The same technique was employed as in the series previously reported. Stovain was the analgesic used in 91 of these cases and novocaine in 9 cases.

There was no case of failure in entering the dural sac, and in no case did the injected fluid fail to act.

In three cases a second injection was given, as after the first injection the analgesia did not extend high enough for the performance of the operation.

In two cases when novocaine was injected, the analgesia did not last long enough, and the operations were completed under light general anaesthesia. My limited use of novocaine has not created an impression in its favour in comparison with stovain or tropococaine. The dose required is almost double that of stovain, and the analgesic effect does not appear to be so deep or lasting. The bye-effects in these cases were mostly trivial.

During the operation, there was faintness or nausea in 16 cases.

In these 16 cases the analgesia reached to above the nipple line.

In 12 cases the patient vomited on returning to the ward.

Two cases suffered from severe headache, for which a hypnotic was administered. In 45 cases, slight headache was reported to be present on the evening following the operation, but this headache did not interfere with the patient's sleep during the night.

AN ADAPTER FOR UTILIZING JINRICKSHA WHEELS AND SPRINGS FOR THE TRANSPORT OF SICK AND WOUNDED ON STRETCHERS.

By W. R. C. Middleton, M.B., D.P.H.
Surgeon-Major, Singapore Volunteer Corps.

It occurred to me some years ago that the wheels and springs of jinrickshas might be utilized for the transport of wounded on stretchers. The same idea had occurred to Major H. E. Winter, R.A.M.C., to whom I mentioned it when he was stationed in Singapore, but I am not aware that he ever put it into practical form.

The carrying out of the idea is facilitated by the simple way in which the body of the jinricksha, with the shafts, is attached to the springs. This is done by means of a couple of bolts on either side which pass through corresponding holes on the upper portion of the springs, and are secured by nuts. By unscrewing four nuts therefore the body and shafts can be dismounted leaving the wheels, axle, and springs.

The present contrivance is one which, on the invitation of Lieutenant-Colonel Barratt, R.A.M.C., I had an opportunity of showing in a rather crude and unfinished form before Major-General Stephenson and officers
Fig. 1.—Wheels, axle and springs with adapter in position.

Fig. 2.—Stretcher on adapter with supports for awning in position.
of the garrison in February last. It consists of a steel bar 2 in. wide and 1 in. thick, stretching from spring to spring, and bent downwards in its centre portion to avoid contact with the canvas of the stretcher. It is attached to the springs by bolts passing through the same holes as the bolts of the jinricksha body and secured in position by nuts. As the width between springs and the distance between the holes in the springs vary within certain limits, the bar and the cross piece attaching it to the springs have to be made adjustable. To receive the stretcher two adjustable uprights are provided which fit into brackets screwed on the sides of the stretcher poles. Other additions to the stretcher are (1) four legs to preserve it in a horizontal position when stationary, and which when not in use are folded up along the poles, (2) four sockets for receiving uprights for the awning. These are both attached to an irregularly triangular metal plate screwed to the stretcher pole above and attached to the rackets below by a prolongation of the axles of the rollers. This plate also bears a socket into which the legs slide when in use, and which serves to support them against lateral strains.

The awning is made in one piece with side and end flaps, and is supported by two metal uprights, and a cross piece at either end. These pieces are 23 in. long (equal to the width of the stretcher). When not in use they are placed in pockets at either end of the awning, the side and end flaps folded in and the whole rolled up and fastened with straps.

The accompanying photographs will give an idea of the contrivance.

The weight of the adapter is 7 lb., of the awning and supports 10 lb., and of the other additions to the stretcher 20 lb., adding 30 lb. to the weight of the stretcher, but it would doubtless be possible to reduce this weight by the use of lighter materials without a sacrifice of strength. The cost of providing a litter of the above description (exclusive of the stretcher) was £75 (£8 15s.). This included rubber-tyred wheels, springs, axle, hood, metal fittings and painting.

A small screw spanner should also be included with each stretcher, and all the metal portions should be galvanized or painted with aluminium paint to prevent rusting.

In emergencies jinrickshas and coolies accustomed to pulling them could be commandeered, and by the use of the adapter the jinrickshas could be easily and quickly converted into wheel litters. Where it is desired to have such litters always at hand, wheels, axles, and springs can be purchased and wheel litters provided at a cost considerably less than that usually charged for the different designs now manufactured.