per urethra, and the bladder washed out by this means. On the introduction of the instrument about 2 ounces of thick foul-smelling pus were evacuated. After this the patient was able to pass small quantities of urine normally for the first time. On September 10th slight extravasation of urine took place into the scrotum, which became red and oedematous on the right side, the right spermatic cord being greatly thickened and painful. The temperature rose slightly. Incisions were made into the tissues, and hot baths given. The condition quickly subsided with a slight amount of sloughing.

The further progress of the case was uneventful. The patient was discharged from hospital on October 14th, 1908. The pus had disappeared from the urine by September 21st, and the patient was able to hold his urine for several hours and pass it normally. The abdominal wound was quite healed, and the scrotal wounds were looking healthy. The urine was almost clear.

NOTE.

November 16th, 1908: Patient was seen by me after my return from leave. He appeared to have put on considerable weight, and looked extremely well. He stated he was feeling better than he had been for years, and was retaining and passing his urine quite normally. He passed some in my presence; the stream was full and forcible, and the urine was perfectly clear. On examination it contained neither blood, albumen, nor pus. The abdominal and scrotal wounds are perfectly healed, leaving firm scars.

Since the above note I have seen the patient frequently, and his satisfactory condition is maintained. He has resumed his employment.

FURTHER NOTES ON SURGICAL TECHNIQUE.

By MAJOR F. E. GUNTER.
Royal Army Medical Corps.

Since my last article on this subject published in the May number of the Journal, 1908, the procedure at the Curragh has been slightly modified.

The tendency has rather been to drop those precautions which do not appear to be absolutely necessary. We have been trying to work as simply as possible, realising that the Army Medical Officer, working as he does under such varying conditions in all parts of the globe, should get into the habit of using simple methods.

Perhaps it may be well, before going further, to summarise as shortly as possible the procedure at present adopted.

All dressings are sterilised in the disinfecter. Old biscuit tins have been substituted for the drums usually employed. Instruments are, without exception, boiled and placed on a dry towel for use. No water
Clinical and other Notes

or lotion is used throughout an operation, except at the commencement for the cleansing of the operation area. The skin of the patient is not prepared in any way, beyond shaving the night before, till he is under the anaesthetic. I am of opinion that harm may be done by too much washing. It certainly irritates some skins and all that is now done is to gently wash the part, without using a nail-brush, with soap and water, and then to apply a little alcohol.

During the operation, each instrument after it has been used is passed to an orderly, who dries it thoroughly, and then holding it in a pair of forceps passes it through and through the flame of a spirit lamp in the

<table>
<thead>
<tr>
<th>Cases</th>
<th>Sterile</th>
<th>Gauze Guard and Gloves.</th>
<th>Cases</th>
<th>Sterile</th>
<th>Rubber Guard and Gloves.</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>6</td>
<td>or 30%</td>
<td>82</td>
<td>33</td>
<td>or 31%</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Cases</th>
<th>Sterile</th>
<th>Mouth Guard, Gloves and Rubber Guard.</th>
<th>Cases</th>
<th>Sterile</th>
<th>No Mouth Guard or Guard or Gloves, but Flaming Instruments.</th>
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<tbody>
<tr>
<td>17</td>
<td>17</td>
<td>or 100%</td>
<td>14</td>
<td>14</td>
<td>or 0%</td>
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</table>

Note.—By “Cartilage” is meant removal of articular cartilage of knee-joint; by “Varix saphenous” is meant ligature of saphenous vein in thigh for varicose veins.
same manner as he would if working in a laboratory. He then places it amongst the clean instruments for further use. Any instrument thus flamed is fit for use with the next case. In this way considerable time is saved.

I find this flaming of instruments especially useful when dressing cases in the wards. It is essential that the instruments should be quite dry before flaming, or there is a risk of their being insufficiently sterilised.

Every ligature is threaded with a needle previous to sterilisation, and is then put up in a separate test-tube and the needle stuck into the cotton-wool plug. The tubes are then sterilised in the disinfecter. On a ligature being required the orderly removes the plug and along with it the needle and thread. The needle can be removed from the thread if preferred, but, personally, in tying arteries, I usually under-run the neighbouring tissues.

In the accompanying chart are shown the results of 100 consecutive operations upon non-septic cases, about half performed by myself, the remainder by other officers in the station.

Each case in which the sutures removed from the wound on dressing proved to be sterile on bacteriological examination is shown on the lower line in the same way as a normal temperature is recorded in a temperature chart. When pathogenic micro-organisms have been detected this is indicated by a dot on the upper line. The organism found is noted in each case above and the operation performed below. This is a graphic way of showing results and saves much writing. (It should be explained that none of the cases became septic, but the object aimed at was bacteriological perfection.) The precautions taken are shown at the top of the chart.

The first twenty cases were unsatisfactory, only 30 per cent. of the sutures being bacteriologically clean. I thought that this was possibly the fault of the gauze guard and substituted a rubber guard in the next twenty-three cases. There was a considerable improvement, 71 per cent. of the sutures being sterile.

This, however, was not perfection; so I next, in addition, used a mouth-guard. The result was perfect, all the cases were sterile. Mouth-guards are, however, uncomfortable, and I cannot but think they are injurious to the wearer, so I stopped the use of them. At the same time I did away with the rubber-guard, but flamed my instruments. Fourteen cases were operated on and all proved sterile.

Getting bolder, I dropped the use of gloves and the results got worse. In seventeen cases only 64 per cent. were sterile. I deduce from these experiments that the use of gloves is desirable if you aim at bacteriologically perfect results, and that a guard for the mouth and operation area are unnecessary.

The chief object of flaming is to remove any slight contamination of the instruments which may have occurred during the operation.
In conclusion, I would like to express my thanks to Lieutenant-Colonel F. A. B. Daly, C.B., and brother officers here, for much kindly advice and assistance, and to Private Buckell, laboratory attendant, for aid in working out bacteriological data.

HOW TO DEAL WITH THE SAC IN OPERATIONS FOR INGUINAL HERNIA.

By Major F. J. W. Porter, D.S.O.
Royal Army Medical Corps.

As Captain Churton has pointed out in the Journal for December, the isolation of the sac is not in all cases by any means a simple matter, and constitutes practically the most difficult part of the operation. I should like to mention the method which I have adopted for many years past, and which has proved satisfactory.

The sac is invariably to be found at the lower border of the internal oblique, in front and to the inner side of the cord, covered simply by cremaster muscle. The lower edge of the internal oblique is forcibly retracted upwards and outwards. With two pairs of dissecting forceps, the cremaster muscle is stripped inwards and outwards in a direction parallel to the cord, exposing the sac, which can of course be recognised by its white appearance. The sac is now picked up by two pairs of Spencer Wells forceps applied at right angles to its long axis and held by an assistant.

An incision is very carefully made through the sac between the points of the forceps and deepened until a shining membrane is seen. This is, of course, the posterior surface of the sac lined by peritoneum. The edges of this incision are now held by forceps and a blunt dissector is passed into the sac in an upward direction. If the sac has been properly opened the instrument passes into the abdomen without the slightest resistance.

The opening of the sac is now enlarged upwards and downwards so as to admit the left forefinger. This is inserted and the edge of the sac gripped between it and the thumb-nail at the cut edge. With a pair of dissecting forceps, the structures of the cord are stripped from the sac, keeping very close to it and working in a direction at right angles to its long axis. As the stripping progresses, the sac is pulled towards the operator and firmly held by the thumb-nail against the forefinger. In this manner it is possible to work round about three-quarters of the sac. The circle is completed by working in the opposite direction in the same manner. The stripped sac is now quite free from the cord for about the space of one inch, and the cord is still firmly adherent to its natural bed. The stripped portion of sac is then clamped by a Spencer Wells forceps and cut across.