SOME NOTES ON THE TREATMENT OF BITES BY VENOMOUS SNAKES.

By J. CROFTON FOX, M.R.C.S., L.R.C.P.,
MISSIONARY, C.M.S., N. NIGERIA.

ALTHOUGH the correct and most certainly effective treatment of snake bites is to be found in the use of an anti-venom serum, yet it must often happen that cases of poisoning by a venomous snake occur at a time or place when a serum is not available, though remedies more commonly used are at hand. This being the case, some results obtained by a treatment outlined below may be of interest. I fully realize that the small number of cases on which it has been tried, however encouraging, can lead to no definite conclusions. The treatment I employ is the injection of a full dose of cocaine hydrochloride at the site of the puncture caused by the fangs of the snake, followed later on by appropriate treatment of symptoms as they arise.

I am indebted to the Rev. J. D. Aitken of South Nigeria for the knowledge of the efficacy of cocaine in the treatment of scorpion stings which led me to its use. It not only relieves the very severe pain, but also, if the treatment be immediate or not long delayed, causes a complete absence of the swelling that is usually so rapid and characteristic. Cases which I have treated with cocaine combined with potassium permanganate include those bitten by *Echis carinatus*, *Naia nigricollis*, and *Bitis arietans*. Cases treated primarily with cocaine alone consist only of those bitten by *Echis carinatus*. At first I used to incise punctures deeply, and rub into incisions potassium permanganate, and then inject hypodermically a solution of cocaine hydrochloride proximally. In cases of *E. carinatus* venom I was, however, troubled by uncontrollable haemorrhage from incision starting on the second or third day. The incision and the potassium permanganate were omitted in the next case, but there was still troublesome oozing haemorrhage from all mucous surfaces, which reduced the patient to a dangerous state of anaemia. To try and stop this I gave large doses of a solution of gelatine by the mouth, with the hope of at least dealing with the mouth and intestinal tract for part of its length.

In the last 5 cases of snake bite which have come to me, all of which have been due to *E. carinatus*, I have relied on this treatment alone—that is, the injection of a full dose of cocaine hydrochloride into the punctures and immediate and continuous dosing with a solution of gelatine, 1 oz. to the pint.

Of these 5 cases, 4 gave me no anxiety of any sort, the haemorrhages being either absent or very slight and pain and swelling being slight, except in those where the swelling was considerable before the patient arrived. These 4 cases were African children between the ages of 6 and 10 years, and in all the punctures were plainly visible and the snakes of good size. Of these cases, none arrived sooner than half an hour after being bitten, and some as much as two hours after.

The fifth case, arriving half an hour after being bitten, was that of an elderly African man, very big and beginning to run to fat and to suffer from the effects of too much native beer. He on the fifth day had great swelling of his tongue, which, however, subsided somewhat that evening. The next day the swelling became greater and his breathing seemed much impeded, possibly from swelling lower down. Intubation was impossible, and tracheotomy, in the hope of doing something, was refused absolutely by the relations. The man died that day from asphyxia, presumably obstructive.

VISIBLE EFFECTS OF VENOM.

Echis carinatus.—Patients evince a good deal of fear. Much pain at site of bite and progressive and rapid swelling extending almost visibly. On second or third day, sometimes earlier, oozing haemorrhage from the gums and from the nose and any recent cut on the body begins. Blood is also present in the stools and urine, but owing to the prevalence of bilharziosis, these symptoms may be deceptive, except when the bleeding has been high enough and copious enough to cause melaena.

Naia nigricollis.—One case. Evidence of considerable shock; pain very severe and unrelieved by cocaine. Swelling very extensive from foot to tip of scapula of corresponding side. The bite was on dorsum of foot. Later there was extensive sloughing, involving at least half of surface of leg, irregular in

area and serpentine in outline, with sharply defined borders, not extending below subcutaneous tissues. Natives say this sloughing is typical of venom of this snake if victim survives long enough.

Bitis arietans.—One case, with symptoms same as *Echis carinatus*.

As to what action the cocaine has I cannot venture an opinion. It may merely be one of dilution, in which case an injection of distilled water would be equally effective. It will be noticed that the visible effects of the venom in the cases that have come to my notice do not agree very closely with those noticed in laboratory experiments on animals. In no case that has come to my notice has death taken place within twelve hours. One untreated case was brought to me on the sixth day and died on the seventh. Two other cases treated, in my absence, with potassium permanganate alone died some time after the third day. In these three the prominent symptom was the haemorrhage.

NOTE.—Although *naia* is not usually supposed, I believe, to be a spitting snake, yet in Northern Nigeria it has been my experience that *Naia nigricollis* habitually uses this method of attack when not within striking distance. A simple and effective remedy for cases where the venom falls on the conjunctiva is to wash immediately with a solution of unsweetened tinned milk. No doubt other substances would be equally effective as washes, but tinned milk is to be found in every white man's house in Nigeria and probably in most tropical climates. The milk from a newly-opened tin should be sterile.

Memoranda: MEDICAL, SURGICAL, OBSTETRICAL.

INFECTION OF PLEURAL CAVITY FROM PERITONEUM.

THE following case was seen in consultation at various stages by the late Dr. Robertson of Lerwick, Dr. Brown of Aberdeen, and Dr. Grant. A delicate boy, of 2 years and 3 months, was in a condition of reduced vitality for some weeks before his illness. On June 27th, 1913, he had a sharp attack of vomiting and diarrhoea. Until July 6th he was in a condition of toxæmia, originating in the gastro-intestinal tract; this improved under treatment. On July 3rd it was noted that the skin had a dusky hue; this deepened to a yellow tint, and on July 8th there was marked jaundice of skin and conjunctivæ with increased hepatic dullness, white motions, and urine containing biliary pigment. The onset of the pulmonary condition was very insidious; it began on July 4th as a scarcely perceptible harshness of respiration. On July 6th fine crepitant râles could be heard at the right base, though obscured by friction sounds heard plainly over both bases and axillary regions. On July 8th there was loud, rough pleuritic friction over the whole pulmonary area, except the apices in front. On July 10th consolidation of the right base was complete. On July 14th the pleurisy had invaded the left apex, and was impinging on the cardiac area; but the cardiac sounds remained clear. From this stage onwards the course of the disease was easily followed through the emaciated chest wall. The pleurisy rapidly subsided and disappeared without effusion. The right base began to resolve on July 14th, but a fall of temperature next day was followed by a rise associated with crepitant râles in the right middle lobe, succeeded by all the classical features of lobar pneumonia in this area. On July 23rd another crisis occurred, to be followed next day by another relapse, the right upper lobe being invaded. Crisis occurred on the evening of July 26th. During the night of July 27th a serious collapse came on, when the heart sounds were inaudible, the breathing scarcely perceptible, and the thermometer in the rectum did not rise above 95° F. Brandy by the mouth, strychnine hypodermically, and a saline injection into the rectum elicited a ready response. The patient subsequently made a good recovery and is now a perfectly healthy, though not very robust, boy.

To begin with, we had a gastro-intestinal catarrh, followed by a catarrhal jaundice. Next we had a generalized pleurisy, which passed off, leaving pneumonia, which began at the right base and extended upwards through the whole of the right lung. The whole process was probably microbic, and there is some support for the