REPORT ON THE ARROW POISON USED BY THE FRA FRA.

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The poison is manufactured from the following: (1) The seeds of a shrub, description on separate page; (2) the poison, say of scorpions; (3) the heads of various snakes.

The following is the method of preparation. The seeds are reduced to a powder by grinding, and the other parts added, and to this a small quantity of water is added and stirred; the mixture is then boiled for some time until it becomes of a thick consistency, it is then allowed to cool, and the arrows are subsequently smeared with the thick brown coloured resinous looking residue, in some cases the tips of the arrows are free of poison for about one inch, in others the poison is slightly smeared to the tip, but the junction of head with shaft is always thickly smeared; the arrows are barbed, occasionally double barbed. I carried out the following experiments.—

(1) I obtained a portion of the poison by scraping two arrow heads and triturated it with boiling water, making a solution of 10 per cent., I allowed this solution to cool and the solid matter to settle and filtered a portion of the solution; I injected two minims of the solution into a sheep. Death occurred in forty minutes and all the symptoms pointed to a paralysis of the respiratory apparatus; for the first twenty minutes no apparent reaction took place, after this the breathing became somewhat quickened and irregular; within thirty minutes it was slower but distinctly laboured, inspiration being somewhat prolonged and accompanied by forcible heaving of the flanks, the ribs standing out distinctly; expiration took place with a quick sharp jerk transmitting a vibration to the entire body, the mouth was tightly closed, the alæ of the nose acted forcibly and a peculiar snoring sound accompanied respirations; in thirty-five minutes the sheep moved uneasily and soon fell on its knees and subsequently on its side, and struggled for some time as if trying to rise, the respirations became less to the minute (about 10), and soon the animal appeared unconscious, but still threw the head and neck back in a convulsive respiratory effort; at this time I could not detect any action of the heart: the animal was dead at the end of forty minutes.
(2) An incision was made on the back of a sheep, and an arrow held for two minutes in the wound; the animal was then allowed to go free, death occurred in twenty minutes, the symptoms being the same as in the previous case, but the onset being more rapid. The arrow poison was quite fresh; there were no convulsions and no evidence of animal suffering from pain. The post-mortem examinations revealed a very collapsed condition of the lungs, which in Case I. were a yellowish pink colour, the heart and great veins were engorged with blood of a dark venous character, no other abnormality being detected.

During my service here I have had several arrow wound cases to attend to, and I attach notes on two typical cases occurring in the Fra Fra country, in each of these cases penetration was deep, and I think it possible that a small portion of the poison may have been absorbed; I have not yet seen a fatal case in a human being.

With view to supposed native antidote I do not believe in its efficacy, but its application may be useful as it entails sucking the wound. The antidote is prepared as follows: (1) The bulb of a variety of small lily; (2) the bark of a variety of wild custard apple; and (3) two varieties of grasses are collected, dried and then reduced to a powder; this mixture is then burned, and the resulting charcoal obtained, a useless fetish ceremony is then carried out, and the black carbonaceous material is considered fit for application, the method of application being as follows: The native doctor places a portion of the powder in his mouth and sucks the wound, then ejecting the saliva, &c., he places some more powder in his mouth and forces it into the wound; in the meantime some vegetable oil, called shea butter, is made warm and some powder added and stirred up, this is then rubbed on over and around the wound and the patient is given an occasional mouthful, the process being continued for about half an hour.

The French and Germans, I am informed, place enormous faith in this antidote as also the natives, but I cannot see what the efficacy of vegetable charcoal can be; on the other hand, the sucking of the wound is of the greatest value no matter how small the amount of poison extracted. I am sending the different parts of the antidote and the powder for analysis.

With regard to the treatment of arrow wounds the following points should not be lost sight of as it is of absolute importance that they should be rapidly and implicitly acted on:—

(1) The instant extraction of the arrow, no matter how painful or by what means.
(2) The instant sucking of the wound, "there is not any risk attached to this in my opinion."

During an expedition in the Fra Fra country I had the men and officers informed that in the event of their being hit by arrows they were to immediately have the arrow pulled out without waiting for my arrival on the scene, and as this was implicitly carried out I had little or no trouble with the cases.

After the wounds had been well sucked they were syringed with a weak solution of permanganate of potassium, considerable inflammation and induration around wound occurs for the first two days, and suppuration, leaving a sloughing wound, is fairly likely to occur.

If the natives are hit in a limb in the fleshy part they sometimes force the arrow head completely through the tissues, having first broken off the shaft.

A horse which had been deeply wounded in the gluteal muscles survived; the arrow was not taken out for about one minute.

**MEDICAL REPORT ON CAPTAIN T. PAMPLIN GREEN'S ARROW WOUND AT FRA FRA.**

Captain T. Pamplin Green received a severe arrow wound on the right side of chest in the third intercostal space. The arrow was pulled out immediately by one of his men and case was reported at once to me. I found a deep penetrating wound had been caused which was bleeding pretty freely. I at once sucked the wound and thus abstracted as much blood as possible. My dresser, H. Lamptey, in the meantime prepared some lotio. potass. permang. with which I syringed the wound for some time. I then gave a large glass of brandy and had Captain Green placed in a hammock and carried. In about thirteen minutes after he complained of agonising pain running down his spine and right arm, this was soon succeeded by a sense of faintness, extreme pallor occurred, pulse became weak and almost imperceptible, breathing somewhat irregular with frequent sighing, the skin became bathed with cold perspiration; within twenty minutes all these conditions were intensified, the pain being very severe and all the appearance of collapse setting in, twenty-five minutes after infliction of wound, condition remained the same. We halted and patient was given some more brandy and wound syringed with cocaine solution; very slight improvement resulted. In another three minutes pain was very much less, pulse quicker and stronger and respirations more normal; brandy was
repeated, extra blankets were placed over patient and the wound again syringed with solution of cocaine; great improvement resulted, and at the end of half-an-hour the patient had become quite strong and cheerful, but still complained of extreme coldness, pulse was about 100 and somewhat weak, I placed a hot bottle in the hammock at his feet. I considered patient completely out of danger by this. About fifteen minutes after this the patient was seized with violent chattering of the teeth and increased feeling of cold, and I came to the conclusion that he had received a chill and contracted ague, I gave some hot brandy and quinine. The skin soon became hot and temperature ran up to 102°F at which point it remained until our arrival at camping ground where I placed patient in bed and gave him phenacetin, grains x. The fever did not give any trouble. On the evening of the 18th it was 102°F., on the 19th 101°F., and on the 20th 100°F., becoming quite normal from 21st.

A good deal of pain and inflammation in tissues surrounding wound resulted in the first few days and was followed by tendency to sloughing. Warm carbolic lotion was used for syringing and dressing for first five days, then boracic lotion substituted. The wound is now practically healed, but I regret to say that Captain Green's health has sustained a severe shock, his wound being complicated by an attack of malarial fever and a severe cough, his present condition is one of extreme anaemia for which I have placed him under treatment.

Notes.—The arrow was double-barbed on each side and was freshly smeared with poison to the tip.

The arrow penetrated into the tissues past the first barb. I consider that Captain Green suffered from the effects of the poison, and had it not been for the rapid extraction of the arrow, might have succumbed from the poison. I regret that it was impossible to carry out very accurate observations, as the column was in motion and men were hit from time to time. I was therefore unable to take accurate count of the pulse and respirations in any of the cases. None of the other cases except that of Sergeant Igala were sufficiently serious to require notice. Both of these cases presented the following features in common:—

1. A sense of malaise.
2. A feeling of difficulty in respiration.
3. Severe local and spinal pains.
4. A reactionary fever.
MEDICAL REPORT ON SERGEANT IGALA GRUNSHI’S ARROW WOUND AT FRA FRA.

Sergeant Igala received an arrow wound over fleshy part of shoulder through deltoid muscle, &c. The point of the arrow penetrated to the bone (humerus), which it struck with sufficient force to bend back on itself, making the extraction more difficult and more painful. In this case the arrow had been instantly pulled out by one of the men, and the sergeant reported to me. My dresser sucked the wound, which was bleeding profusely, and then the wound was washed out with solution potass. permang., 6 grains to one ounce. The sergeant walked on to the camping ground, a short distance, and did not experience any ill effect, beyond local pain for about five minutes. He then began to feel acute spinal pains and a feeling of general malaise, succeeded by a feeling of feverishness. He expressed the wish to have the native antidote applied, and I gave him permission. The antidote was not applied for about fifteen minutes, so that I cannot believe that it could be of any value. At the end of fifteen minutes there was a great deal of spinal pain, so much so that the men applying the antidote made small incisions on the side of centre of back, and placed some of the antidote in the incisions. There was increased pain locally from the wound, and swelling and tumefaction around it. The axillary glands were tender, skin hot and covered with perspiration, pulse weak and fast. This condition remained unaltered for about ten minutes, but the condition of the man did not give rise to any anxiety, and the pain soon decreased, this decrease being accompanied by a general sense of improvement. On resuming march the sergeant appeared quite strong and marched to camping ground for the night.

When we arrived I examined him again and found that he had become free of the spinal pain, but local pain still troublesome and tissues surrounding wound greatly inflamed. Pulse strong, about 86. He soon afterwards felt feverish and temperature ran up to 100-8° F., but fell towards morning to 99° F. From this on, his wound displayed a tendency to considerable inflammation for about two days, then the inflammation subsided, the wound discharging a good deal of pus from day to day, but decreasing after about a week and soon after healing. The wound was first washed out twice a day with warm lotio carbol, 1 in 40, and the patient was discharged.
DESCRIPTION OF SHRUB FROM WHICH POISON IS OBTAINED.

Growth shrubby, generally 6 to 8 feet high, branches and skins woody and bearing numerous leaves; leaves opposite oblong shape, reticulated venation dark green and polished on upper surface, sometimes covered with small hairs on the inferior surface, edge wavy, sometimes emits a strong objectionable odour when crushed. Flowers: 5 sepalous and petalous, small, more or less bell shaped, each petal terminates in a wavy filament doubling back on itself, petals pale, yellow and small; brown stripes at base, flowers in clusters. Seed pod, a long double pod, each half joining at base, where it is attached to branch, each half generally 10 inches in length and growing at right angles to stem, brown or greenish colour, deeply grooved on upper surface, each pod ending with a peculiar cup-like projection; on section pod greenish with fibrous cortex, secretes thick, slimy juice, turning brown on exposure to air, tutular space in centre with many seeds oval in shape, somewhat flattened and bearing numerous fine silky hairs. The seed pod is quite characteristic, a variety of the plant grows in the bush having smaller leaves with more even surface and free from hairs, and with a thicker seed pod shorter in length and not presenting cup-like extremity.