

THE POLYNESIANS AND THE SEA



THE POLYNESIANS AND THE SEA

CATALOGUE OF AN EXHIBITION

by A. LAVONDES

Translated by M. KELLUM - OTTINO and E. SAHORES

OBJECTS OF THE PAPEETE MUSEUM

Photographed by SYLVAIN

SOCIETE DES ETUDES OCEANIENNES
OFFICE DE LA RECHERCHE SCIENTIFIQUE ET TECHNIQUE OUTRE-MER
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Cover. View of Huahine. Cook's Atlas.

The exhibition "The Polynesians and the Sea" has been organised by O.R.S.T.O.M. and the Société des Etudes Océaniques.

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Their recognition goes also to Mr. Yves de SAINT-FRONT, a well known artist in Tahiti, who was willing to contribute, by his talent, to the success of this exhibition.



INTRODUCTION

This exhibition needed a theme which is of present-day interest, and yet serves as a link with the past. Now the Polynesians have always lived very close to the sea. Even if they have changed in many ways since they undertook their great migrations far back in their history, they are still the same men of the sea, acting in that confidence which grows from many years of close companionship and wide experience.

When, upright on a surf-board they glide on a wave, or when in their narrow canoes they lose sight of their islands, or when they dive, spear-gun in hand, and lie in wait for a passing fish, they still amaze strangers by their ease and agility in face of the elements, revealing the attitude of people not trying to dominate nature but rather to become part of it.

When lost at sea as still happens in our days, the Polynesians can survive for a very long time by living on fish that they have caught sometimes by very precarious methods, when they have forgotten to leave a permanent supply of hooks in some corner of their craft. They know how to avoid wearing themselves out in useless battles and if necessary, they can paddle and bail, paddle and bail for hours, even days while anyone else would have given up in fear and its fatal consequences.

It must certainly have been this way when, in the past, they made the long voyages on their canoes that were so low in the water that one could touch the sea with one's hand.

By making use of their empirical, but often useful knowledge of the different faces of the sea, the winds, the swell, the clouds, the currents, the birds, the nature of the sea-bed, the differences in water temperature, the seasons, the days, the nights, the moon, the stars, the Polynesians have lived for centuries by taking from the ocean an important part of their food, ornamental and utilitarian resources.

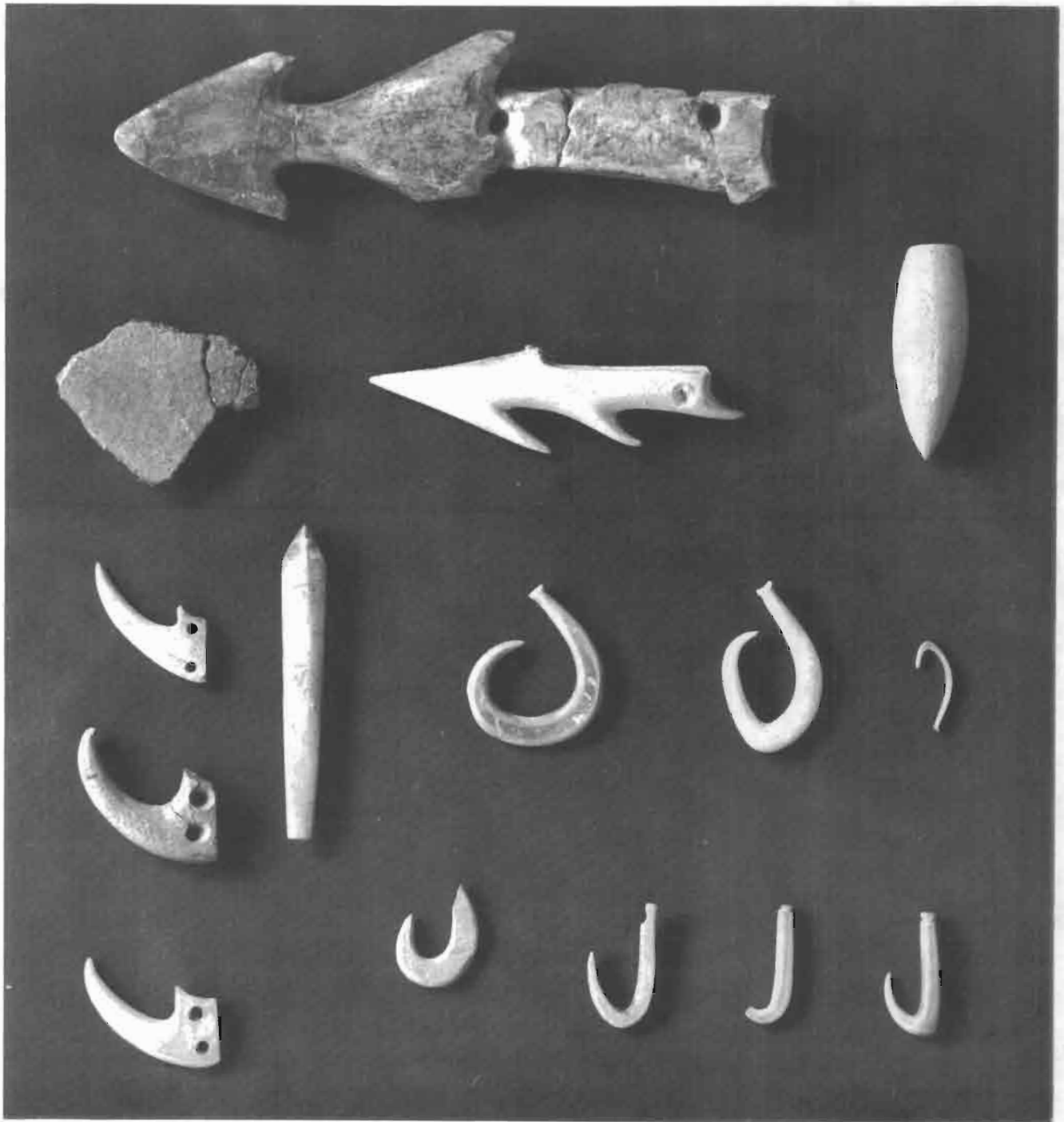
On the atolls where the ocean can be sensed and heard from every spot, the Polynesians depended upon it exclusively. And it wasn't such a long time ago that he was plunged into it at birth and returned there when he died.

It is therefore easy to understand why the relationships between man and the sea had such a great importance in Polynesian mythology and ancient rituals ; chants and narrations concerning the sea, invocations before fishing, sacred canoes ; stone images in the form of fish or

turtles. Constructed with sacred rites, the canoe transported the representations of gods and, in certain circumstances, a stone coming from the homeland marae of its occupants.

While being deeply rooted to the land where they are born, the Polynesians are equally attached to the sea which surrounds them. More than any other people in the world, they belong as much to one as to the other.





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2. The oldest artifacts found in French Polynesia. They come from the coastal dune site of Hane, on Uahuka in the Marquesas and were excavated by Y. H. Sinoto of the Bishop Museum. Top : perforated bone harpoon head, the original of which is at the Bishop Museum. Below; from left to right : a fragment of non-decorated pottery. Pottery was found in very

small quantities in the earliest level which dates from before 850 A.D. A pearl-shell harpoon head. A worked sperm whale tooth pendant. Bone and pearl-shell points and shank of a trolling hook for bonito fishing. Pearl-shell hooks and an incomplete circular hook in bone. Bone hooks are found only in the earlier levels.

THE MIGRATIONS

Who are the Polynesians? Where do they come from? Ever since Oceania has been known to the western world these questions have been debated continuously in many books and articles. Travellers, writers and scholars have given varied answers, many of which are pure fantasy. However, some of these, and not necessarily the most modern, can be regarded as serious hypotheses and are often confirmed by present research. But because the scientific knowledge in the fields of anthropology, linguistics and archeology was still too rudimentary, not one of these theories was based on sufficient fact. Often just customs, words or isolated objects were selected for comparison without taking into sufficient consideration the chronology and the historical and cultural contexts from which they were taken. Customs, which were not studied systematically, could be interpreted differently and often the elements compared had nothing in common. There was also the tendency to forget that people far apart in space and without contact with one another could come up with the same inventions and realizations.

THE MOST IMPORTANT THEORIES.

With the information now available, it has become possible to separate these authors according to their convictions on the origin of the Polynesians.

Evidently, this attempt to classify becomes more complicated as one approaches the present day authors, as the problems presented become more and more complex.

Only a certain number of those who have written on the question of the settlement of Polynesia will be considered here, with the help of an article by Alan Howard (1967).

One can distinguish :

1) THE PARTISANS OF AN AUTOCHTHONOUS ORIGIN OF THE POLYNESIANS.

J.A. MOERENHOUT, trader and writer, in 1837, believed that there once existed a large oceanic continent of which the islands are the remains. He thought the Polynesians did not come from elsewhere by migrations, but are autochthonous. This theory never became popular since the geological evidence did not support the idea of a lost continent.

Pierre Adolphe LESSON, doctor, naturalist and philologist, 1880-1889, thought that all of the Polynesians originated from New Zealand.

2) THE PARTISANS OF AN AMERICAN ORIGIN

Several authors considered that the Polynesians were not good enough navigators to have come from the West against the contrary winds and currents.

Some like the missionary William ELLIS, 1830, suppose the Polynesians had a distant Asiatic origin, that they had crossed to America through the Bering Straits, and thence set forth into the Pacific.

In 1947, Thor HEYERDAHL tried to prove to the world by his spectacular Kon Tiki raft expedition that the Polynesians came from America. According to him, a first migration left the north-west coast of America to settle in Hawaii and in New Zealand. A second migration took place from the Peruvian coast : a pre-Inca, Caucasian-like population with a great technological knowledge had civilized the Indians, then occupied East and Central Polynesia.

Heyerdahl's hypotheses are based primarily on the nature of the winds and currents of the Pacific and even though he also used archaeological and botanical arguments as well as navigational techniques, his proofs remain very weak and his whole thesis is tainted with an ethnocentrism which renders it suspicious from the start. Its lack of constraint with regard to any sort of chronology is also the cause of numerous errors and gaps.

Many well known anthropologists and archaeologists have taken a vigorous position against Heyerdahl's thesis. There still remains, however, the problem of the sweet potato. In spite of the work of the ethnobotanists, in particular D. YEN, it has not yet been solved. Known 4000 years ago on the Peruvian coast, the sweet potato constitutes one of Heyerdahl's arguments in favor of a settlement of Polynesia from America. How did the Polynesians obtain the sweet potato and why did they not at the same time adopt corn which the Peruvians had been cultivating for a long time? If the Peruvians had come to Polynesia, they would have certainly brought corn with them. If, on the other hand, it were the Polynesians who landed on the coast of Peru, for cultural reasons they may have only taken the sweet potato since they were traditionally root eaters and did not cultivate cereals. In the end nothing is known about the contacts that might have taken place between Polynesia and America before the voyages of the first Spanish sailors (Mendana, Quiros 1595).

3) THOSE WHO FAVOR A WEST PACIFIC ORIGIN OF THE POLYNESIANS.

The supporters of this theory are more numerous and they start with James COOK, navigator, 1784, and Horatio HALE, linguist, 1846 : the Polynesians are of the same race as the East Indians. Eastern Polynesia would have been settled from Tonga and Samoa. Armand de QUATREFAGES, naturalist and anthropologist, 1866 : the Polynesians are descendants of the Malays. Like Hale, Quatrefages used geneologies to date the migrations. Basing himself on the average length of a European ruler's reign, he counted about twenty one years per generation and in this way arrived at dates very close to those presently accepted for the settlement of Polynesia. Abraham FORNANDER, 1878, based his argument for a western origin on the legends and cosmogonies.

Towards the end of the 19th century, there appeared the theories of successive wave migrations from the west, sometimes along different routes.

Scholars, and in particular linguists, have tried to specify the origin of the populations that took part in these different migrations.

E.S. CRAIGHILL HANDY, ethnologist, 1930, added considerable support to the theory in which Polynesia had been settled by two successive waves. He gives as proof the two different elements that existed in Tahiti, the manuhune or tenants who represented the first wave and the arii or chiefs, a more recent and evolved population. But more than purposeful migrations, it was the accidental voyages extending over thousands of years that explained the peopling of Polynesia.

This theory, based on conjectural ethnology, has since been almost completely abandoned.

The first studies of the cultural differences existing within Polynesia and on the relationships between the islands groups were made by Peter BUCK, Kenneth P. EMORY and H.D. SKINNER.

H.D. SKINNER, archeologist and museumologist, 1933; distinguished two cultural areas : western Polynesia consisting of Samoa and Tonga and "marginal Polynesia" including New Zealand and the other islands groups. His supporting evidence for this distinction came from ethnographic and archaeological documents and he thought that Samoa and Tahiti were occupied at the same time by well equipped settlers who had left Indonesia and the Philippines around A.D. 700 or 800. After having given up pottery and metal as a result of their great distance from the homeland, the Tahitians distinguished themselves from the eastern Polynesians by their elaborate art and craftsmanship.

Peter H. BUCK, the ethnologist whose Polynesian name was Te Rangi Hiroa, was Maori on his mother's side. For a long time he was

the director of the Bernice P. Bishop Museum of Honolulu. Distressed to see the Polynesian traditions disappearing so rapidly he spent his life time accumulating a great mass of ethnographic material on Polynesia. After having selected from this documentation what he considered reliable, and adding to it his own thoughts, he built his theory on the origin of his people (1938).

He believed that the Polynesians came from India, and after having passed through Indonesia, they continued their route via the atolls of Micronesia until they reached the Gilberts. From there, a first wave settled Samoa, Tonga, the Society Islands and Hawaii. The manuhune were the descendants of these first settlers. Then a second wave left Micronesia and installed itself in Raiatea. Between the 12th and 14th centuries smaller scale expeditions left for the unknown from the Society Islands where life had become difficult as a result of the increase in population and local wars.

The Marquesas were settled, then Manga-
reva and Easter Island, and subsequently the Cook Islands, Hawaii and New Zealand.

K.P. EMORY, archaeologist, 1959, announced the direction in which research during the last ten years was to take place. He thinks that it is not necessary to seek for the Polynesians very far to the west since these people did not necessarily have the same physical aspect, the same language and the same civilization as today. "What now appears most likely", he writes, "is that people of somewhat diverse origins came together in a western archipelago in the Polynesian area about B C 1500, and in comparative isolation, their descendants, their language and their culture took on the features which Polynesians now share in common and which give them distinctive characteristics".

Robert C. SUGGS, archaeologist, 1957-1961, as a result of his archeological excavations on Nukuhiva, Marquesas, puts back the Polynesians migrations to around B C 2.200. After having left southern China, Malayo-Polynesian populations passed through the Philippines and progressively made their way into Melanesia and Papua. Tonga and Samoa would have been settled from Fiji. Around 200 B C the Marquesas and Tahiti were occupied. From the Marquesas, the Polynesians settled Easter Island, Manga-
reva and the Eastern Tuamotus. The Hawaiian islands were reached around A D 100, and New Zealand around A D 1000, both from Tahiti, as well as the Austral Islands and the Western Tuamotus.

This hypothesis, which like the preceding ones definitely puts aside Buck's thesis of a settlement through Micronesia, is the last big theory suggesting the displacements of the Polynesians from their presumed origin in South-East Asia across to the islands of eastern Polynesia.

The question of whether or not the Polynesians were great navigators has raised nearly as much controversy as that of their Asiatic versus American origin. In 1956, Andrew SHARP wrote that the Polynesians did not have sufficient knowledge of navigation to undertake long, ocean voyages. Hawaii and New Zealand could only have been settled by accidental voyages. This question was later debated among specialists of the Pacific, research scholars and navigators (1962-1963). Even though they demonstrated the empirical and rudimentary character of the ancient Polynesian knowledge in navigation, this did not exclude purposeful voyaging over relatively long distances. This only makes them seem all the more extraordinary and fascinating.

THE PRESENT STATE OF THE QUESTION.

Ethnology, and in particular the study of genealogies and legends have now proved their weakness in resolving the problem of migration, so it is the turn of physical anthropology, ethnobotany and most of all linguistics and archaeology to take over.

But the investigators in these fields who no longer have the rather ambiguous desire to conciliate the observed facts and the mythologies of the great Polynesian odyssey could appear to the non initiated rather discouraging by their prosaism and their modesty. They have renounced the long arrows traced across the Pacific, and proceeding step by step, they only compare what is immediately comparable, such as word lists, dates and identical objects. If they do find traces of big migrations, they only reveal short distances.

In linguistics, the similarity between the languages spoken in the different Polynesian island groups had already been remarked upon Cook and his companions. Scholars also realized very early that a relationship existed between the Malay and Polynesian languages. They deduced the existence of a large malayo-polynesian linguistic area which also included Madagascar.

Today, the linguists are working at reconstituting the language that would have been ancestral to the present day Polynesian languages. These languages are compared by refined phonetical analysis, semantics and grammar and a search is made for the similarities and differences between them. The linguists have shown the relationship that exists between the Melanesian languages - in particular those of Rotuma, Fiji, S.E. Salomons, and central New Hebrides - and the Polynesian languages. One of them, Bruce BIGGS, even goes as far as stating that linguistically there is no proof what so ever that the Polynesian migrations came from regions situated any further west than Melanesia. For him, Polynesia is a branch of Melanesia.

As will be seen later, this opinion is not in contradiction with the latest archaeological evidence.

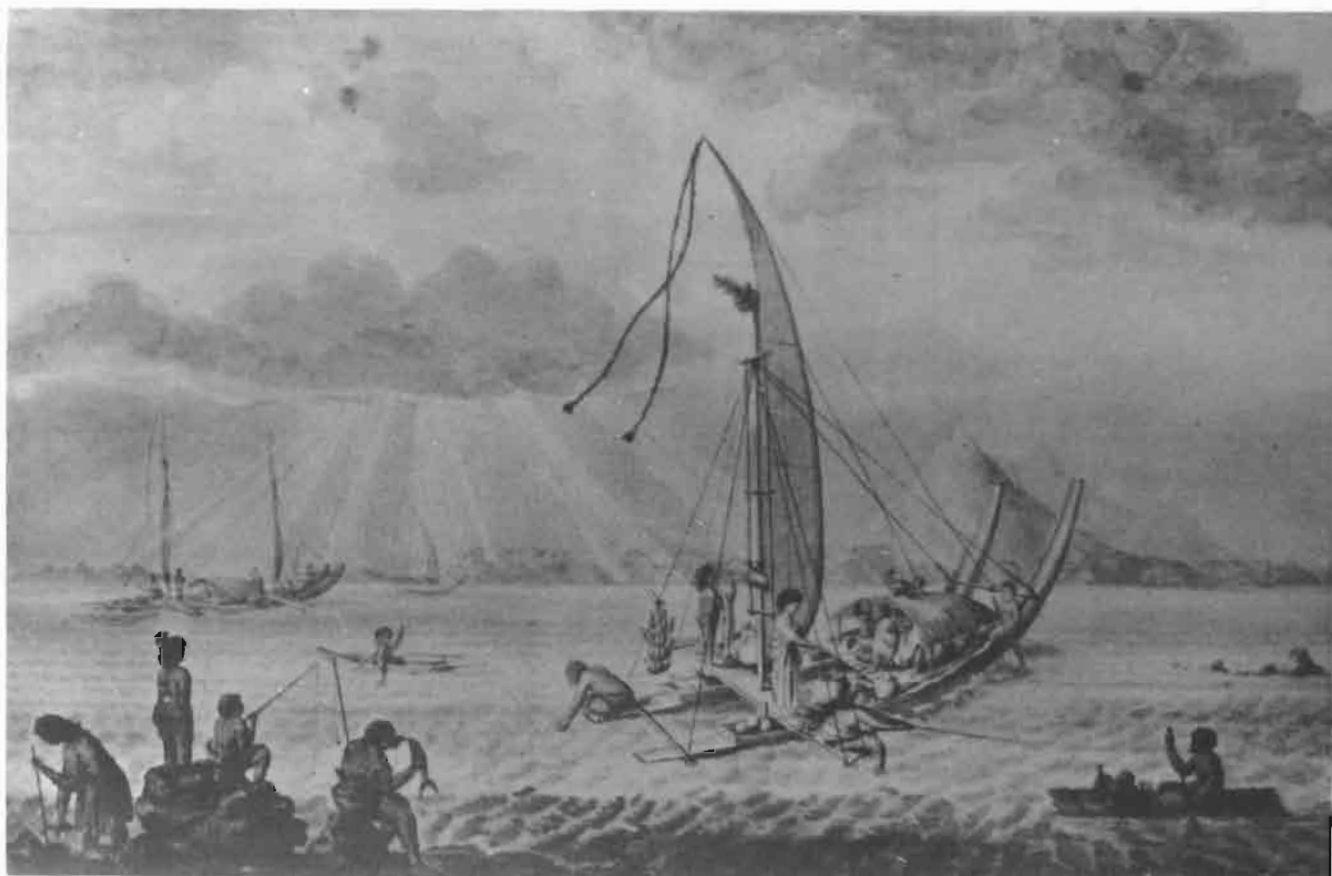
The archaeological work of these past few years is characterized most of all by stratigraphical excavations in which the principal cultural layers can generally be dated by carbon 14. This method used in a wide range of sites and at great depths offers the possibility of situating fairly accurately in time the periods of the first human occupation of these respective regions. It can immediately be seen after a quick checking of some of the dates from the ancient levels that the theory of a settlement from America has no archaeological basis. Actually, the more one goes towards the east, the more recent are the dates.

The following dates are the most ancient reliable dates for a given site, but they do not necessarily indicate the date of the first human occupation, which in certain cases could be even further back in time.

Marianna Islands, Saipan

(Spoehr)		1527 B.C.
Marianna Islands, Guam		
(Reinman)		270 B.C.
New Britain, Watom Island,		
(Specht)		500 B.C.
New-Hebrides, Makura		
(Garanger)		590 B.C.
New-Hebrides, Tongoa		
(Garanger)		510 B.C.
New Caledonia (Gifford)		850 B.C.
Fiji, Sigatoka (Birks)		510 B.C.
Tonga, Tongatapu		
(Poulsen)	around	500 B.C.
Samoa, Upolu (Green and		
Davidson)		70 B.C.
Level of the first pottery		
discovered in		to
Samoa	A.D.	70
Marquesas, Uahuka		
(Sinoto)	A.D.	850
Easter Island		
(Mulloy)	A.D.	857
Society Islands, Mau-		
piti (Emory & Sinoto)	A.D.	860
	and	1190
Society Islands, Moorea		
(Emory & Sinoto)	A.D.	1000
		(around)
Hawaii, Oahy (Emory)	A.D.	957
New Zealand, Wairau		
Bar (Duff)	A.D.	1150

The artifacts such as pottery, adzes, shell tools, fish hooks, net weights, ornaments, pounders, etc, found by the archaeologists during the excavations differ and evolve from one period to another, and in this way they also characterize the different cultural levels. And because identical objects are found in fairly far



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3. Voyaging canoes at the island of Tahaa. Wash-drawing colour by Sydney Parkinson. British Museum. 23921 f. 17



4

4. Top : two adzes found in a burial site dating back to about A.D. 1000. One adze is rectangular in cross-section, the other is triangular. Excavations were carried out on Maupiti, in the Society Islands by Y.H. Sinoto and K.P. Emory of the Bishop Museum.
Below, from left to right :
- a conical sinker for an octopus lure ; this form has only been found in the earliest levels but in Samoa it exists as an archeological as well as an ethnographical object.
- an adze with a quadrangular cross-section and an adze with a triangular cross-section. These ancient artifacts come from Hane, Marquesas.

removed sites, it becomes possible to make comparisons, to define the cultural levels in common, and to situate in time the contacts between island groups.

Thus the discovery of a similar type of decorated pottery in Melanesia (Watom Island in New Britain, central New-Hebrides, New Caledonia, Fiji) and in Tonga takes on a very great importance in archaeology. It seems that the more one goes back in time, the less the Melanesian and Polynesian cultures are differentiated. Some investigators think that the origin of the Polynesian culture must be sought in an ancestral oceanic culture which existed around 500 B.C. in Melanesia and eastern Polynesia.

Other archaeologists, without seeing it as the origin of the Polynesian culture, do however consider this area as "one of the principal stopping places for the Polynesian populations during their slow and complex journeys to the extreme limits of the Polynesian triangle" (Garanger 1966). The archaeologists presently at work are numerous: J. Davidson, J. Garanger, J. Golson, R. Green, B. Palmer, J. Poulsen, R. and M.E. Shutler, J. Specht, etc...

Recent research has shown that in the past Tonga and Samoa were more different from one another than they were later on as a result of more numerous contacts. Sherds of undecorated pottery, different from the decorated pottery of Tonga, have been found in Samoa and primarily in the lower levels. This discovery is of direct interest regarding our knowledge of the settlement of eastern Polynesia since R. SUGGS in 1957 and Y. SINOTO in 1964-1965 found pottery in the Marquesas, the former on Nukuhiva, and the latter on Uahuka. This discovery of undecorated pottery sherds in the lower levels of two sites in the northern Marquesas was a revelation because it had always been thought that the Polynesians had ceased using of pottery before settling in eastern Polynesia. This find, associated with other comparative elements (adzes, octopus lure sinkers), reveals close relations between Samoa and the Marquesas. It has now become possible to affirm that Samoa is the homeland of the Marquesas settlement.

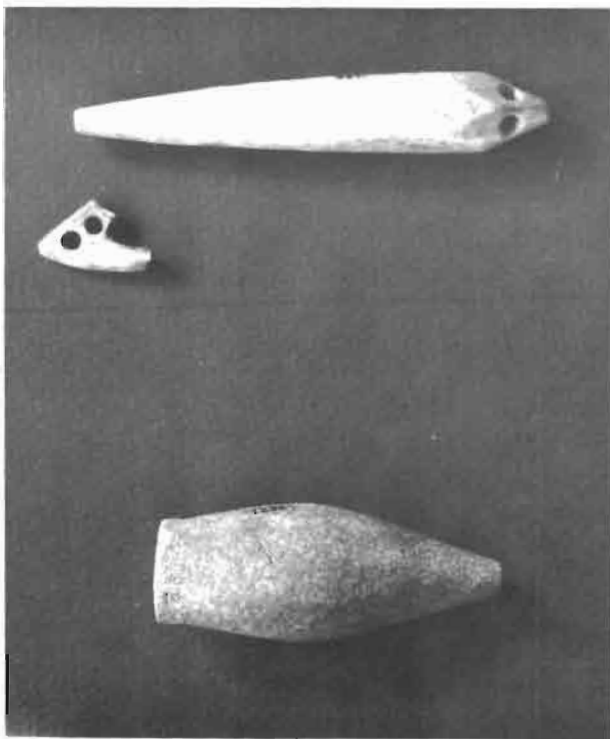
Other excavations have also proved very important for our knowledge of Polynesian prehistory. On the island of Maupiti in the Society Islands, in 1963, Y. SINOTO and K.P. EMORY of the Bishop Museum brought to light fifteen burials accompanied with objects such as adzes, hooks, ornaments, all of a rather archaic type and very close to what had been previously found by R. DUFF in New Zealand.

The results of these investigations have brought a new light to the manner in which eastern and marginal Polynesia was populated. Y. SINOTO considers the Marquesas islands as the

principal dispersal center for this region of the Pacific. The Polynesians who had established themselves in the Marquesas would later have joined the Society Islands, then Mangareva and Easter Island. Hawaii and New Zealand would have been settled from the Marquesas and Tahiti.

It can be said that the problems presented by the settlement of Polynesia are on their way to being solved. Archaeology in the Pacific is only at its beginning, and subsequent studies will come to confirm or infirm present views, and most of all will enrich our knowledge on this fascinating subject.

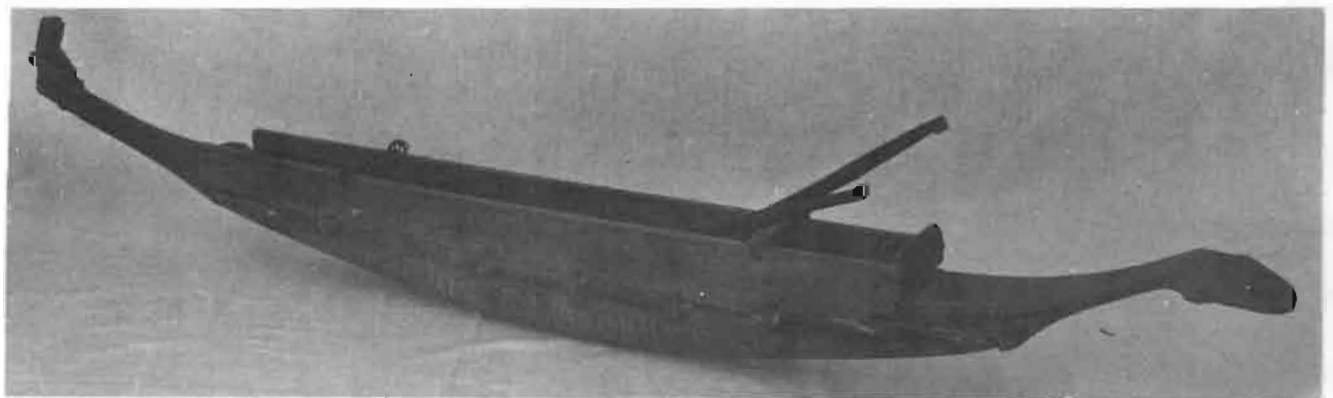




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5. Maupiti excavations, Society Islands : bonito hook shank and point. Sperm whale tooth pendant. These pendants are very ancient. Ones of a very similar form have been found in the Marquesas, Maupiti and at Wairau Bar in New Zealand at the Moa-Hunter site excavated by R. Duff.

6. No 112. Reduced model of a Marquesan canoe, 155 cm.



6

NAVIGATION

THE CANOES

Unfortunately we know nothing regarding the nature, the form and the construction of the crafts that enabled the ancient Polynesians to accomplish their long voyages across the Pacific. Complete canoes, hundreds of years old, have never been unburied in Polynesia as in other parts of the world, in northern Europe in particular.

We can only suppose that the ancient Polynesians navigated, as do their descendants, in canoes built from one or several hollowed-out tree-trunks and balanced by an outrigger, or on double canoes.

On the other hand, we have a fair amount of information about the crafts used by the Polynesians at the time of European contact in the Pacific. The western navigators became almost immediately interested in the canoes as it was one of the Polynesian cultural features which they could best observe. At each of their stops, the ships were surrounded by many canoes of which the artists of Bougainville and Cook have left us reliable drawings. We also know them from the reduced models seen in museums, but few of these were built to scale.

There were two sorts of Polynesian canoes: the large double canoes and the outrigger canoes.

In the Marquesas double canoes used for travelling between the islands seem to have been very rare even at the beginning of the historical period. On the other hand, it is known that the war canoes and fishing canoes had outriggers.

The war canoes measuring between 12 and 15 meters long, were formed of a hull extended at the bow and stern by projections decorated with carvings of tikis and tiki-heads. The hull was raised by boards lashed on with coconut sennit. The seam was covered with a long horizontally placed piece of wood to which bunches of feathers were attached. If non-figurative carved motifs sometimes did appear on the canoes, they were limited to the stern and bow and to the outside of the washstrakes. It is only the more recent models that are entirely decorated.

The sail, probably made of plaited pandanus leaves, was triangular and fixed between two masts.

The larger fishing canoes were wide and deep with raised sides. The ordinary canoes for fishing near the coast consisted of a single hull dug out of a tree trunk.

In the Society Islands, there were numerous types of embarcations which probably varied according to the island.

The double canoes had different functions depending upon their form: the large canoes for long journeys were built of several hulls joined end to end, as a single dug out tree trunk would have been too short. The sterns of two joined hulls were very much raised and each was surmounted by a post carved with decorative motifs and on top of which was a ti'i. The sides of the hulls were raised by adding two planks one on top of the other and lashing them together with coconut sennit. The two canoe-hulls were joined by crosspieces and a platform on which a small thatched shelter could be erected. A sail of plaited pandanus was fastened to the mast placed near the bow of the canoe.

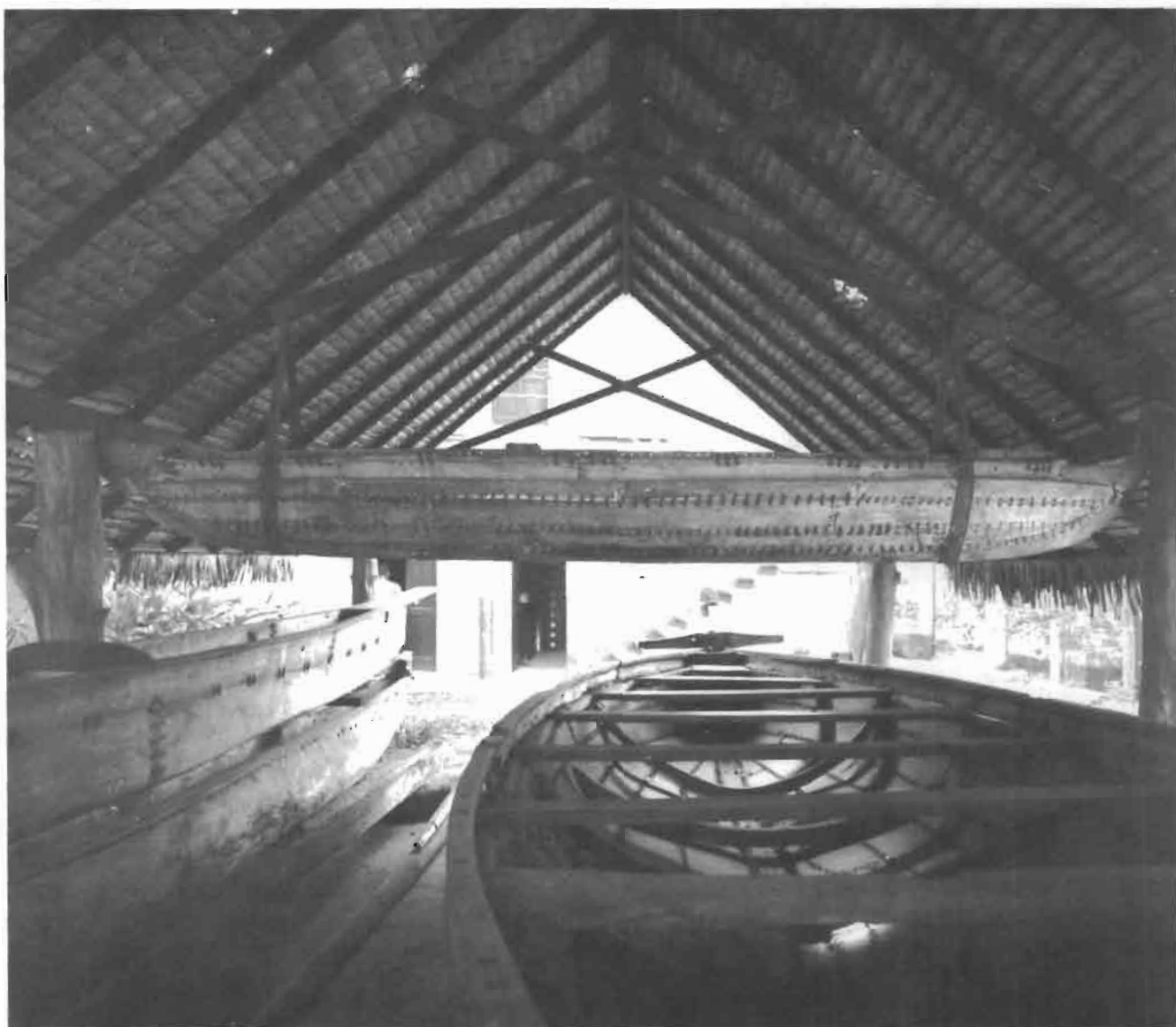
The double war canoes were rather similar but both extremities were very much higher and more decorated. These canoes had no sails, but paddles were used.

The canoes for ocean fishing, in particular for large tuna, were built along the same lines, but the front of each canoe was drawn out to a platform on which the fishermen could stand. The stern, very characteristic of this type of canoes, ended obliquely, hence their Tahitian name va'a no'o. These canoes were provided with a movable mast which also served as an outrigger to hold the fishing lines, and with two large oars near the bow which could be used as brakes. The canoes were manoeuvred by paddlers.

The outrigger canoes ranged from the small ones manoeuvred by paddle to much larger canoes capable of carrying a sail and thus permitting to navigate from one island to another or to fish further out at sea. This latter type, called va'a motu did not disappear from the Society Islands until the beginning of the 20th century.

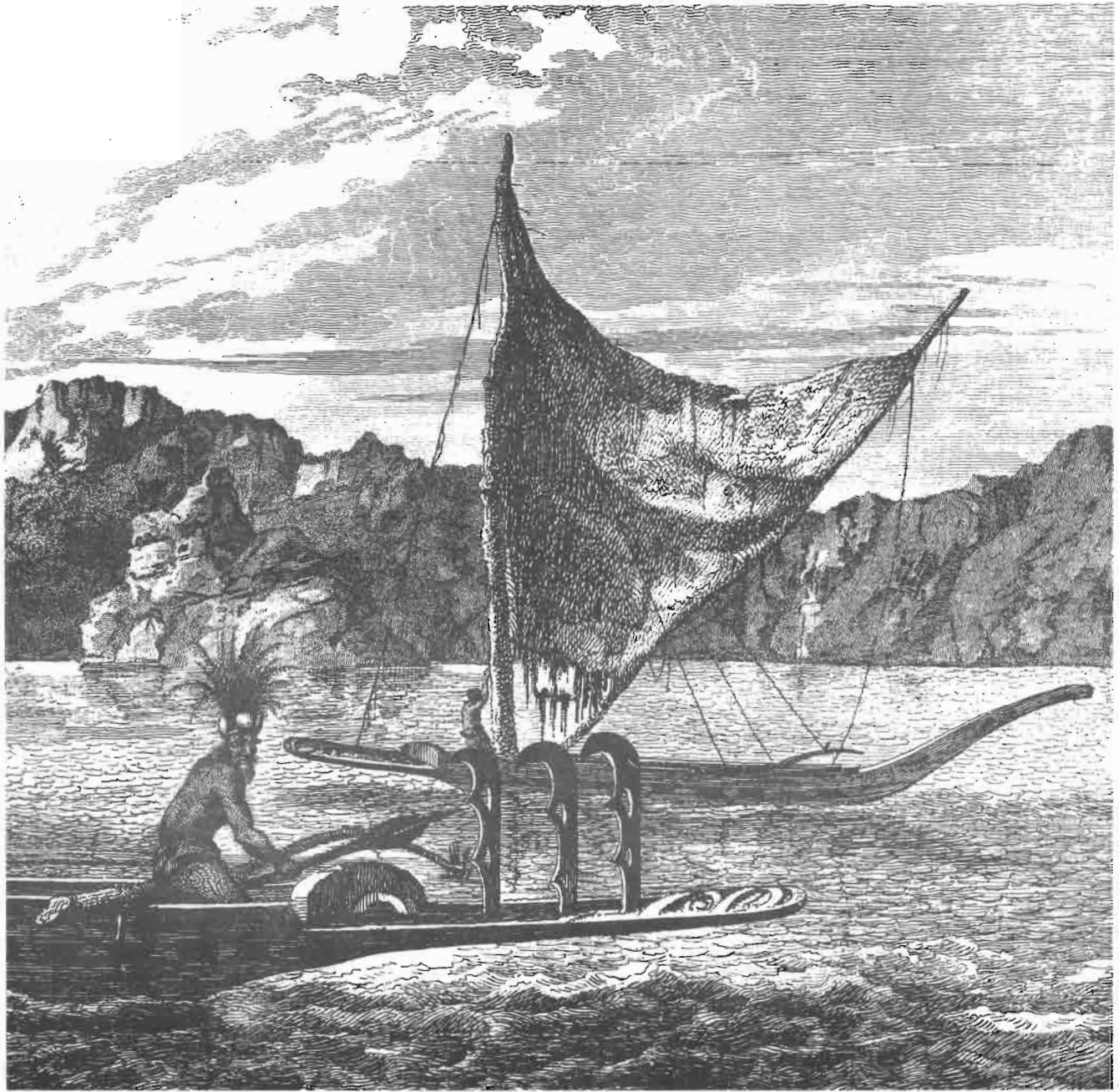
The hull, often raised by sewn planks, was curved towards the stern and ended in a vertical plank. The bow was extended by a horizontal projection. One of the characteristics of this canoe was a platform situated transversally at the foot of the mast thus "permitting the crew to act as counter-weight if the canoe heeled too much". In "Ancient Tahitian Canoes" by the Commandant P. JOURDAIN cited here, can be found a description of how the sails were handled on these canoes, as well as more complete notes on the different types of canoes used in Tahiti years ago.

For the Austral Islands, we know of no prints representing these canoes at the time of Cook.



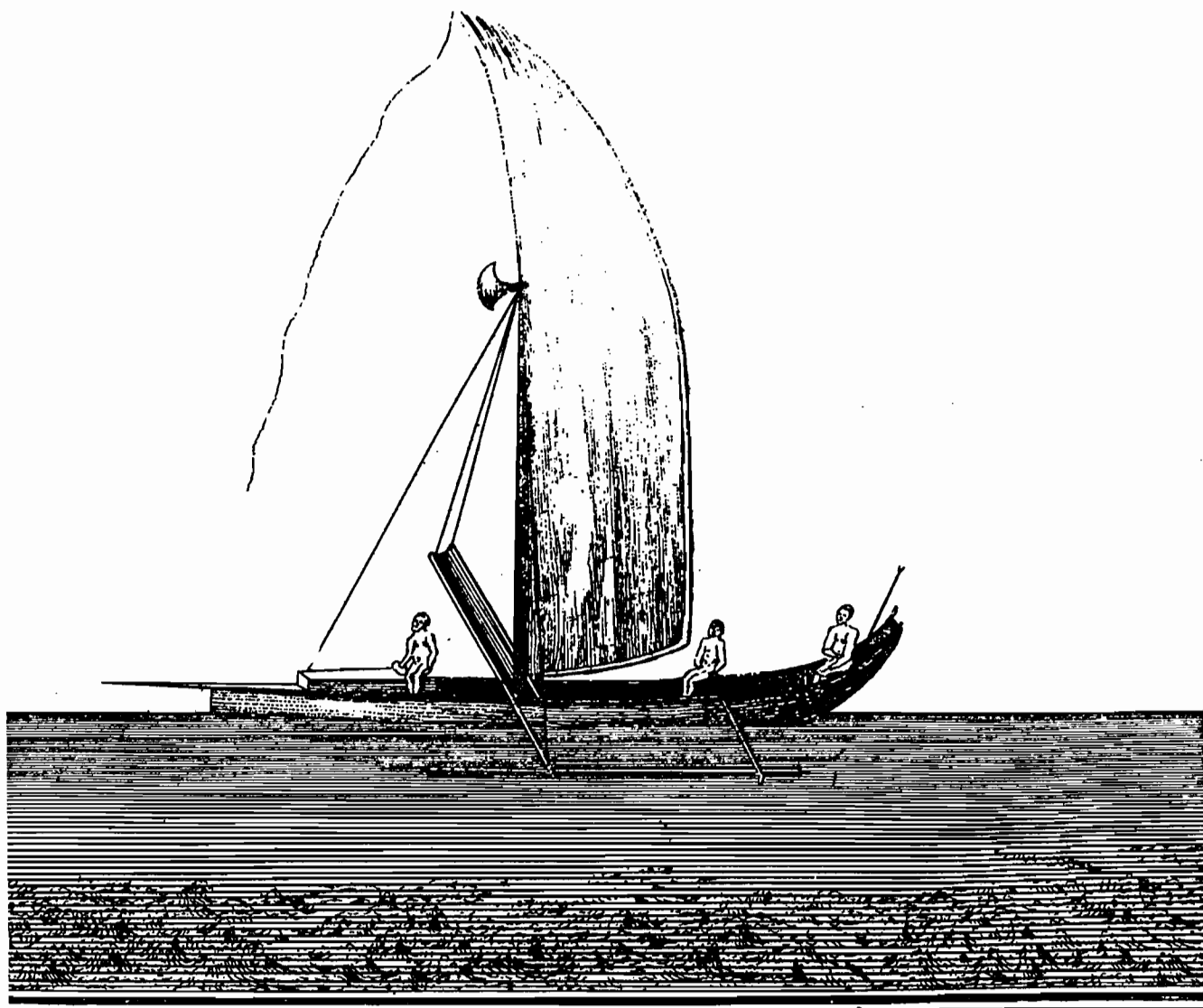
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7. The boat shed at the Papeete Museum.
 Top : No 750, outrigger canoe from Tatakoto
 Tuamotu, 4,34 meters.
 Left : No 752, sewn canoe from Ra'ivavae,
 Australs, 8,70 m
 Bottom : No 751, Tahitian canoe that belonged
 to the royal Pomare family and named Pua'a-
 ta'a'ino, 7,06 meters
 Center : No 799, large sailing craft of Vaitahi,
 Tuamotu, 7,94 meters.



8

8. The front end of a Marquesan canoe. Cook's Atlas.



9

Canot de l'Isle Taiti à la Voile.

9. The first engraving of a va'a-motu canoe from the Society Islands. Voyage of Bougainville, 1771.

10. No 450. Stern of a canoc, Rapa, 91 cm.

11. No 753. Bow of the va'a-motu canoe
Huahine, Society Islands, 2 meters.



11

10





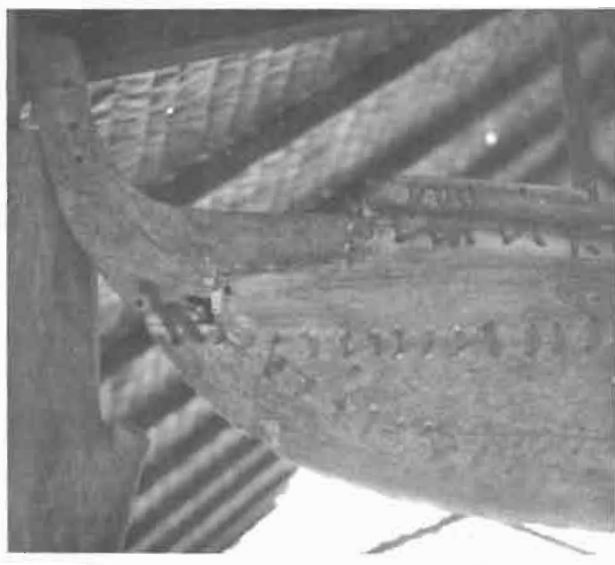
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12. No 113. Model of a canoe, Tuamotu, 134 cm.



13. Canoe from the Tuamotus. Detail of the lashings with coconut sennit.

13



14

14. Stern of an outrigger canoe. Tatakoto, Tuamotu. Detail showing how the stern, keel and sides were fastened to one another.



15

15. The stern section of a sailing craft, Vahitahi, Tuamotu. The transversal bar visible on the photograph has a hole in its center where a vertical spar was fixed. A very heavy oar, that served as a rudder, pivoted around this axis.

16

16. No 640. and 138. Marquesan bailers. 25 and 26 cm.



According to the early voyagers, they were not greatly different from the canoes seen in Tahiti. The sewn canoe of Raivavae has even survived to the present day ; one may be seen at the Papeete Museum. It is an outrigger canoe, 8.70 meters long ; the hull is made of two dug-out trunks put end to end and surmounted by a sewn plank and a narrow gunwale. The bow is prolonged by a horizontal board which extends 80 cm. over the hull whilst the stern projection is much shorter (12 cm).

In Rapa the canoes were built from many planks sewn together but we only know them from fragments which have been found in caves or in the swampy taro patches.

In the Tuamotus there were many local variations but since large trees are rare in the atolls, all the canoes were made of small planks sewn together. As opposed to the canoes from the high islands, the Tuamotu canoes had no dug-out hull but only a keel that extended upward at both ends and to which the plankings that made up the hull were fastened by sennit. The large canoes needed several rows of planks. As in Tahiti, the canoes either had an outrigger or were double. It is only as a result of European influence that larger crafts, of a whaleboat type having no need for an outrigger, were built but still along the same lines as the canoes. The boat shell was consolidated by a series of ribs. These boats navigated by sail from one island to the other. A very heavy oar served as a rudder. A boat of this type can be seen at the Papeete Museum.

In Mangareva, the canoes were of different sizes. "Some were simple with an outrigger, others were also simple but without an outrigger, but the most beautiful and the largest were the double canoes... Usually a human figure was carved at the two extremities of the bow and stern and I never heard it said that this was done in honour of some guardian divinity or other. It was purely ornamental... It is clear that these canoes were for large-scale operations. In the ordinary service simple rafts were used, composed of several beams placed side by side and fastened with transversals and cords". This is how the Pere LAVAL described the crafts of Mangareva. But the Mangarevans had already abandoned the use of the canoe at the time of European contact and they only used rafts.

It would be too long to describe here all the canoes found in Polynesia. Let it suffice to say that the most sumptuously decorated were the New Zealand canoes whose bow and stern were formed of large pieces of intricately sculptured wood. Like the Marquesan canoes, the New Zealand canoes were decorated with tufts of seabird feathers. The outrigger canoes disappeared soon after the arrival of Europeans, and by the middle of the 19th century, there were no longer any double canoes in New Zealand.

THE PADDLES.

The paddles were of different forms depending upon the island group and whether they were plain paddles or oars used as rudders.

The paddles were light and, either round, oval or sometimes diamond-shaped in form. The Marquesan paddles were characterized by a sort of spur sculptured on the base and this can also be found on the ceremonial paddles from Easter Island. The ancient Marquesan paddles were not decorated.

The so-called "ceremonial" paddles that can be seen in all the museums are remarkably and finely decorated. They come from the Austral islands, probably from Raivavae, but were never used for paddling. They were probably made after European contact, with the aid of metal tools.

The Mangarevan paddles are recognizable by the large size and shape of the base, which ends in a short point.

THE BAILERS.

The Polynesian bailer was made in wood and well characterized by the handle placed in the axis of the object. In Tahiti, the end of the handle is not free, but joined by a transversal piece. Except in New Zealand, the bailers were not decorated.

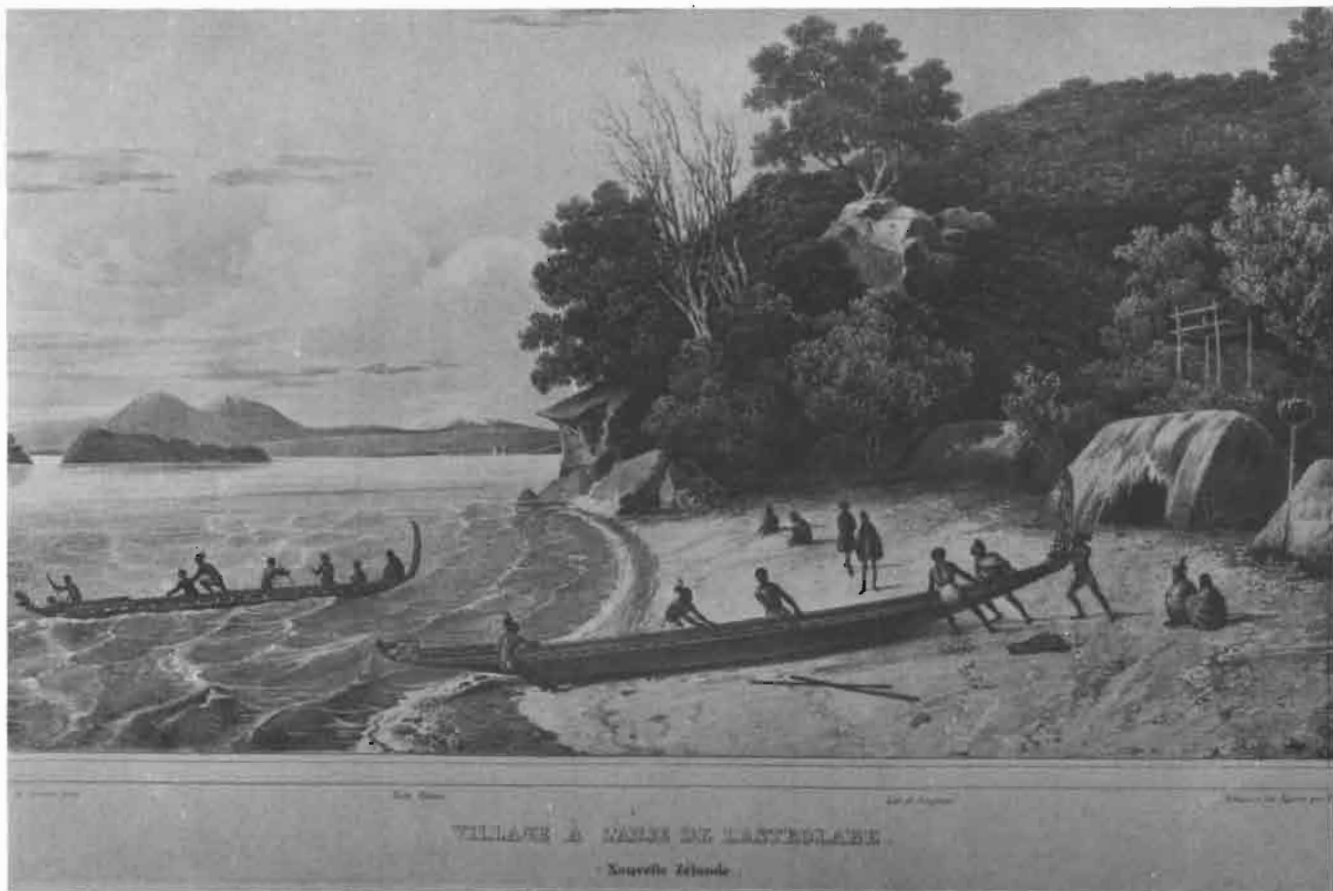
THE ANCHORS.

These were made from volcanic rock ; large oval stones with a protuberance at the top for the simple canoes, and very large pierced stones for the long-distance canoes.

CANOE CONSTRUCTION

This is how WALLIS, the discover of Tahiti, described the construction of canoes :

"They first fell the tree with a kind of hatchet, or adze, made of a tough greenish kind of stone, very dexterously fitted into a handle ; it is then cut into such lengths as are required for the plank, one end of which is heated till it begins to crack, and then with wedges of hard wood they spilt it down : some of these planks are two feet broad, and from 15 to 20 feet long. The sides are smoothed with adzes of the same materials and construction but of a smaller size. Six or eight men are sometimes at work upon the same plank together, and, as their tools presently lose their edge, every man has by him a coconut-shell filled with water, and flat stone, with which he sharpens his adze almost every minute. These planks are generally brought to the thickness of about an inch, and are after-



17

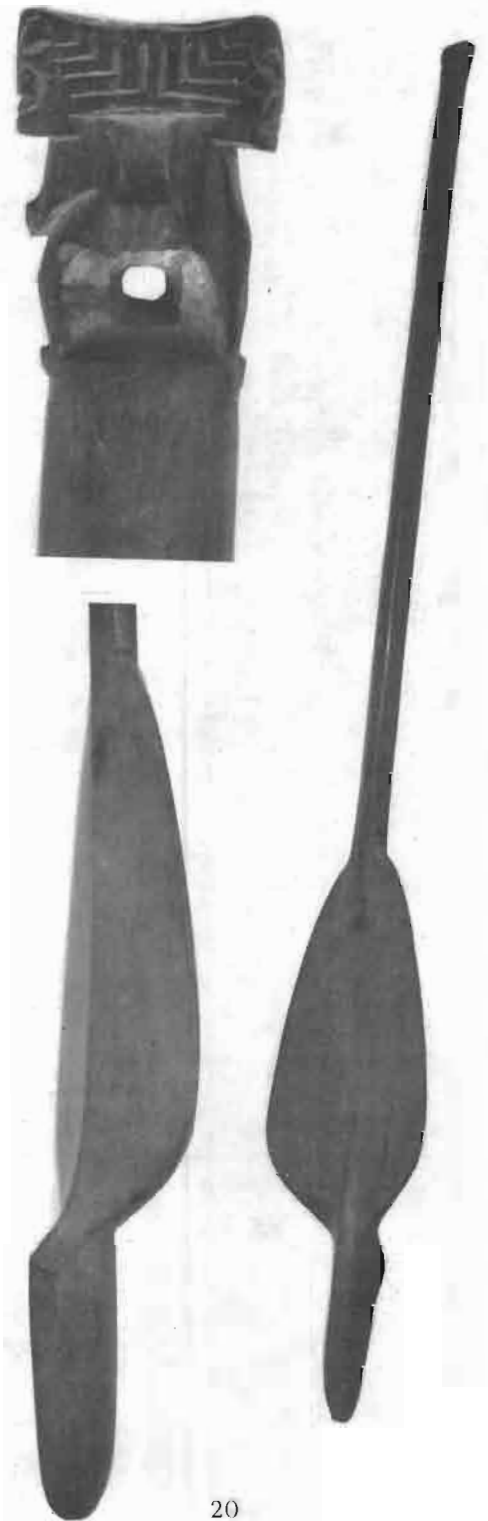


17. Canoes of New Zealand. Atlas of Dumont d'Urville 1841-1846.

18. No 1227. Anchor made of volcanic stone. Mangareva, 60 cm.

18

19. "Ceremonial" paddle from Ra'ivavae, Austral Islands. Details of the handle and of blade. 113 cm.



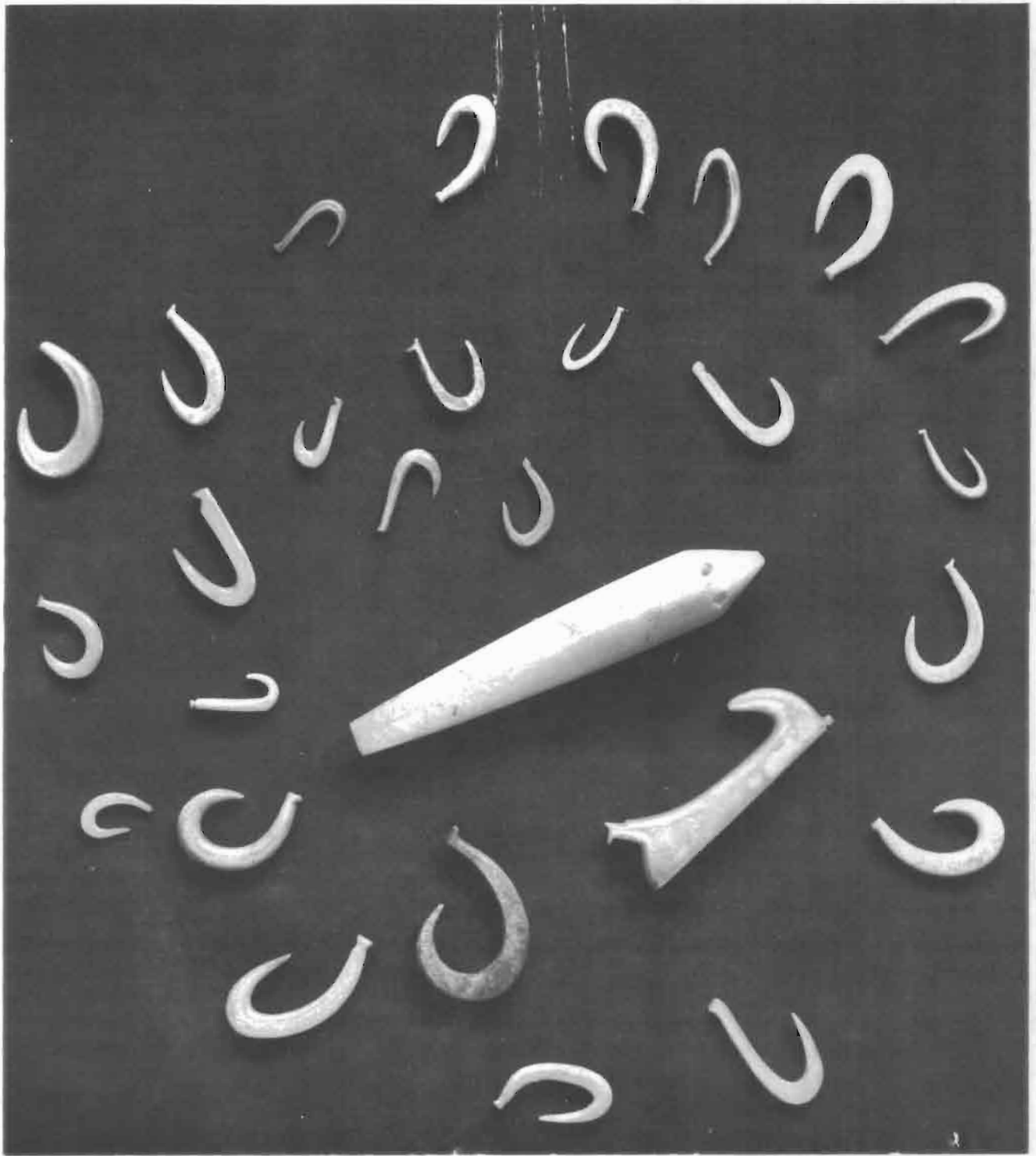
20. No 106. Marquesan paddle. Details of the handle and the blade. 158 cm.

wards fitted to the boat with the same exactness that would be expected from an expert joiner. To fasten these planks together, holes are bored with a piece of bone that is fixed into a flick for that purpose, a use to which our nails were afterwards applied with great advantage, and through these holes a kind of plaited cordage is passed, so as to hold the planks strongly together".

The braided cord was made from coconut (nape). It is this same material that was used for caulking the seams and the holes. Breadfruit sap was also used. But it goes without saying that the canoes were never perfectly water tight and that constant bailing was necessary. In addition to the paddlers, there were men specially appointed for this task. It is often wondered how many people one of these canoes could transport. In Tahiti, according to James MORRISON, the small outrigger canoes were handled by two to five paddlers. The canoes used by the chiefs and their families for journeys by sea were handled by 20 to 30 paddlers. As for the large war canoes, they could carry up to 300 men.

(This chapter was in part based on The canoes of Polynesia, Fiji and Micronesia by James HORNELL, in Canoes of Oceania, 1936).





21

21. Ancient hooks from the Marquesas. Hane, Uahuka. Pearl-shell. Excavations by Y.H. Sinoto.

FISHING

ARCHEOLOGICAL DATA :

The fishing methods used by the first settlers in Polynesia were not very different from those observed by the European navigators when they discovered the Pacific. Archeologists have exposed coastal dwelling sites that at one time were occupied by fishermen ; these sites are especially numerous and interesting in eastern Polynesia.

So far, the most important ones that have been excavated are those of Hane on the island of Uahuka in the Marquesas (Y. Sinoto and M. Kellum-Ottino), on Oahu and Hawai in the Hawaiian islands (Bishop Museum) and in Afareaitu, on the island of Moorea in the Society Islands (Bishop Museum - ORSTOM).

During these excavations many fish hooks have been recovered : most of them are made of mother-of-pearl, others of shell or bone. Many of them are only roughly made or unfinished hooks which enable experts to reconstruct the different stages in the manufacture of a fish hook. Generally, they are accompanied with the manufacturing and shaping tools : coral or stone saws, coral or pencil sea-urchin spin files, shell drills (Mitra) and, though very rarely, the disc weight used on the pump drills.

The archeologists distinguish several types of hooks :

- the simple or one-piece hooks of which the shank and point are a single piece. They can have the form of an almost closed 'O'; of a U or of a V. The point can either be shorter or longer than the shank. It is often directed back towards the shank thus forming a hook. It can have one or two barbs like certain Hawaiian hooks. The circular hook which rotates in the mouth of the fish to assure it is well caught is a remarkable technical achievement found only in the Pacific.

- composite hooks or two-piece hooks : the shank and the point are made separately and bound together. Many of the bone hooks from Hawaii are of this type.

- trolling hooks : these are well known as they are still used today for bonito fishing.

The lure or shank is cut out from a piece of pearl-shell and the line is lashed to a hole pierced at the top. At one time a pearl-shell point was fastened to the base of the lure. The archeologists can distinguish two types of points :

- 1) a West Polynesian type is found in Samoa as well as in the early sites of the Marquesas, Society Islands, Hawaii and New Zealand. The base of this point is large and perforated with two holes.

- 2) an East Polynesian type, that appears in the same island groups. It is a more recent type identifiable by a less wide base and only one hole.

On the modern bonito hooks, the pearl shell point is replaced by a strip of metal bent back to form the point.

For all the hooks, and especially the simple hooks, the form of the head is very important as it determines the method of attaching the line, but most of all it enables experts to distinguish different types, to compare them, classify them and date them. In this way Y.H. Sinoto has been able to classify the Marquesas and Society Island hooks into eleven principal types, based on head form.

One of these types is characteristic of the earliest cultural levels in the Marquesas, whilst others did not appear and spread in the archipelago until the 14th century.

During the excavations, besides the hooks and the tools necessary for their manufacture, rather crudely worked stones used by the ancient Polynesian as net weights, line weights or as octopus lure sinkers are found. These fishing weights are of several types but the most common is one made from an undetermined sized stone, generally irregularly shaped, and having a knob at the top for easy attachment of a line. A more elaborate type, in the shape of a "coffee bean", made up part of a special device for octopus fishing.

In the Society Islands dough-nut shaped stone weights are found which were probably used as line weights.

FISHING METHODS :

LINES AND HOOKS

"Every Fisherman", writes James MORRISON in his Journal of 1792, "makes his own hooks lines twines and every article of his gear, which are not be equald by any thing but their skill in using them." In Tahiti the lines were made from the roa bark (*Pipturus argenteus*, Wedell), a bush that grew in the cool valleys and whose fibres were much more resistant than flax or hemp. These fibres were twisted into two or three strands and thence into fishing-lines of such fine quality that the first European voyagers were most impressed. Other materials of inferior quality as purau bark (*Hibiscus tiliaceus*) could also be twisted to make lines.

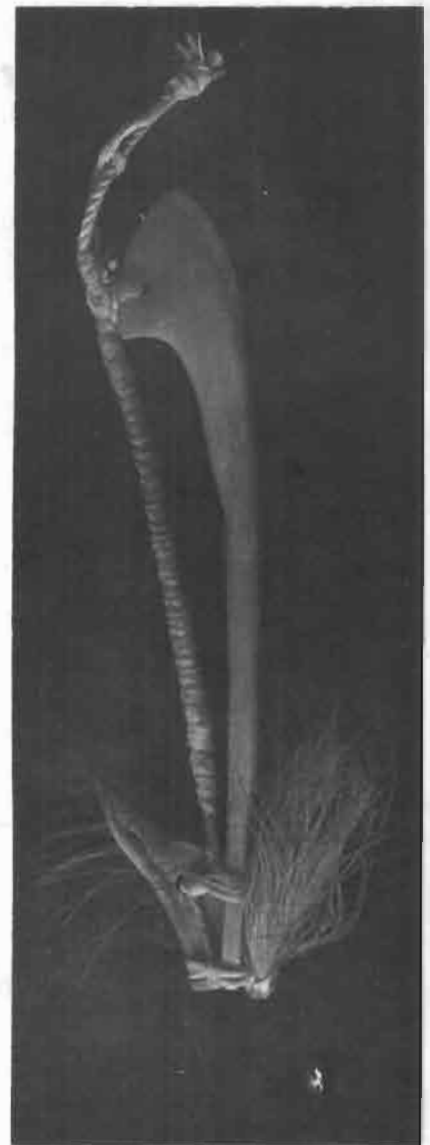


22

22. The manufacture of pearl-shell hooks, Marquesas. Excavations by Y.H. Sinoto.
 Top : coral and sea-urchin spine files.
 Center : blanks of one-piece of simple fish hooks at different stages.
 Bottom : Bonito hook lure and point of an early type.



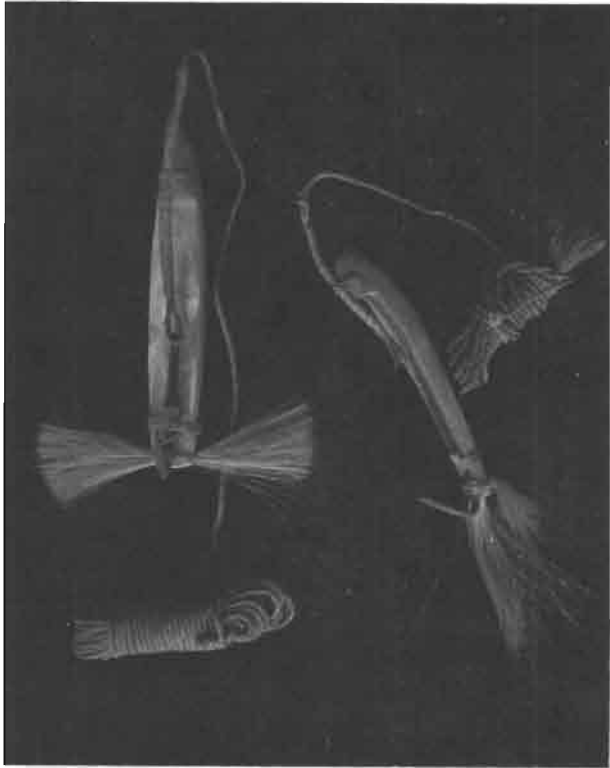
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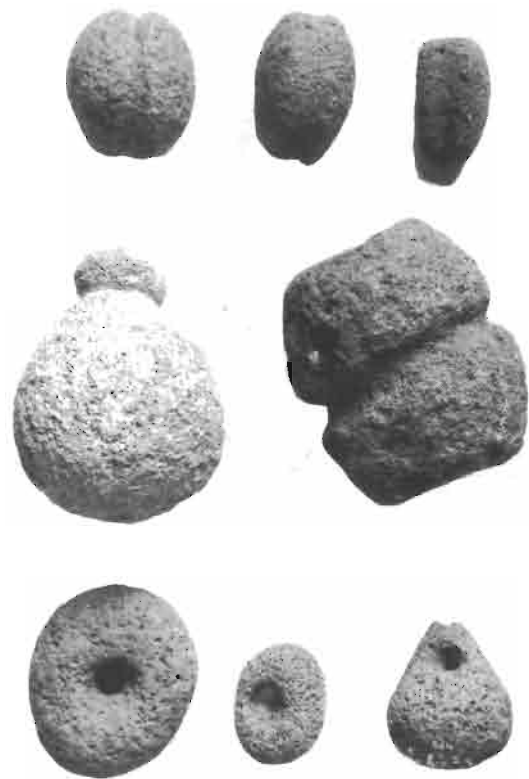
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23. No 384. Paddle from Mangareva, 189 cm.

24. No 456. Bonito hook lure. Point in pearl-shell
 15,3 cm. Tahiti.



25



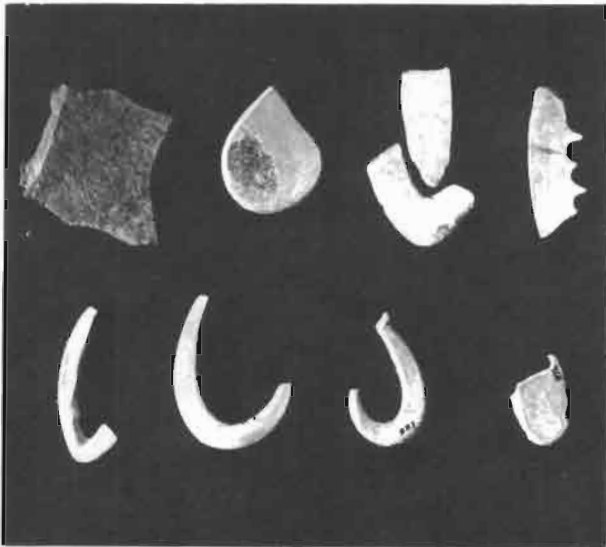
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27

25. No 457 and 458. Modern type with metal point.
13,7 and 11,5 cm. Tahiti.
26. Sinkers of vesicular volcanic rock.
Top : sinkers for octopus lures.
Center : net weights and sinker for bait.
Bottom : pierced stones for nets or fish lines.
27. Manufacture of fish hooks in the Society Islands :
shell and coral files. Hook blanks at different
stages showing the use of the drill for the sha-
ping of the inner part.



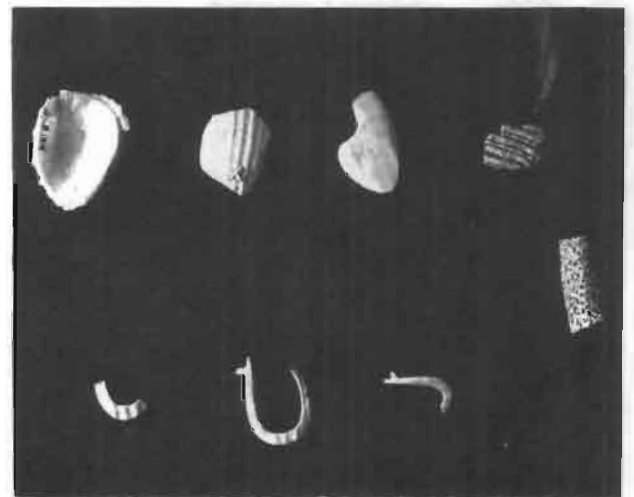
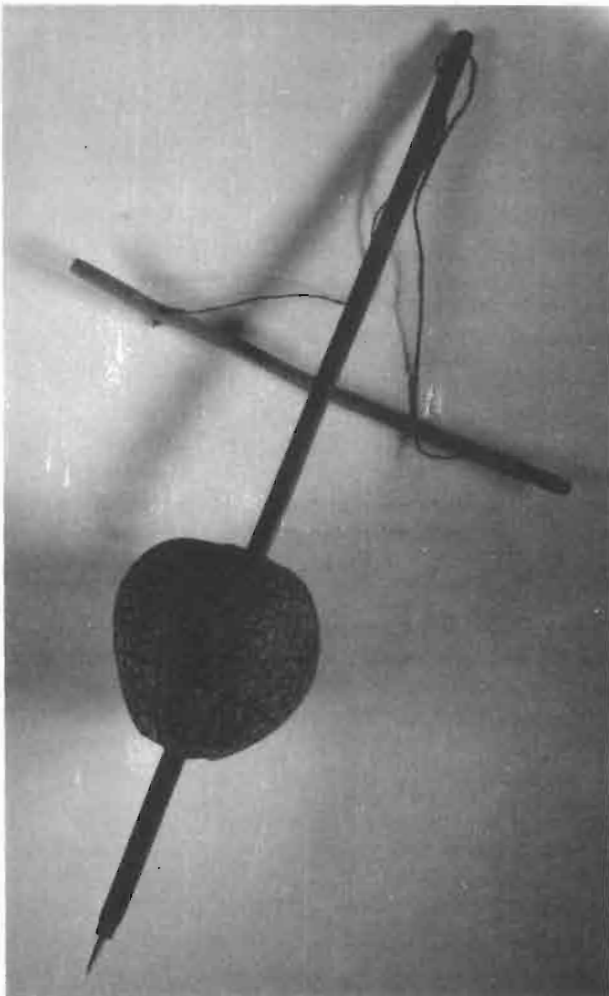
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28. In the Tuamotu atolls the shaping was done by cutting away the inner part between the shank and the point. Above, small basalt-flake saw.

29



30

29. No 800. Piercer of a modern pump-drill used for the manufacture of bonito hook lures ; steel drills tend to split the pearl-shell. Rangiroa, Tuamotu.

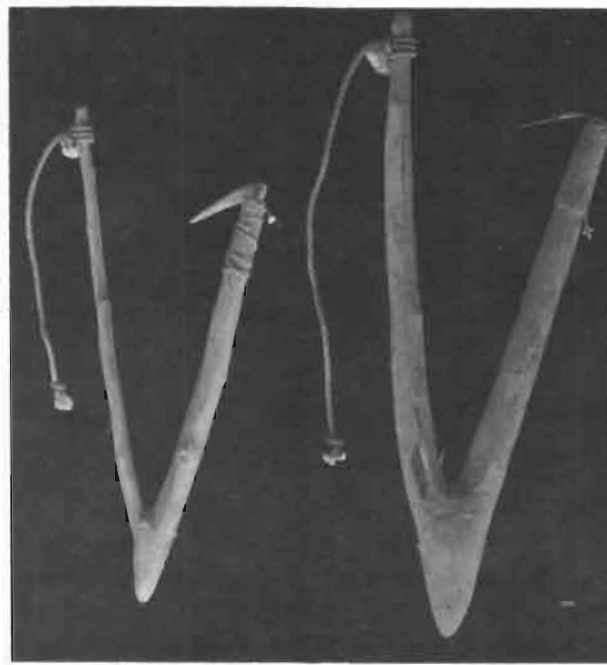
30. Hooks made of Turbo shell are common in the Society Islands and especially in Moorea.



31

31. No 452. Shark hook in wood (*Pemphis acidula*)
Tuamotu. 16,6 cm.

32. No 645 and 644. Wooden hooks of *Pemphis aci-*
dula for fishing the *Ruvettus precious* at great
depths. Rurutu, Austral Islands.



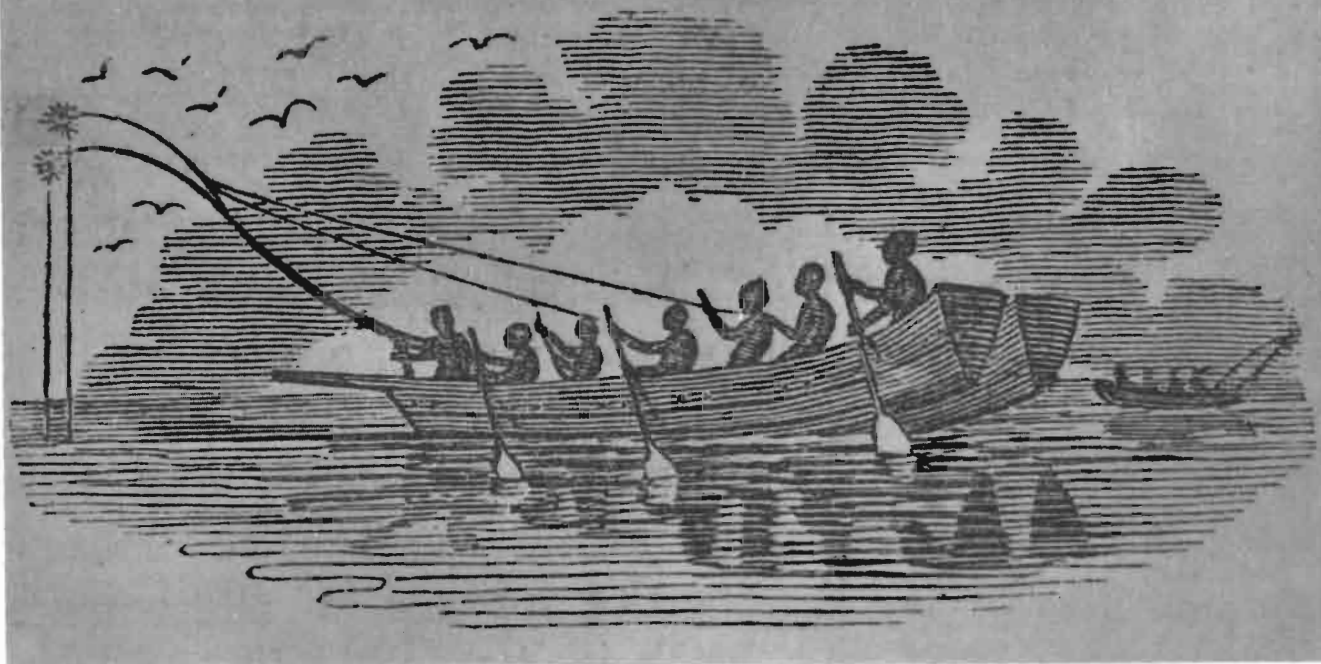
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33

33. Tahitian trolling hooks

Fishing Canoe.



34

35

34. Canoes for tuna fishing with movable masts or tira. Engraving taken from *Polynesian Researches* by William Ellis.

35. Metal fish hooks of local manufacture and of traditional form. Society Islands.
Top : at left, two hooks for tuna fishing. The metal came from bronze nails or from copper sheeting taken from old sailing vessels.



James MORRISON, an English sailor who spent from 1788 to 1791 in Polynesia, described how the Tahitians made their hooks :

"Their hooks are made of Pearl shell, bone, wood etc ..., of different constructions for the different fish, some being made to answer the double purpose of hook and bait ; they make their hooks by grinding them into form on a stone with water and sand and with a drill made of a shark's tooth ; they make a hole into which they introduce a sprig of the coral as a file and work out the inside part ; and as they have no beard they make the point to round toward the back of the hook, inclining downward and seldom loose a fish after they get it once hooked."

The small pearl-shell or shell hooks were reserved for lagoon or shallow water fishing. Lines were ballasted with small grooved stones or stones with a hole. Small pearl-shell lures with a point, resembling the large lures for bonito fishing were used to catch 'i'hi (*Myripristis* sp.), or squirrel fish that conceal themselves in the intricacies of the coral.

Sharks were fished with large wooden hooks that had a point turning inwards. A special hook is still used in some islands to catch fish - the 'uravena (*Ruvettus precious* C) and the mana (*Promethichthys prometheus* C) - at very great depths. The hook which is attached to a line 200 to 400 meters long is baited and a stone attached in such a way that when it touches the bottom, it can be detached by a quick jerk ; the hook then comes slowly back up.

One of the most interesting methods of fishing practised in the Society Islands took place in the open sea for the purpose of catching large fish, especially big tuna in great numbers.

Two special types of canoes with an oblique rear board (va'a no'o) were tied together with two beams ; the front beam was very solid as it also served as a support for a long pole (tira) about 30 feet long. This movable mast was made of purau wood (*Hibiscus tiliaceus*) and consisted of several elements joined one to the other. Its base was square in cross-section and was engaged between the forward beam and another partially mobile beam (rio). To its forked extremity were fastened two lines and a bunch of feathers destined to attract the fish when the mast was lowered in a fishing position. A large floating basket (ha'ape'ouma) containing quantities of 'ouma fish (*Mulloidichthys auriflamma* F.) that served as live bait, was hung between the two canoes.

The head of the fishermen (tahua), who observed the movement of birds above the shoals of fish, directed the double canoe by giving orders to the paddlers. When the moment had come, he threw some live bait into the water, then baited the hook. This is how James MORRISON describes this method of fishing :

"When they see any fish, they paddle toward them till they come round the canoe and then they keep the stern of the canoe to windward and paddle from them ; a man is then placed to throw water with a scoop, and make a continual spray like rain, and the hooks being baited the crane is lowered so as to let them just under the surface. The man on the bow who attends to bait the hooks keeps throwing now and then a small fish while the other with the scoop keeps a constant shower about the hooks ; the fish soon fly at their prey and get hooked when the men who attend the crane rope, having notice given them, haul up and the fish swing in to the man who attends to receive them and bait the hooks afresh."

The pole was then raised almost vertical by means of a rope pulled from the stern and with the help of the men who were on the forward platform of the canoe. While the fish slid to one side and was immediately knocked out, the hook of the other line was baited and tossed into the water. In this way the two lines were worked alternatively at a very rapid rhythm.

To catch smaller tuna, other methods were used : hand line fishing from a simple canoe and lure fishing. But this last method was mostly for catching bonito.

Bonito fishing was the most important of the open sea fishing and it was practised in all of Polynesia. In the Society Islands fishermen use a bamboo pole with a short line holding a pearl-shell lure in the form of a small fish. At the base of the shank there is some pig hairs and a point. Nowadays, trolling is done from a motor boat, but in earlier days it was done from a light canoe which could be rapidly manoeuvred by two or three men. Flights of sea birds enable fishermen to locate the shoals of fish. Once having arrived in the fishing area, the boat is kept going at a reduced speed. The two fishermen seated in the rear of the boat each seize a large bamboo pole and carefully chose the lure that they will use. A very great importance is given to the cleanliness of the lure, its finish, its polish, its colour, its brilliance as well as to the behaviour of the pig-hairs in the water. The lure must be manipulated with care and with very clean hands. The fisherman throws the appropriate hook into the water, and with a back and forth movement of his pole, he maintains the lure in nearly a horizontal position on the surface of the water, and replaces it very rapidly in a zig-zag movement. The fish is catapulted on board with a movement of the hip which makes the pole pivot without lifting it completely. The bonito which is caught on a barbless hook easily slips off and falls into the boat. The hook is thrown back into the water and the fishing continues very rapidly as long as there are fish left.

Bonito fishing is done throughout Polynesia



36



37

37. No 796. Trolling hook. Bone point. Uapou, Marquesas, 8 cm



38



38. No 382, 460, and 461. Pearl-shell hooks of the Tuamotu. 11,5 5,6 and 3,8 cm.

and the same characteristic hook is found as far away as the Ellice Islands and even in certain Melanesian islands. In New Zealand, where pearl-shell was absent, shanks were made of abalone shell (*Haliotis*). However this shell was very thin so it had to be reinforced by a wooden support to which it was bound.

Throughout Polynesia, the generic term for the bonito hook was *pa* except in the Society Islands where it was called *'aviti*, perhaps because of a linguistic tapu which we do not know about.

Mahimahi (*Coryphaena*) fishing was done from sailing canoes and mostly between Tahiti and Tetiaroa. Flying fish were used for bait.

There were still other methods of fishing with a line ; float fishing (*poito*) consisted in catching mullet by throwing *purau*-wood floats fitted with a short line and a hook baited with breadfruit paste. A rather similar fishing technique was used in the open sea, with a large float and a weight for catching big fish and sharks.

In the Leeward Islands one can still observe fishing with a pole in shallow water. The fisherman, in water up to his waist, casts his line into the surf.

NETS :

Nets, in various forms were to be found throughout Polynesia.

In the Society Islands, large seine nets 10 to 120 meters long and 2 to 24 meters deep were used. The largest ones had a pocket in the middle which was emptied from time to time when it was full. The fish were transported to the shore by canoe.

The floats were made of short cylindrical pieces of well dried *purau* wood, pierced lengthwise. They were placed along the upper edge of the net at 30 cm intervals. The lower edge of the nets were weighed down with stones wrapped in the coconut fibre which is found at the base of the palms.

The materials used to make nets were the fibres from *ro'a* and *purau* bark. To make the net meshes, bamboo meshing needles and gauges were used.

Flying fish were caught with smaller nets than 30 to 40 meters long by about 3 meters deep ; this fishing was done at night with two men to a canoe.

At the time of James MORRISON, Tahitians also used round or square cast nets "which they threw very skillfully."

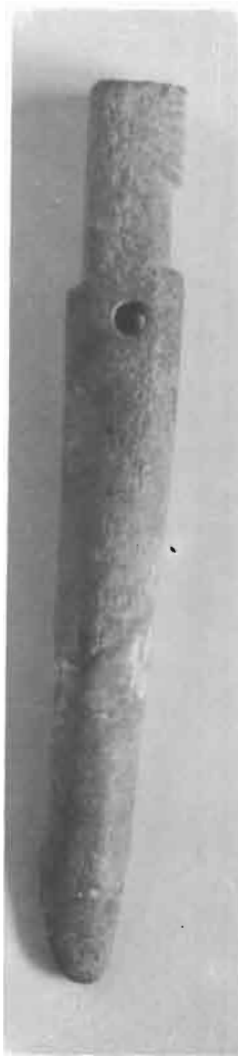
There also existed several sorts of scoop nets, used for reef fishing, for the large net

fishing or just for drawing fish from the fish traps or fish enclosures.

It seems that a sort of dip net, weighed down in the middle by a stone, has been certified in several Polynesian island groups. In the Marquesas it was used to catch the *tatue*, a large blue parrot fish, by using a method of decoy fishing which has only recently disappeared since certain Marquesans remember having seen it done. The *tatue* is a coral nibbler, always in movement but having solitary habits, and will attack fiercely any individual of his kind that will trespass into his "territory". So when the Marquesans of not long ago had speared a live *tatue*, they attached it in the center of a heavily ballasted square net, the four corners of which were held taut by two arcs of flexible wood bent crosswise over the diagonals. As soon as another *tatue* had been located, this net contraption was lowered. When the free *tatue* came to attack the intruder, the line tied to the bent cross piece was pulled which then released them and imprisoned the fish in the bottom of the pocket. A few live specimens were kept for the next fishing in one of the natural fish enclosures abundant along the rocky coast of the Marquesas and kept replenished by the spray. The toponymy keeps these in mind through place names called *'oto tatue* : the basin for *tatue*. In the present day, this same tactic has been adapted to spear-gun fishing ; a swimmer tows a *tatue* at the end of a line and his companion follows the fish within spearing range. As soon as another *tatue* approaches the decoy, it is speared in good conditions as it is a timid fish, generally difficult to approach.

In the Australs and Society Islands, in shallow areas the fish *'ouma* (*Mulloidichthys auri-flamma* Forsk) was fished for bait by means of long garlands of coconut palms tied together (*ra'o'ere*) so as to form a sort of net. The famous "stone fishing" practised in the Leeward Islands is but a variant of this. A large part of the population gathers round in canoes and frightens the fish by hitting the water with stones. Encircled by the coconut palms which many of the fishermen guide and pull in the water, the fish are slowly pushed in towards shore.

Another form of "stone fishing" was practised on Uapou in the Marquesas. It is a collective type of fishing, sometimes calling for all the able-bodied men of several valleys, and consisted of chasing in to shore a school of dolphins without any thing else other than a great number of canoes, and stones which were knocked against one another under water. When a school was sighted in a bay, the canoes formed a semi-circle between the dolphins and the open sea. Sometimes paddling, sometimes hitting the stones together, the semi-circle got progressively closer to shore where the dolphins, completely mad, ended up by throwing themselves



40

39. Trolling hook. Whale bone lure covered with a piece of pearl-shell and a barbed point made of turtle shell. 18 cm. Tonga.



39.

40. No 508. Bone harpoon head. Marquesas.

and where they were massacred in large numbers. This method of fishing needs great coordination between the canoes and a head fisherman (tahuku) who directs the movements with the aid of known signals.

FISH WEIRS, TRAPS, ENCLOSURES :

In favorable areas, especially in the Tuamotus and Society Islands, stone constructions of varying forms and dimensions in which fish were trapped can still be seen. The most spectacular of these is that of Maeva, Huahine which occupies part of channel in front of the village. This channel runs from the salt lake of Fauna nui to the west of Maeva down to the sea via the Tiare Pass. The fish weirs that form five ensembles are orientated in both directions so that they can be used both during the incoming and outgoing tides. The unobstructed passages outside these constructions are very narrow and the fish can escape only with difficulty. Large blocks of stone have been gathered to make vertical walls. Six of these traps are of rather simple construction ; the walls are arranged in the form of a largely opened V the sides of which close in to make a narrow passage which is enclosed by a circular pen. Once the fish are caught in this closed pen, they are complete prisoners. One of the central structures is more complex : the wings of the trap are actually passage ways which lead in to the closed pen.

In the Tuamotus, the traps that are in good condition are still in use. The traps also serve as fish enclosures where fish can be taken when needed. Polynesian fishermen also use a movable sort of fish container ; if the large basket made of fern stems, once indispensable for the ancient tuna fishing, has fallen out of use, everywhere in Tahiti one can see the fish container made from split bamboo with the laths separated.

The wicker traps were used at river mouths or to catch reef fish. Generally they were plaited from the aerial roots of a variety of pandanus, the 'ie'ie (*Freycinetia demissa*). Their form varied according to island groups.

These traps of 'ie'ie are still used in the Society Islands to catch lobsters and fresh water shrimps.

HARPOONS :

In the Marquesas, harpoon heads of shell or of bone were found at all levels in the archeological excavations. Most of them had a perforation and several barbs. Points of a similar form are known in New Zealand. Bone harpoon heads, dating from the 18th century and coming from the Marquesas make up a part of some of the rare ethnographic collections.

James MORRISON's journal gives some indications on the types of harpoons used in the Society Islands at a historical date : "... they have harpoons which they throw with a great precision ; they are 12 to 15 feet long and support at their extremity two points of toa : having no line attached to the harpoon they swim out to retrieve it when there is a fish at the end. They have other harpoons with several points which they throw at random into a school of fish and often spear two or three at a time"

TURTLE FISHING :

Turtles were fished by means of nets weighed down at the base with stones ; occasionally turtles were taken on hooks and lines.

In the present day, turtles are harpooned or caught on lines fitted with strong hooks.

OCTOPUS FISHING :

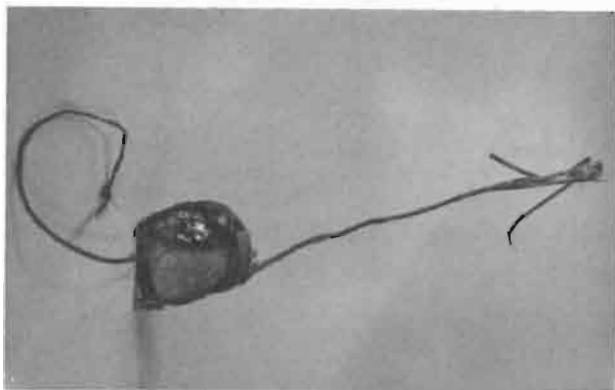
Archeological excavations in the Marquesas and in Hawaii have revealed stones in the form of "coffee-beans" which served as sinkers for octopus lures. The complete decoy included superimposed fragments of pierced cowry shell (*Cypraea*), fastened to a stick of hard wood. The stone which served as a sinker had a hollowed out groove along its dorsal side and thus firmly attached to the stick.

At the base of the lure, there was a hook and some shredded Cordyline leaves. The octopuses, attracted by the cowry shells carefully selected for their brilliance, were hooked and rapidly drawn up into the canoe. This is an ancient method of fishing, as during the archeological excavations many perforated cowry shells accompanied by stone sinkers are recovered. The earliest levels from the site excavated on Uahuka, Marquesas, revealed conical sinkers, similar to those which are still in use in Samoa for a similar method of fishing.

In the Society Islands an even simpler decoy is in use ; it has neither sinker nor point. Fragments of cowry shell are tied around a stick which is held in one hand and shaken in front of the hole where the octopus is hidden. When it appears, the fisherman seizes it with his other hand or else hooks it with a sort of gaff hook.

FISHING POISONING :

The Polynesians knew how to stupefy fish by crushing the fruit, leaves or roots of certain plants. Most of all they used the green kernel of the *Barringtonia speciosa* F. (hutu in Tahitian) and the roots of the *Tephrosia piscatoria* (hora in Tahitian). The raspings were placed in the anfractuosités among the coral heads or rocks. The benumbed fish came out of



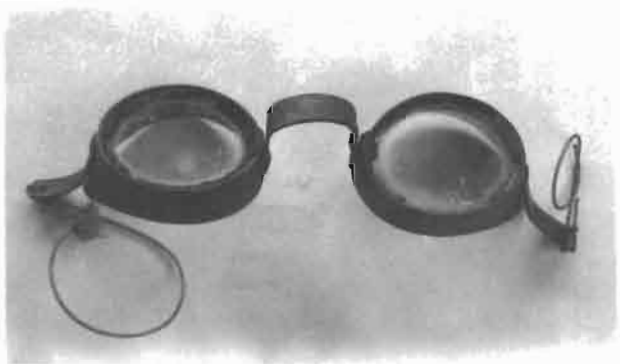
41. Octopus lure, Samoa. When in use, the lure is supposed to imitate the movements of a drowning rat.

41

42. No 658. Octopus lure, Society Islands.

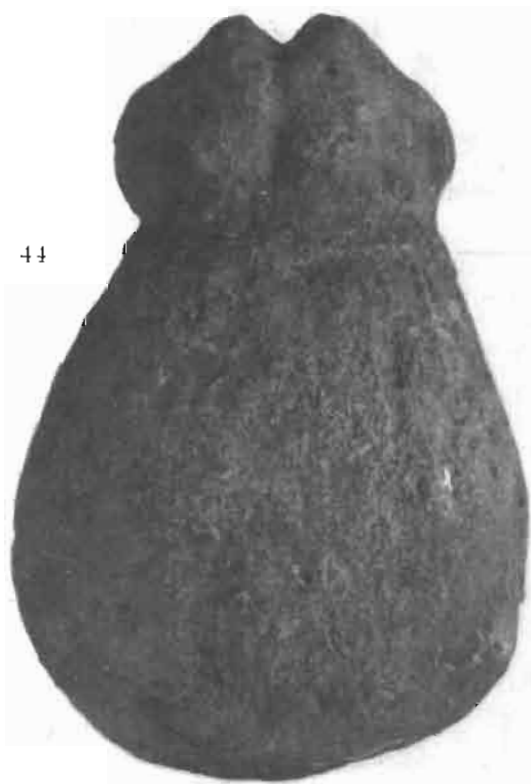


42



43. Copper rimmed diving goggles. Glass stuck on with wax, Marquesas.

44



44. No 953. Fishing weight. 20 cm. Uapou, Marquesas.

their hole and let themselves be speared easily. The poison was absorbed in such small doses by the fish that it was not dangerous for man.

GATHERING :

Practically everything living in the sea that is not poisonous is edible. So, the ancient Polynesians did not eat only fish and turtles but also crabs, lobsters, sand crayfish (ti'ane'e), sea centipedes (varo), shrimps, a small crustacea Hippa sp. (popoti), several kinds of sea urchins (vana, fetu'e, ava'e, etc.). The coconut crab (kaveu) whose abdomen is a pocked filled with coconut oil is very much appreciated by inhabitants of the Tuamotus. Amongst the shells, the most fished are still the tridacnas which in some of the disinherited atolls of the Tuamotus become an exclusive food, the different kinds of turbo shells which are found on the reef, clams, mussels and oysters. If there was nothing better, limpets (mapihi) were also eaten as well as the less habitually eaten mollusks such as the sea worms (u'a'o) that constructed a porcelaine-like calcareous tube, etc ...

Some edible seaweeds, still known by the present-day Polynesians, were gathered for food.

Nor must it be forgotten that sea bird eggs are still collected systematically on certain islets of the Tuamotus and of the volcanic islands. Young sea birds are knocked out with a stick and also furnish a well appreciated meal.

While fishing was, strictly speaking, reserved to the men who considered it to be as much a sport as a way of finding food, gathering was a woman's activity.

But the products of the sea were not all destined to become food. Many were used to make various objects, as apart from stone and wood, raw materials from the land were rare.

The most precious raw material furnished by the sea was probably pearl-shell, as it is from this that were made the fish hooks, bonito lures, certain harpoon points, all very important objects for the survival of the Polynesians.

With pearl-shell, ornaments or parts of ornaments, big pendants, small square pieces of mother-of-pearl to decorate mourners' costumes (heiva), decorative buttons as well as domestic implements, scrapers or coconut graters were also made.

Pearl-shell, very rare and valued in the Society Islands, was obtained by exchange from the inhabitants of the Tuamotus who lacked volcanic rock to make adzes.

Knives and scrapers were of pearl-shell, shell or sharks' teeth. In the far off Tuamotu atolls, only adzes and chisels of tridacna were known and large pearl-shells were used as shovels.

Everywhere, coral, shells (Mitres and Terebras) and pencil sea-urchin spines were used as files to finish hooks. Ray skin also served as an excellent rasp. Drill points or piercers that were necessary to make hooks and canoes were made from shells or sharks' teeth.

Coral itself was not scorned as with it one made coconut graters ('ana in the Society Islands), and still today on Rurutu in the Austral Islands, large coral pounders are made for the preparation of poi, a fermented mashed tuber dish. A few images (ti'i) from the Society Islands are in coral.

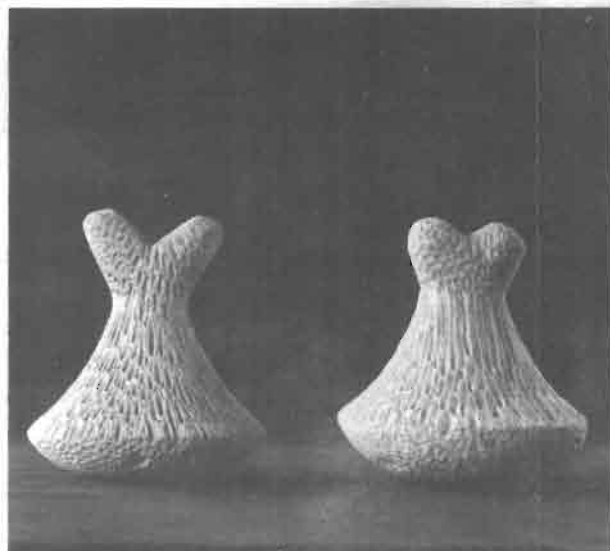
The knives used to peel breadfruit were made from cowries (Cypraea) These are still in use in the Marquesas but have been abandoned in Tahiti.

Along with the birds from which the feathers were plucked, the sea creatures furnished the most beautiful ornaments of Polynesia : sharks' teeth for the beautiful Tahitian breast-plates (taumi), shell and carved turtle shell for Marquesan head crowns, whale tooth or imitation whale tooth for shell pendants and necklaces. On Uapou in the Marquesas there was a local speciality of porpoise tooth necklaces.

Many of these objects were used long ago as they are found in the course of archeological excavations, generally in a good state of preservation.

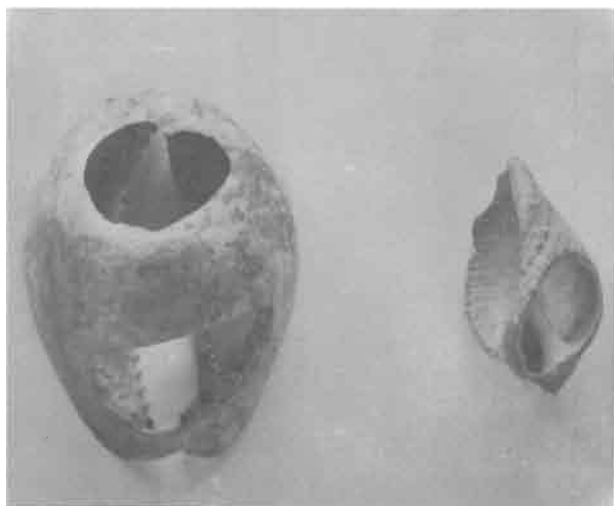


45. No 206, 207. Coral pounders, Rurutu, Australs.
18 cm.



45

46. Shell scrapers to peel breadfruit. Marquesas.

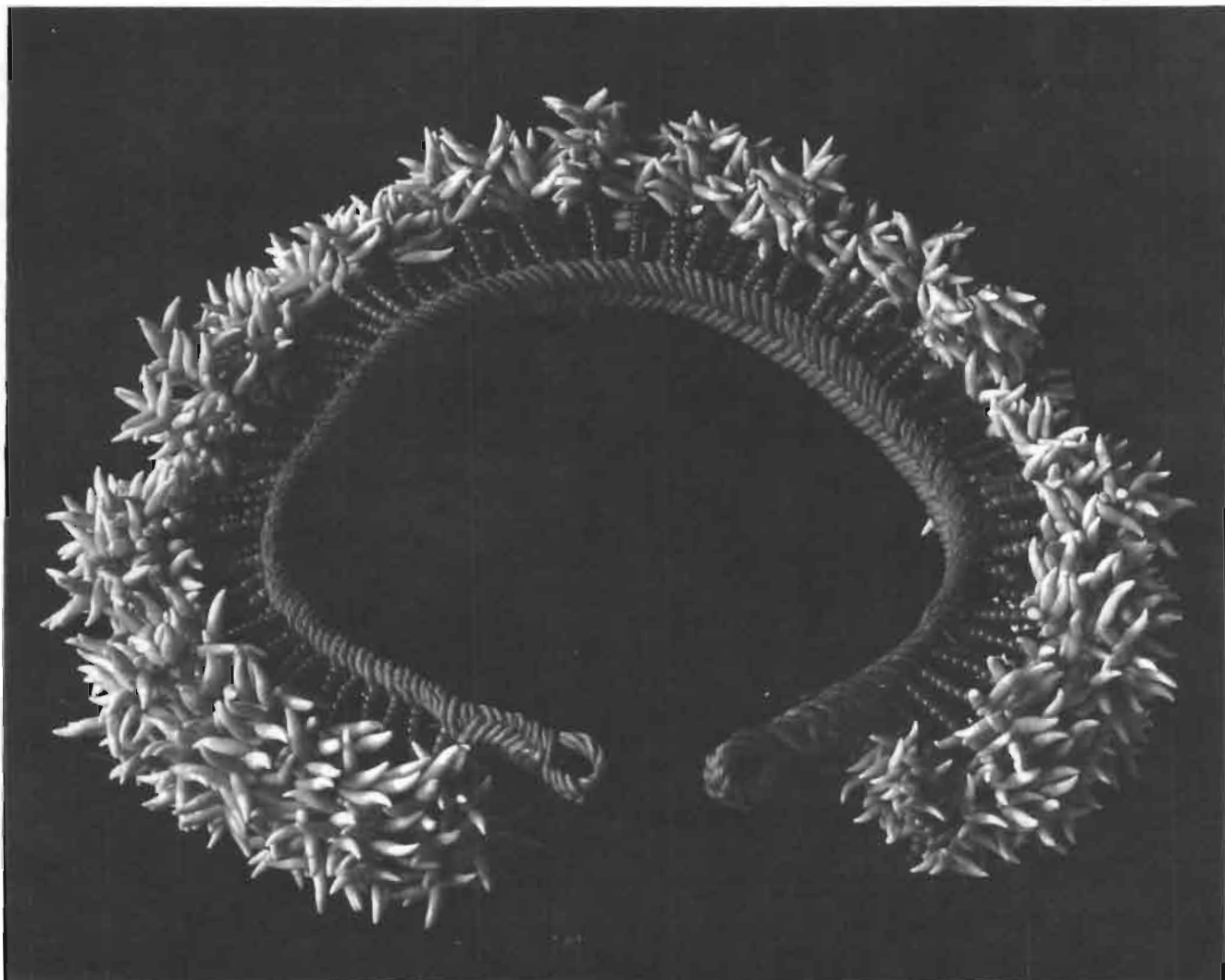


46

47. No 313. Adze of Tridacna shell. Tuamotu.

47



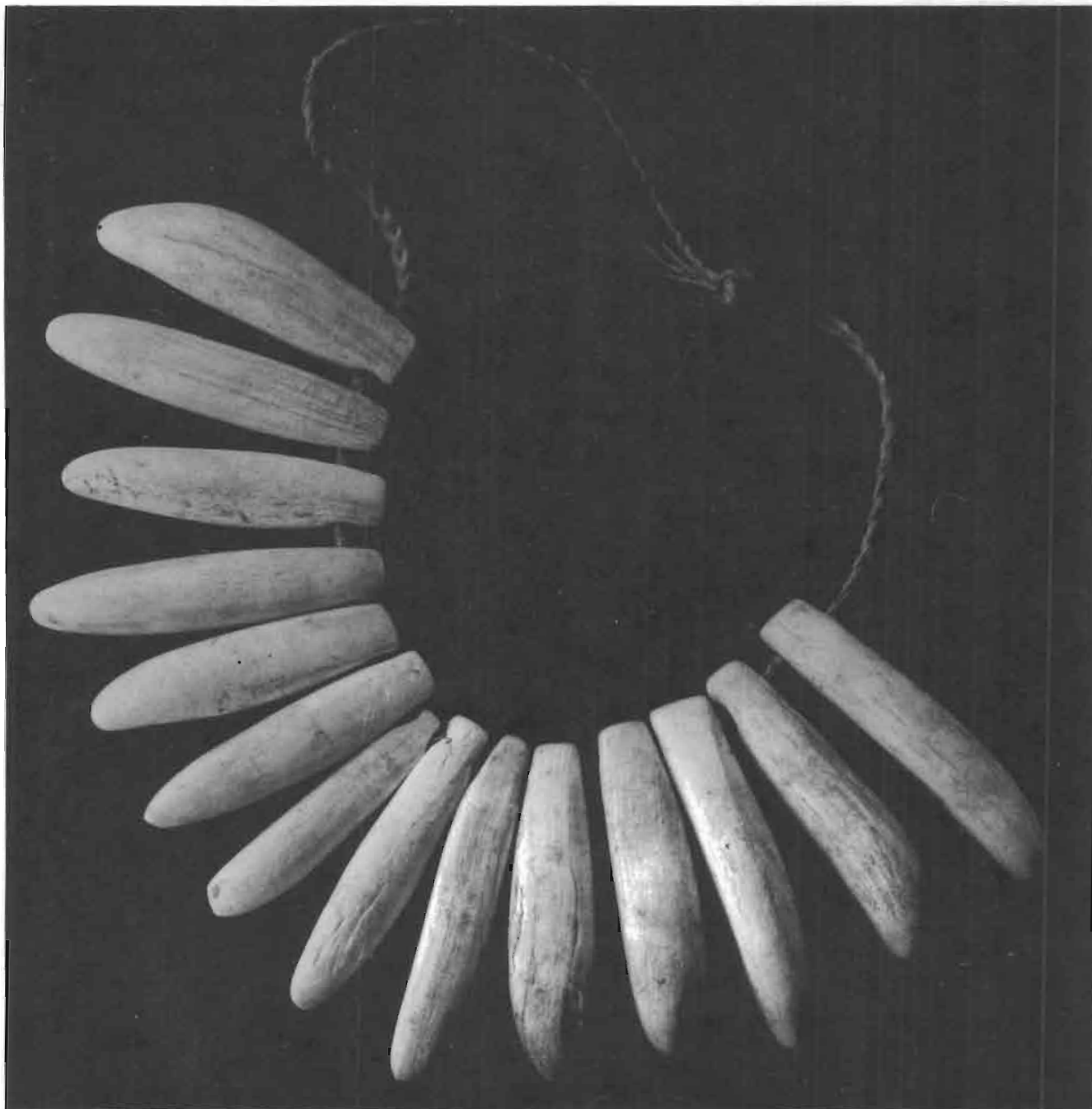


48

48. No 288. Marquesan porpoise tooth necklace with red and blue beads.

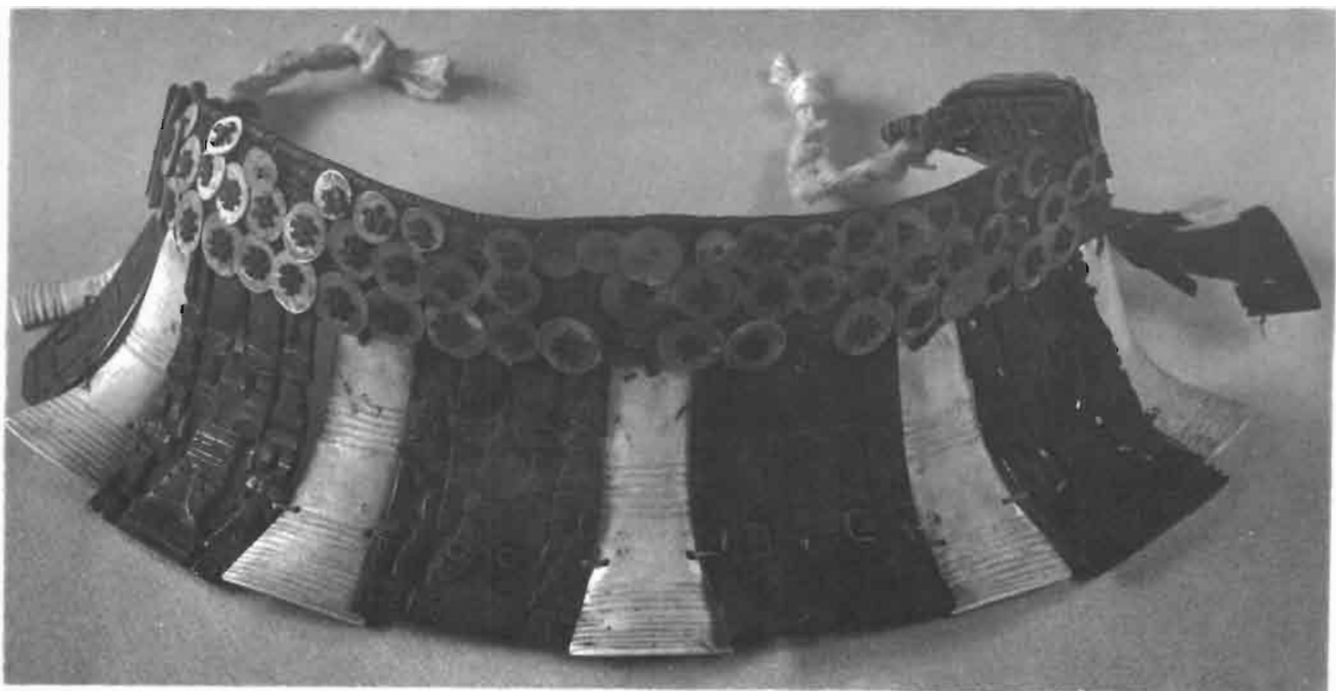
49. Chisel of Tridacna shell. Tuamotu.





50

50. No 633. Imitation sperm whale tooth pendants
made of shell. Uapou. Marquesas.



51

52



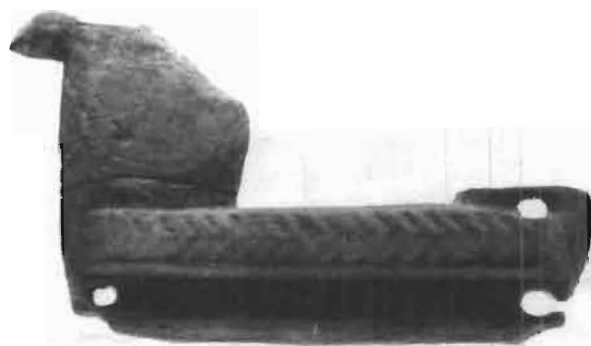
51. No 623. Marquesan head crown of turtle shell and shell. Circles of pearl shell covered over with a fine piece of turtle shell are attached to a braided band.

52. No 299. Man's ear ornament of a sperm whale's tooth. Marquesas.



53. No 436. Coral image or ti'i, Moorea, Society Island. 46 cm.

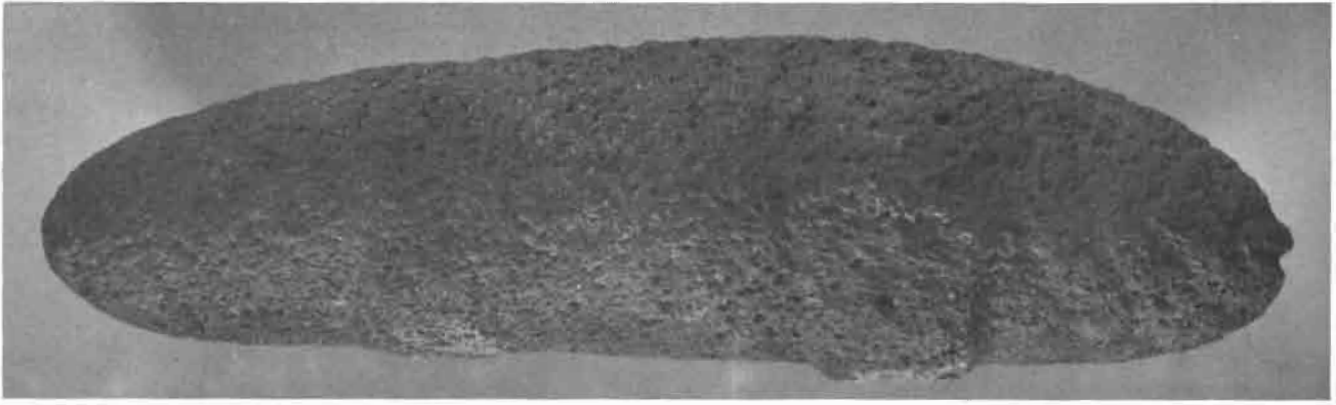
53



54



54. No 791 and 792. Parts of a canoe found in a burial cave in the valley of Hakatetau, Uapou, Marquesas. 35 and 58 cm. No 791 is decorated with chevron motifs, still visible in spite of the weathered surface.



55

55. No 118. Stone image in the form of a fish. 39 cm. Marquesas.



56

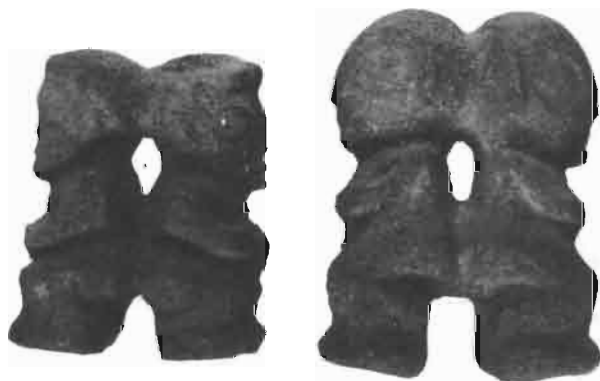


56. No 506. Turtle engraved on a pebble. 20 cm. Marquesas.

57. No 120 and 121. Double stone image from the Marquesas. 12 and 16 cm. These little votive offerings were placed on the marae to obtain success in an enterprise. They were probably derived from the double-headed fishing sinkers and are sometimes considered as net weights.

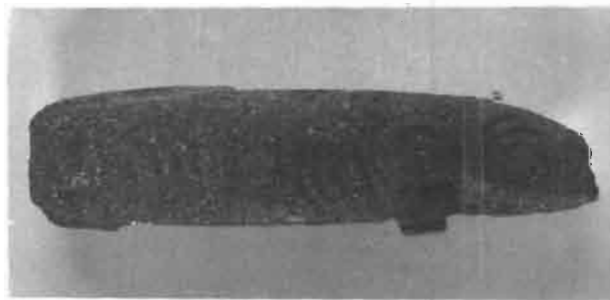


57



58. No 119. Stone image in the form of a lizard. 29 cm. Marquesas.

58



59. No 345. Coral turtle. 30,5 cm. Tuamotu.



59

ANCIENT CUSTOMS AND RITUALS

The Polynesians were so close to the sea in all respects that this familiarity could not help but have innumerable implications in their daily life, customs and beliefs. The sea was the big purificator ; she could receive both that which was too soiled or that which was too sacred without ever any subsequent disastrous consequences.

The sea was at the same time an extension of the firm land ; she had like it her place names and appropriated areas of which the ownership titles were transmitted from generation to generation among the chiefs.

The construction and launching of a canoe as well as certain types of fishing were accompanied by special songs and ceremonies with food offerings. The ceremonies and the feasts that followed gathered many participants and they were, along with collective fishing, an important factor in maintaining social cohesion.

The different activities associated with canoe construction and big fishing were done under the orders of a tahu'a (tuhuka in the Marquesas), a specialist who was in charge of directing the operation.

Turtle fishing was specially filled with rituals. In the Tuamotus, turtles were consecrated to the gods by chants and sacrifices, held on the marae during certain seasonal ceremonies. In the Marquesas, only the chiefs and priests could eat them. Everywhere, they were forbidden for women who also did not have the right to board a fishing canoe. In Tahiti, women could not eat shark or certain noble fish like the tuna and the mahimahi (Coryphaena).

Fishermen had their own special marae where they consecrated their fishing materials, said prayers before setting out, and performed celebration rites on their return. The first fish caught was offered to the "marae" gods.

The divinities of the sea, appropriated to the navigators and fishermen, seem to have been numerous. The early authors list several, but

under different names ; in reality nothing is known of their exact identity and of their respective importance. Nor is it known if in Tahiti they were materially represented by images or if they were just invoqued in the prayers and chants.

In Tahiti, the rahui was applied which was a temporary interdiction to fish within a determined area of the lagoon ; this protective measure took place most of all during the large festivities which assembled in the same area a population coming from several islands. Without this precaution, the participants would have over-fished the lagoon. As it was they were provided with food from other districts.

A fisherman could also appropriate for himself a temporary reserve. It is said that before, in Marquesas, a fisherman who had found a conch shell (putoka) which was too small, would let it grow by making a stone enclosure for it which would become his mark of ownership. Conch shells were greatly valued in all the islands as they served as a trumpet and were so used in numerous circumstances.

The tahu'a specialists knew how to keep track of the seasons and of the time to observe the movements of fish. And it wasn't so long ago that the old fishermen of the Society Islands were familiar with a lunar calendar in which the months were divided into nights favorable or not for fishing certain kinds of fish, crabs, etc.

For example, the ninth night is especially favorable for bonito fishing, the tenth night, all the fish hide, etc. Certain signs observed on land, like the flowering of a plant, indicated the beginning or the end of a fishing season.

Mr. Raoul TEISSIER has just published a synthesis of some of these calendars, showing a connection between fishing and agriculture.

WOODEN AND STONE IMAGES

It is known that in Tahiti the big sacred canoes, decorated with carvings, were kept at the marae. They were used by the chiefs and priests, and for the transport of sacred objects. Masts and paddles, whose exact role is unknown, were also erected on the marae.

During the historical period, the carved wooden images as the bow and stern of canoes were purely ornamental.

The real god images were put in a precise place in the canoe, but it is possible that further back in time these ti'i would have had a religious function.

The very numerous fishing gods were, ac-

cording to T. HENRY, in stone or in wood. The fishermen placed them, as well as other sacred relics and bird feather decorations, in secret hiding places on the fishermen's marae.

No Tahitian images of these gods have been discovered, but some statuettes from Rarotonga in the Cook Islands brought back by the English missionaries are known to be representations of the god of the fishermen.

In the marae of Tahiti, the first Europeans observed carvings of fish that could have had a relationship with fishing.

In the Society Islands stone fish were primarily destined to favorise tuna fishing.

In the Marquesas, stones carved in the shape of fish were hidden inside the marae. While fishing, one of these tiki fish was exposed on the marae platform. If it was not efficient, it was replaced by another.

The Papeete Museum possesses one of these stone fish, as well a lizard of similar workmanship, but perhaps more recent.

A pebble representing a turtle is also conserved in the Papeete Museum. One side is carved in the form of a turtle head ; on the other side, which is flat, appears the incised carving of the contour of the animal. It is not known if this image, which seems to be unique, was supposed to have a good influence on turtle fishing, as the tuhuka, the specialists devoted to this fishing, had stone tikis of human form.

On the other hand, representations of turtles crudely shaped from a block of coral have been reported from the Tuamotus and are represented in museums. These were regarded as sacred stones and placed in the marae and were brought out during the ceremonies accompanying turtle fishing.

The fisherman who had caught the turtle offered it to the god and dedicated it with a chant :

Now the tide rises
It sweeps to the east
It sweeps to the west
It sweeps toward the land
It swings out to sea
It rises before
It rises between
It rises behind
O Tagoroa
Partake (of the offering) above !
Partake below ! ...

The Polynesian oral literature, sacred chants, and legends are filled with evocations of the sea and all that it contains. The allusions to canoe construction, to voyages at sea, to departures, to returns and to fishing, are numerous, and from them one can learn many de-

tails of the knowledge of the ancient Polynesians.

Fortunately all of this knowledge had not disappeared along with the marae and the creation chants. Canoes are still being built in Polynesia and fishing is still done with much ingenuity.



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Back cover. Shark hook. Tuamotu.

