April 11th, 1905, and about 6 ounces of pus evacuated. The man returned to work with the sinus in the groin still discharging slightly, but causing little inconvenience. At the end of the year, it was decided to follow up the sinus and make an attempt to close it. On January 13th, 1906, an incision was made parallel to Poupart’s ligament down to the transversalis fascia, and all the structures pushed inwards, exposing the sheath of the psoas muscle. A probe passed into the sinus was then found to lead to a sinus beneath the psoas sheath, which was accordingly opened up
Case of Needle impacted in Foot.

To illustrate "Surgical Report for the Royal Arsenal, Woolwich, Year 1905-6."
By Lieutenants-Colonel S. F. Touched, C.M.G., and Majors J. C. Jamison,
E. M. Pilcher, D.S.O., and H. N. Dunn R.A.M.C.
Case of Needle impacted in Foot.

To illustrate "Surgical Report for the Royal Arsenal, Woolwich, Year 1905-6."
to the extreme limit to which the probe reached. The whole track of the sinus thus laid bare was thoroughly scraped down to the opening in the groin, and the wound was packed with a strip of iodoform gauze. The superficial structures were then allowed to fall back into place, a few sutures united the muscles, and the skin wound was closed and dressed in the usual manner. The wound did not heal quite antiseptically, as was hoped, but gradually healed with the formation of a certain amount of pus, and the man returned to duty. The origin of the condition remains a mystery. No history of spinal diseases could be obtained, though the condition found renders such a cause in a high degree likely. The man was, and remains, a particularly strong, healthy-looking individual, with no signs of tubercle in any other part of the body.

(17) Removal of Hemorrhoids.—The method usually adopted was, after dilatation of the sphincter, to seize the pile, and divide the mucous membrane round its base. The base was then transfixed with a needle on a handle threaded with stout silk, and the ligature tied. The pile was then cut away, and when as many others as was considered necessary had been similarly treated, a tube was placed in the rectum and packed round with iodoform gauze, a pad of gauze was placed against the anus, and the dressing completed with a T-bandage. A half-grain morphia suppository was usually placed in the rectum, and the bowels were kept confined and the patient on milk diet until the fourth day.

(18) Operations upon Fistula in Ano.—Three of the cases were over 50 years of age, three over 40, the youngest being 25. This is evidently a disease of adult and late adult life. In two cases tubercle existed in other organs of the body; one healed soundly, the other resisted all treatment and still exists. In all cases no internal opening was found, and it is probably extremely rare for an ischio-rectal abscess to open into the bowel. It may be argued that much time and patience may be necessary to find the internal opening, especially when the track is tortuous, and that surgeons find it unnecessary to expend time over such a search. The point is not of much importance surgically, but text-book descriptions do not as a rule indicate the condition of things usually found: a blind external fistula.

(19) Diseases and Injuries of the Lower Extremity.—Most of these 15 cases were accidents at work of varying degrees of severity. The following deserve mention:—

(a) T. C., aged 55, had dry gangrene of the left foot as far back as the bases of the metatarsals. Amputation was performed at the
site of election by lateral flaps. The arteries were of a greatly reduced calibre and like pipestems for hardness; indeed, it was a serious question if they would hold a ligature at all. The anterior part of the flaps sloughed over an area corresponding to the distribution of the recurrent tibial artery, and a flake of bone separated from the cut surface of the tibia, otherwise all went well.

(b) W. S., aged 24, had his right leg amputated through the thigh on January 26th, 1904, for tubercle of the knee-joint. On December 19th, 1905, he attended with a tubercular abscess on the dorsum of the foot, which was twice scraped and packed with iodoform gauze. The bones and synovial membranes of the tarsus do not seem to have been in any way affected. The lungs were not invaded.

(c) J. L., aged 58, was injured by the fall of some heavy barrels upon his right leg. Both malleoli were broken off, and the astragalus, carrying the foot with it, was displaced inwards and tilted somewhat inwards. The skin was stretched almost to bursting point, but reduction was effected under chloroform before sufficient took place to cause sloughing. An excellent result was obtained, with a freely moving joint. An X-ray photograph is appended.

(d) Two cases of needles impacted in the foot were dealt with. The X-rays demonstrated the position of the needles, which were cut down upon and extracted.

(20) Operations of Varicose Veins.—Nine operations were performed upon varicose veins of the leg. Trendelenberg’s method of removing a piece from the internal saphenous vein was invariably adopted, and an attempt was usually made to identify and remove the communicating vein between the external and internal saphenous veins behind the knee. The operations were pretty radical, extending often along the greater part of the limb, and they were on the whole very successful, healing taking place by first intention and a sound and painless scar resulting.
Radiographed about 18 months after date of accident.

Case of Fracture--Dislocation of Right Ankle-joint.

To Illustrate "Surgical Report for the Royal Arsenal, Woolwich, Year 1905-6."