# STONE FISH AND STONE FISH POISONING

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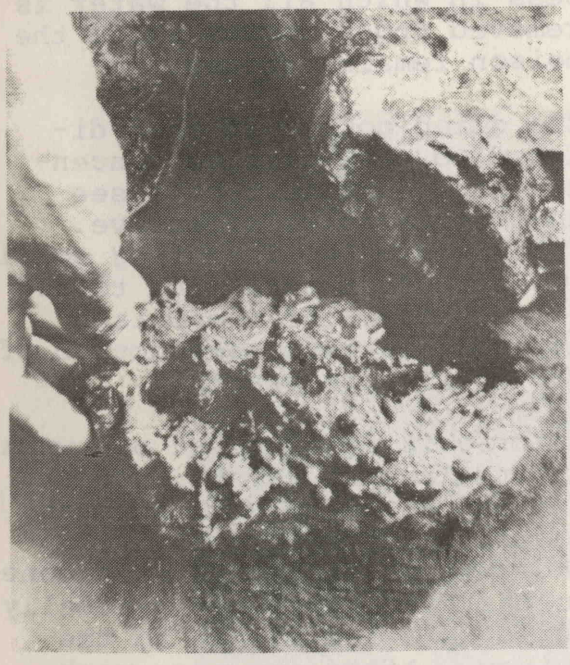
## INTRODUCTION

All villagers from the coastal areas of Papua New Guinea know what a stone fish is. It is a very ugly looking fish which looks like a piece of weathered coral or stone when it is in the water. Its camouflage (disguise) is very good, making it very difficult to see. Many people have found this out by accidentally stepping on a stone fish. This can be very painful because the fish is extremely poisonous.



*Stone fish look like pieces of weathered coral or stone.*

Stone fish are very inactive animals. They lie absolutely still and wait for a small fish to swim past. When this happens the stone fish suddenly opens its mouth and swallows the other fish. It then settles down to wait for the next mouthful.

## STONE FISH POISONING

Because of its inactivity, a stone fish does not swim away, like other fish, when approached by humans. Instead, when it feels threatened, it raises thirteen poisonous spines on its back.

At the base of each spine are two little bags (or sacs) which contain the poison. When somebody steps on the fish, the spine sticks into the foot and the pressure of the foot squeezes the poison out of the sac. The poison travels along groves or canals on the spine and enters the foot. The spines of the stone fish can go right through a sand shoe.

When a person steps on a stone fish he immediately feels an intense pain. Depending on how much poison is injected, the pain can get so unbearable that the victim faints. The foot, or sometimes even the whole leg swells and becomes painful to touch. Quite often he will vomit and have diarrhoea. Sometimes he will have difficulty in breathing and may even die.

When somebody has stepped on a stone fish, he should put the foot in hot water for about an

*The stone fish on the left has raised four of its poisonous spines.*

hour. The water should be as hot as the person can bear without causing burn damage to the foot. The hot water will help to break down the poison. The victim should then be taken to hospital as quickly as possible where the doctor will try to stop the pain and control the other symptoms.

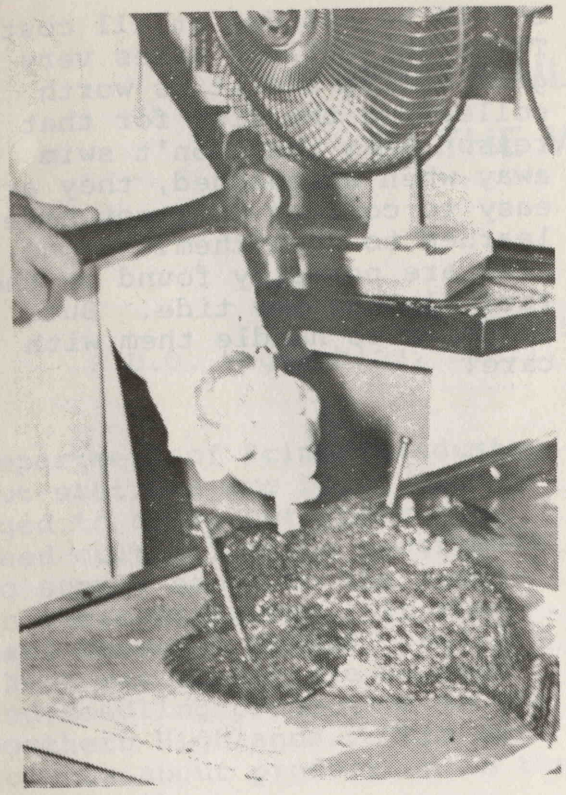
In some cases, the doctor has to inject the victim with antivenine. This medicine is produced by injecting the actual poison into the bloodstream of a horse.

ANTIVENINE PRODUCTION

To make this antivenine, stone fish are collected alive and kept in tanks. When enough fish have been collected, they are taken one by one to a laboratory where they are killed and the poison extracted. This has to be done quickly because the poison begins to deteriorate (spoil) as soon as the fish dies. To preserve the poison it is immediately frozen to -20°C. When enough poison has been extracted, it is freeze dried. This is a process in which all the water is removed under vacuum while the poison remains frozen.

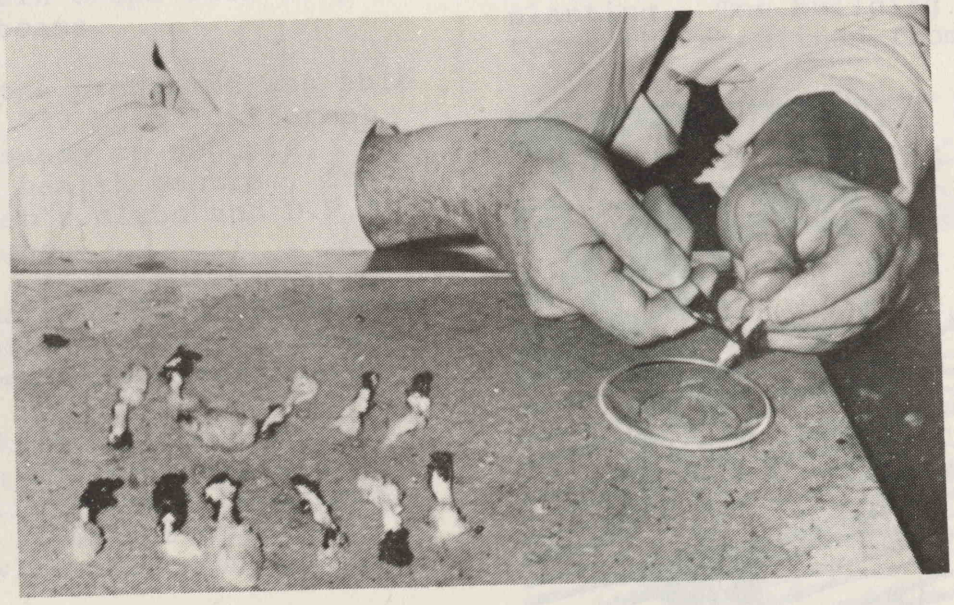
The dried poison is then diluted to very precise concentrations, and tested to see that it is still effective. This is done by injecting small amounts of it into mice to see if they die. If the poison passes this test, production of the antivenine starts.

A horse is injected at one week intervals with 20, 50, 130 and 320 mg of poison. This is the amount produced by 0.5, 2, 3 and 7 stone fish. This is done so that the horse can gradually build up a resistence to the poison. After one more week, 30 litres of blood are taken from the horse and the antibodies (poison-fighting compounds) are extracted from the blood. The horse is then given a three week rest before it is used again.



*A stone fish is killed in the laboratory.*

*The spines are taken off the fish.*



*The thirteen spines and their poison sacs are separated and the poison is extracted.*

The antibodies are concentrated, purified and sterilized to make the antivenine. Before this is distributed, it is tested for sterility, temperature tolerance, strength and chemical purity. The whole procedure, from the time that the poison is first injected into a horse until the antivenine is ready for distribution, takes one year.

A similar process is used to prepare antivenine for snake poison.

CONCLUSION

Stone fish are not simply horrible, dangerous animals which should be avoided at all cost. Their white flesh makes very good eating and it is worth collecting the fish for that reason. As they don't swim away when approached, they are easy to collect once you have learned to spot them. Stone fish are normally found on the reef flat at low tide. But remember to handle them with care!