several negative examinations of urine. Shortly after discharge, he had a recurrence of symptoms whilst on a march; ova were found in his urine only on the sixth examination. He was given three injections of tartar emetic (7½ grains), but then refused further treatment.

Table II gives a summary of the treatment and results.

Table III records the subsequent examination of the urine of all men in the Royal Ulster Rifles and 19th Brigade Royal Field Artillery who had been in the infected area.

### TABLE III.

<table>
<thead>
<tr>
<th>Regiment</th>
<th>Number examined</th>
<th>Number whose urine showed</th>
<th>Total infected</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number examined</td>
<td>Number whose urine showed</td>
<td>Total infected</td>
</tr>
<tr>
<td>R.U.R.</td>
<td>Officers 12</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td>Other ranks 461</td>
<td>29 (6 per cent)</td>
<td>82 (7.5 per cent)</td>
</tr>
<tr>
<td>19th Brigade R.F.A.</td>
<td>Officers 1</td>
<td>NIL</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td>Other ranks 35</td>
<td>11 (81 per cent)</td>
<td>11 (81 per cent)</td>
</tr>
</tbody>
</table>

There was no opportunity of searching the suspected area of infection for the snail hosts of the parasites as the area was evacuated by our troops before many cases were admitted to hospital and interest in the infection had been aroused.

It is regretted that the movement of the troops to Egypt has prevented me from following up and recording the final results of the treatment, and from treating the other 122 cases in whose urine ova were subsequently found, but these notes are published in the hope that the progress of the cases can be followed and recorded at a later date in the JOURNAL OF THE ROYAL ARMY MEDICAL CORPS. A nominal roll of these cases has been submitted to the Medical Authorities, Egypt, for this purpose.

I owe more than I can here express to the A.D.P. Mesopotamia, Lieutenant-Colonel Hamerton, C.M.G., D.S.O., R.A.M.C., for his help and suggestions throughout; it is due entirely to his persuasion that I have placed these few notes on record.

**IODINE IN THE PROPHYLAXIS OF INFLUENZA.**

**By Captain D. W. Beamish.**

_Royal Army Medical Corps._

Sajous (1930) has emphasized as a result of his experiments and those of others, the importance of inhalation of fumes produced by heating pure iodine crystals, in the prophylaxis of influenza. This is recommended for trial in all public places, barracks, schools, etc.

I have carried out the following experiments in Kasauli and Sana'war and think it may be of interest to describe them in some detail. The experiments about to be described are based on the theory: (1) that we are protected to a very high degree by the natural nasopharyngeal defences and the defences of the respiratory tract; (2) that iodine fumes in suitable doses are particularly powerful...
in stimulating these defences, which are thus enabled to deal successfully with an invasion of organisms such as the Bacillus influenza.

The doses and method of carrying out the experiment are as recommended by Sajous.

No. 1 at Kasauli Barracks.—At the time of carrying out this experiment in February, 1921, influenza was mildly prevalent amongst the European residents in Kasauli and so it was thought a favourable time to start the work in the barracks.

There were then two bungalows in occupation by the troops. The cubic capacity of the rooms having been ascertained, the amount of iodine crystals required was arrived at, bearing in mind the fact that 0.33 gramme is sufficient for a room of sixteen cubic metres capacity.

The cigar box method, being the most economical was the one employed.

The crystals were heated in the barrack-rooms at night for three hours commencing at about 10 p.m. The lamp was placed in the middle of the room.
I found that a small lamp of local manufacture which contained three ounces of methylated spirits lasted just three hours. The flame is placed about six inches below the saucer in position on top of the cigar box (see diagram). The size and position of the flame can only be arrived at by visiting the rooms and altering as required.

There should be a faint odour of iodine throughout the room and no excess of fumes which would cause any discomfort on the part of the men.

I found that a flame a little more than half the size of an ordinary candle flame did not produce any bad effects.

There were no complaints on the part of the men who had been previously lectured on influenza and I experienced no difficulty in carrying out the work.

The iodine was weighed out and the lamp refilled daily at the British Station Hospital. One man was detailed from each room to take his supply of iodine and methylated spirits from the hospital. The senior non-commissioned officer was made responsible for lighting the lamps before retiring to bed.

Cost of the Experiment.—The cost of the iodine which is 11 rupees a pound worked out at about 7 annas per night and the methylated spirits it annas per night. This is the cost of iodine and spirits used in a total space of over 1,000 cubic metres, housing about three quarters of the men in the station at the time. The lamps, which are of scrap metal, only cost two annas each. The experiment was only carried on for about one month as influenza disappeared from the station. There were no cases of influenza amongst the troops at any time during the season.

Experiment 2.—A mild outbreak of influenza occurred in the Lawrence Royal Military School, Sanawar, during March, 1921. As the cases increased, in the usual course of events the classes would have to be stopped and the whole school thus disorganized. I suggested that a trial should be given to the iodine prophylaxis before closing down the schoolrooms. This was carried out for three hours during the morning classes in all the schoolrooms.

The results were interesting, the curve of admissions rapidly falling, and within a few days there were no admissions. Of course this could not have been entirely due to the iodine but the result is certainly interesting, as there were no more cases after six days' treatment. The presumption is that iodine must have had some part to play.

From a teaching point of view it was very satisfactory as the classes were
carried on as usual with no complaints from the teachers or pupils. In conclusion
I think this form of prophylaxis is worth further trials in view of its simplicity
and small cost.

I wish to thank Assistant Surgeon Aliug of the British Station Hospital,
Kasauli, and Assistant Surgeon Raj Singh, of Sanawar, for their valuable
assistance in carrying out these experiments.

REFERENCE.
SAROUS (1920). "A New Interpretation of the Prophylaxis, Pathogenicity and Treatment

A CASE OF BLACKWATER FEVER OCCURRING IN
MESOPOTAMIA.

BY CAPTAIN A. G. HARSANT.
Royal Army Medical Corps.

The 2nd Battalion York and Lanes. Regiment, were heavily infected with
malaria whilst stationed at Kasvin (Persia) during autumn of 1920 and spring of
1921.

Lance-Cpl. G., of that Regiment stated, that he had sixteen attacks of malaria
during that period, for ten of which he was admitted to hospital. He had been
having ague attacks every three to four weeks and was discharged from hospital
after the last of these, about April 10. He had taken much quinine by mouth
and was given daily intramuscular injections of quinine for eight days in
December, 1920. He was admitted to 23rd British Station Hospital, Baghdad,
on April 25, 1921, apparently suffering from an ordinary malarial relapse. For
two days he had an intermittent temperature. His colour and general condition
were good, his spleen was enlarged considerably below the costal margin and
tender, and he vomited at intervals. He was given a mixture of quinine fifteen
grains, three times a day.

On the evening of the third day, he complained of pain in the right side of his
chest, apparently superficial; no abnormal physical signs could be detected in his
chest.

On the fourth morning patient was very collapsed, was vomiting frequently; his
skin was slightly jaundiced and his urine was almost black. He was given
an intramuscular injection of quinine bihydrochloride fifteen grains at 7.30 a.m.
At 10.30 a.m. he had a severe rigor, temperature 103° in axilla. Pulse 136, very
weak. He was vomiting bilious fluid and his jaundice was rapidly increasing.
There was tenderness over the spleen and in the right hypochondrium where the
lower edge of the liver was just palpable. He was given a further intramuscular
injection of quinine at 11 a.m. On the fifth day, the patient was pallid and
collapsed, and was still vomiting. One pint of bicarbonate and saline, and ten
grains quinine bihydrochloride were given intravenously. The bicarbonate and
saline injection was repeated on the seventh day, when the patient's condition
was still critical.

There was definite improvement after each of these injections: his temperature
however rose to 104° on the seventh day.