Some forty-seven cases of jaundice, associated with fever, occurred in Port Sudan between the beginning of January, 1922, and the end of March the same year.

Distribution.—All the cases originated in Port Sudan with one exception. This case left Port Sudan two months before developing an attack of jaundice.

Endemiology and Epidemiology.—For the last sixteen years there is no record of there having been any jaundice cases of this nature in Port Sudan.

The possibility of man acting as the direct carrier is unlikely. No case occurred in the hospital where a number of the jaundice patients were treated in the ordinary wards; and, where the disease occurred amongst a collection of men sleeping and living in close proximity, only a very small proportion of the whole contracted the disease, nor did these come into closer contact with the other sick men than with the healthy ones.

Rats are possible carriers of the virus, as also are flies, of which there were large numbers.

Approximately equal numbers of patients came from the small villages round the town, and from the town itself.

The villages consist of small grass huts, which are somewhat congested, and good sanitation is almost impossible to obtain, whilst the town houses are mostly built of brick with plenty of air space, and with the usual sanitary conveniences.

It must, however, be noted that a proportion of the inhabitants of the town houses eat all their meals in the market place, which possesses the same facilities for harbouring rats and flies as the villages outside, so that the town man stands as good a chance of eating contaminated food as the man living in the villages.

There were practically no mosquitoes in Port Sudan during this time of year.

Aetiology.—Males of between 20 to 30 years of age, and belonging to the Dongaloui tribe, were the most prone to infection.

There were no cases amongst women, and only one child was affected.

No Europeans contracted the disease.

Pathology.—Facilities for carrying out pathological examinations were only available at the end of the epidemic. Eight cases were so examined, two of these being quite recently infected patients, whilst the remaining six had had the disease for varying periods.

The histories and clinical notes of all the forty-seven cases so closely resembled one another that it seemed justifiable to regard the findings in the eight cases examined in detail, as indicative of what one might expect in the remaining thirty-nine cases.

The primary lesion appeared to be either in the stomach or the proximal end.
of the duodenum giving rise, as it invariably did, to pain in the epigastrium, and very frequently to vomiting.

The liver was not, as a rule, enlarged.
The conjunctivae were yellow in the recent cases.
There was no rash, and the skin appeared normal.

The blood showed marked leucopenia, averaging about 3,000 white cells per cubic millimetre, with a relative increase of lymphocytes, which averaged forty per cent. The number of red cells and percentage of haemoglobin was normal. No parasites were found in the blood. No organism was cultivated from the blood. The serum did not agglutinate B. *typhosus*, *B. paratyphosus* A or B.

The stools of the recent cases had the usual clay-coloured appearance associated with jaundice.

No organism of the enterica group was isolated from the stools.
There was no diarrhea.
The urine of recent cases contained bile. There was no albumin.
The urine of almost all the earlier cases was examined for albumin, and its absence was noted in every case.

Spirochaetes were present in considerable numbers in the urine of two of the cases, and were of a coarse variety.

Animal Experiments.—Guinea-pigs were inoculated intraperitoneally with the urine of certain cases, all remained fit for eight and a half weeks, when the animals were killed, and the organs, blood and urine were examined. Nothing abnormal was found post mortem in these animals.

Sections were cut of the kidneys, livers and spleens of these animals, and no spirochaetes were found microscopically.

Symptomatology.—The chief symptoms were: Jaundice, headache, pain in the epigastrium, a furred tongue, slight fever for one or two days, and vomiting after food. The pulse rate was normal.

The majority of those cases admitted to hospital showed no rise of temperature after admission, and in no case did the temperature rise above 100°F, or last more than three or four days. The average stay in hospital was four days, the jaundice disappearing five or six days after the date of onset, and none of the cases seem to have suffered from weakness or debility after their discharge from hospital. No complications were noted.

Three of the cases had a second attack some weeks after the first attack, so presumably the immunizing properties of the causal agent are slight.

Diagnosis.—These cases were diagnosed jaundice, camp jaundice being differentiated from spirochaetosis icterohæmorrhagica on account of the mildness of the attack, the absence of rapid enlargement of the liver, the absence of albu­minuria, the immunity of guinea-pigs to the disease, and to the absence of hæmorrhagic symptoms.

The differentiation from yellow fever was made because of the absence of high fever, albuminuria and the black stools, and vomit usually associated with that disease. Added to these points, no *Stegomyia fasciata* have been seen in the place.

Prognosis.—No serious case of illness occurred amongst the forty-seven patients treated.
## Detailed Notes of Eight Cases

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Physical signs</th>
<th>Blood examination</th>
<th>Urine</th>
<th>Feces</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>+ + + + - - + -</td>
<td>- -</td>
<td>3rd</td>
<td>N</td>
<td>2,500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>+ - - - - + -</td>
<td>- -</td>
<td>7th</td>
<td>O</td>
<td>3,343</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>+ + + - - + -</td>
<td>- -</td>
<td>10th</td>
<td>0</td>
<td>4,760</td>
</tr>
</tbody>
</table>

---

**Notes:**
- **Day of disease:** 3rd, 7th, 10th
- **Blood examination:** Aphtation of Bac. Y., Bac. A and B, Animal inoculation, Red count, White count
- **Urine:** Albinin, Blood culture, Spirochetes, Animal inoculation
- **Feces:** Lactose fermenting organisms
- **Remarks:** Leucopenia, lymphocytosis, animal inoculation, — or
<table>
<thead>
<tr>
<th></th>
<th>+</th>
<th>+</th>
<th>-</th>
<th>-</th>
<th>+</th>
<th>-</th>
<th>-</th>
<th>-</th>
<th>14th</th>
<th>-</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>5,000</th>
<th></th>
<th>0</th>
<th>0</th>
<th>0</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>17th</td>
<td>-</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>17th</td>
<td>-</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8,000</td>
<td></td>
<td>-</td>
<td>+</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>20th</td>
<td>-</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4,700</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>24th</td>
<td>-</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>(P M:</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Patient fit (14th day), leucopenia, lymphocytosis**

**Patient unfit (17th day), still weak; leucopenia**

**Patient fit (17th day), spirochetes in urine**

**Patient fit, eosinophilia, leucopenia, lymphocytosis.**

**Patient fit; eosinophilia**

---

**+ = Present or positive result.**

**- = Absent or negative result.**

**0 = Not tested.**
Treatment consisted in the administration of aperients combined with light dietary.

My thanks are due to Dr. Noel Waterfield, S.M.O., Red Sea Province, for his great help in putting all available material at my disposal, and for supplying me with clinical notes on all those cases that it was impossible for me to examine myself.

NOTES ON A CASE TREATED BY INTRAVENOUS INJECTIONS OF TARTAR EMETIC.

By Major B. H. V. Dunbar, D.S.O.
Royal Army Medical Corps.

W. R. H., garrison engineer, Zhob area, aged 29, was transferred to the British Station Hospital, Quetta, on December 3, 1921. He had been in India eight years, and stationed in the Zhob Valley since August, 1921. He was in Peshawar for three years before that and also in Delhi and Simla, but had never been to Assam. He gave a history of malaria, but stated he had not had an attack for the past six years. He went into hospital on November 14, 1921, with fever (irregular temperature) which he stated was the commencement of the present illness.

On admission he was very markedly anaemic, the skin being of a peculiar "earthy grey" colour. He was very emaciated, his arms and legs being "stick like," but his abdomen was very protuberant. The marked fullness of the abdomen was due to an enormously enlarged spleen which was soft on palpation and reached vertically well below the level of the umbilicus, and nearly into the left iliac fossa and beyond the middle line to the right. The spleen dullness merged into that of the liver which was also enlarged upwards and downwards, the lower border being felt two to three fingers' breadth below the costal margin. The heart was generally enlarged, apex beat one inch external to and below the nipple. There was a harsh blowing murmur loudest in the pulmonary area and down the left side of the sternum, but heard also at and external to the apex beat. The second sound in the pulmonary area was loud, but blurred.

The lungs were quite normal.

His temperature all through was of an irregular type, and there was always a rise some time during the twenty-four hours.

No malarial parasites or Leishman-Donovan bodies were found in the peripheral blood, but the blood serum gave a positive reaction for kala-azar with formal-gel test.

The blood count was as under: Total white blood-cells 1,000 per cubic millimetre. Differential count: polymorphonuclears, 48 per cent; lymphocytes 32 per cent; large mononuclears, 16 per cent; eosinophiles, 4 per cent.

There were a few nucleated red blood-cells and very slight poikilocytosis.

The coagulability of the blood was diminished and the haemoglobin was greatly reduced; this was quite noticeable to the naked eye.

From the time he came under observation in November, 1921, till he was transferred to this hospital he was treated with arsenic and quinine, the latter given intravenously as well as by the mouth. This treatment was continued for