

On the Nature and Mode of Use of the Vegetable Poisons employed by the Samoan Islanders. By the Rev. THOMAS POWELL, F.L.S.

[Read March 15, 1877.]

THE death of that great and good man the late Commodore Good-enough, from the poisoned arrows of the people of Santa, having invested those deadly weapons with so peculiar an interest, I am sure no apology will be required for my presenting to the Linnean Society at one of its Meetings the following particulars upon the subject of poisoned spears and arrows.

I have in the mission establishment here a native of Efat, (Sandwich Island) in the New Hebrides. He is the son of the late chief of the village of Erakor, whose name was Torlie, and who, under the influence of our Samoan evangelists, embraced Christianity in 1845. He then adopted the name of Pomare. This son of his, who is about 35 years of age, obtained from him the following particulars upon the above subject.

Poisoned Spears and Arrows.

The Preparation of the Points.—This, together with the preparation of the poison, was a regular business, and practised only by the initiated. They were distinguished by constantly wearing the *os femoris of a pig* inserted between the arm and the armllet.

When these men heard of any person suffering from some very acute disease indicated by excessive delirium, they watched for his death and then noted the place of his burial. After the lapse of five or six months they would stealthily open his grave and carry thence the large bones of both extremities and the parietal bones of the skull. Of these they made the points of the spears and arrows. Of the femoral bones alone were made the points of the spears. These were prepared by sawing off the upper part below the processes separating the outer condyle, and rubbing down the inner one to a fine point. A wooden handle was then inserted into the upper end and securely fastened with the bark of a twining plant coated with some gummy substance which made it imperishable.

The other bones were sawn into small pieces from an inch to two inches long, and then rubbed down on stones to a very fine point. On account of the convexity of the parietal bones, the

points made of them were often very short, in order to have them perfectly straight. These, however, were considered the choicest.

For a saw they used the spines of the large *Echinus*. To make these answer this purpose, two sharp edges were formed on each by rubbing it on stones. Each spine, therefore, was equal to two saws. A goodly number of these were needed, as they soon became dull.

The points, when finished, were inserted into a cane shaft made of a species probably of *Joinvillea*, and fastened in the same way as the spear-points. They were then ready for the application of the poison.

Preparation of the Poison.—In this preparation a great number of poisonous plants were used—different plants by different persons. Three, however, were used in common.

1. The most virulent of all is called on Efat NA TORO; *na* is the article, *toto* the noun. This is a large tree, which my informant compares to a *Calophyllum Inophyllum*. Inflorescence abundant, white. Fruit a drupe, about the size of an almond, dark red when ripe, attached to a long peduncle. Every part of the tree is a virulent poison. When cut, a white milk exudes from it, which causes blindness when brought into contact with the eyes. Its sap, when introduced into the circulation, causes death. Of both these effects my informant gave me a memorable illustration, of which his own mother was an eye-witness. She was a Samoan, and one of a party who, with a number of Tongans, were drifted from Samoa in a double canoe to the New Hebrides about fifty years ago. They landed on the western end of Efat and acted the part of freebooters. Again embarking, they proceeded eastward, calling at several villages and acting in the same way, intending finally to make their way back to Samoa. At a place called Mole, near Eraker, the people, expecting a visit from these depredators, prepared for them in a way which they little suspected. They had, as is common in similar places, an enclosure of water on the beach which at low tide served both for drinking and bathing. They pounded a quantity of the leaves of the toro previously dried in an oven; and when they saw the canoe coming they threw these pounded leaves into the bathing-place. As soon as the canoe anchored, most of the crew, after native fashion, rushed to the fresh water to drink and to bathe. They were immediately thrown into convulsive agonies: those who only bathed became blind; and those who drank died. The survivors settled

down in the neighbourhood ; and, as above intimated, one of the women became the wife of Tahī and mother of my informant, from whom he received this account. The original party numbered about fifty ; in 1845, when the mission-ship first visited the island, only *nine* were left.

But to resume. The tree grows near the sea-beach. It is very tenacious of life ; for when cut down, shoots soon spring up from the roots. It is probably common in the New Hebrides ; my informant had noticed it growing on Aneiteum.

So closely does this description agree in many respects with that given by the late Dr. Seemann, 'Flora Vitiensis,' p. 233, of the *Sinu gaga* of Fiji, *Excœcaria agallocha*, Linn., that it seems highly probable that the *toro* of Efat is identical with it, or is a closely allied species.

2. NA SUAFA is the name of the second of the plants referred to above. Being told that this plant is found in Samoa also, I sent the man for a specimen. It proved to be the PUTU of Samoa, which Professor Oliver has identified as *Tabernœmontana orientalis*, R. Br.

3. NA SOLA. This is the *Fanuamamala* of Samoa, a species of *Carumbium* ; but since we have, according to Baron von Mueller, probably three of these, viz. *C. pedicellatum*, *populifolium*, and *acuminatum*, I cannot say with which the Efat species agrees. They are all, however, considered by the Samoans to possess poisonous qualities, yet to be useful in some diseases.

The leaves of these three plants were carefully picked, the stems and points were nipped off, and they were put into a shed to dry. When quite dry, they were taken in equal parts and reduced to a fine powder in a wooden mortar with a pestle made of the *ara* wood,—that is, the *toa* of the eastern Polynesians (*Casuarina equisetifolia*). To this powder was added a portion, in quantity equal to that of each of the leaves, of very fine scrapings of an old piece of *ara*. The whole was then well rubbed together in the mortar.

The next ingredient was from the animal kingdom. A very long species of *Holothuria*, called in Samoa the *pewa*, being probably *H. vittata*, was brought from the lagoon ; the sea-water and the sand were emptied out, and it was exposed to the sun sufficiently long for all the water that remained in its substance to evaporate. It was then put into a leaf of *Calocasia Indica* and placed in the shade till it became a putrid liquid. The bowl having been previously lined with a leaf of the *Calocasia* in order

to prevent adhesion to its sides, the powder was again put into it and the liquid added in quantity sufficient to form a thin paste, which was then well stirred with a stick or brush prepared for the purpose.

There was still one more ingredient considered necessary to render the poison sufficiently virulent. In the woods, in the neighbourhood of wasp-nests, were accumulated on the branches of trees small mosses of what the natives considered the wasps' food. It had the appearance of dried earth, and was probably merely accumulations of material for building-purposes. It was called NA LET (= *layt*), which was the name also of the wasp, as in Samoa a species of white ant and its nest are both called *ane*. This substance, "the food of the lét," was collected, and a quantity, equal to that of each of the other ingredients, rubbed to a very fine powder in a separate mortar kept for the purpose. The os femoris, the badge of office already referred to, was used as a pestle.

This wasp-earth was considered by the natives the most active of the ingredients, since when convulsions and lock-jaw ensued from the poison, they would say of the person so affected "*Na puatia na lét*"—that is, "he is seized by the *layt*."

This fine powder was added to the mixture, stirred in; and the whole was then exposed for a while to the sun in order to evaporate any remaining humidity. To this mixture some were in the habit of adding the juices of various other poisonous plants; but these were not considered absolutely necessary.

The next step was to grate down the flesh of an old cocoa-nut and wring out the milky oily juice, which was added in proper proportion to the mixture. The mass was then stirred frequently for about a month, till it became a cloudy dark oil. It was then put into gourd bottles, which were suspended to the roof of the house. In about twelve months it became consolidated to the consistence of lard and was considered fit for use.

From this account, then, we obtain the following formula for the preparation of

The Poison for Spears and Arrows.

Take, in equal parts, of

the leaves of $\left\{ \begin{array}{l} \textit{Excæcaria Agallocha}, \\ \textit{Tabernæmontana orientalis}, \\ \textit{Carumbium pedicellatum} ? \end{array} \right.$

The fine dust of an old piece of *Casuarina equisetifolia*. Finely powdered dust of accumulations formed by a species of wasp.

To be well rubbed together.

Add the putrid liquid of *Holothuria vittata*, sufficient to form a thin paste, and evaporate all humidity. Add the expressed juice of an old cocoa-nut; stir frequently for about a month till the mass becomes a dark cloudy oil; bottle and preserve for twelve months, when it will be fit for use.

Application of the Poison to the Points of the Spears and Arrows.

—When about to apply the poison to the points a kind of kiln was prepared for smoking them. One hole was made in the ground in a slanting direction, and another perpendicularly to serve as a chimney. In the slanting one was made a fire of the *Casuarina* wood. The spears and arrows already prepared were placed ready at hand. A bottle of the poison was taken down, and a small portion taken out on the point of a stick; this was carefully rubbed on the bone point of the spear or arrow, which was then held over the smoke ascending from the chimney. Having been well smoked, it was carefully placed upon a rack over the common fire-place. A large number were prepared in this way at one time.

When well dried, the point of each arrow was carefully inserted into a dried flower-stalk of *Tacca pinnatifida*; and thus prepared and protected, the arrows were tied in bundles and placed in a quiver formed of one of the cylindrical layers of the trunk of the Banana, and again hung up over the fire-place to keep them dry. They were thus ready for use or for sale whenever needed. It will be observed that from first to last great care was used to exclude humidity. The reason of this may be that humidity destroys the virulence of the poison; and hence the comparative harmlessness of the poison of such arrows as have been obtained as specimens by gentlemen of war-vessels and others.

The points of the spears were carefully preserved from injury in the spathe of the Mountain Plantain (*Musa troglodytarum*, Linn.).

Effects of the Poison and the Means of Cure.—The poison, when taken internally, was always fatal. Hence occasionally a woman when determined to get rid of a hated husband, would scrape off the poison from the point of an arrow, put it in her husband's

food, and thus surely effect her purpose. And however much she might feign grief, the symptoms of the sufferer would at once proclaim the cause and the author of his agonies and death; for men never resorted to such means of revenge.

When introduced into the system on the points of spears or arrows, the effects were often diversified. In some instances the local pain would be very severe, followed by general disturbance of the system in two or three days, and ending in convulsions, lock-jaw, and death. If the incisions were in such cases made at an early stage, the patient might recover.

In other instances the effects were more gradual and insidious, causing at first but little local or constitutional disturbance, but gradually inducing fever, convulsions, lock-jaw, and death. The tetanus was one symptom of every fatal case.

There were men who professed a knowledge of antidotes to the poison. When called to a patient, their first care was to guard against every thing which might startle him, as a very slight shock would induce convulsions and lock-jaw, and render the case hopeless. The antidotes were kept a secret by the craft; but Pomare, who had often been wounded, assured his son that his conviction was that he had been saved, not by these antidotes, but by making free incisions in different parts of his body, so as to allow the escape of the poisoned blood.

Upolu, Samoa, Oct. 1, 1876.
