

# RECORDS OF THE OTAGO MUSEUM

PUBLISHED BY THE OTAGO MUSEUM TRUST BOARD  
GREAT KING STREET, DUNEDIN, NEW ZEALAND

ANTHROPOLOGY NUMBER 3

JUNE 22, 1967

## Maori Fish-hooks in Southern New Zealand

JAN HJARNO

### CONTENTS

	<i>Page</i>
Foreword	2
Introduction	3
The Sites	4
Classification	12
<i>Lure Hooks</i>	
The Kahawai Lure Hook	14
The Barracouta Lure Hook	15
The Minnow-shaped Lure Hook	18
Lure Hook Points	20
<i>Bait Hooks</i>	
Two-piece Bait Hooks	22
One-piece Bait Hooks	30
Barbed One-piece Hooks	34
Broken and re-used One-piece Hooks	36
Conclusion	36
Tables	45
References	49
Key to Notes	51
Plates	53

## FOREWORD

THIS paper was started when working as a conservator at the Otago Museum, during a period of seven months. To Mr Dave Simmons, Keeper in Anthropology at Otago Museum I owe more than can possibly be expressed in a few words, his knowledge, advice and suggestions were invaluable to me. He corrected my English, and edited my in no way tidy manuscript. For all his unsparred labour and understanding I am extremely obliged to him. A study of this kind has been made possible by the emphasis placed on exact localization of all specimens by Dr H. D. Skinner Curator and later Director of Otago Museum from 1920 until 1958. I hope it is a fitting tribute to the pioneer archaeologist of New Zealand that his work has enabled a further advance in the study of New Zealand prehistory to be made.

During the study very great assistance was rendered to me by the members of the Anthropology Department of Otago, P. W. Gathercole and L. M. Groube; by L. Lockerbie, Education Officer at the Museum, and Michael Trotter, archeologist of the Canterbury Museum, and J. Golson, National University of Australia. Their advice and co-operation have been indispensable, as has that given by private individuals and collectors, notably S. V. Johnson, whose large collection is housed in the Museum, C. Griffiths of Timaru who allowed Simmons and me to study and photograph his collection, C. MacArthur of Dunedin whose knowledge and collection were a great help, and Gordon White, Director of the Southland Museum, for placing the whole of that Museum's extensive collection at our disposal. Dr Roger Duff of Canterbury Museum kindly supplied details of the Wairau Bar fish hooks and Dr T. Barrow photographed the Otago-Southland hooks in the Dominion Museum. A good part of the present Otago Museum collection is due to the generosity of the past generation of collectors whose material is now in the Museum, Alec Hornsey, A. Gilmore, David Teviotdale, Murray Thomson, Alec Thomson, Dr Hocken, Willi Fels, Dr Dempster, J. Christie, R. Laws, R. H. Steele, Sir Frederick Chapman and many others. Further I wish to thank Mr K. Peters, Technician at the University of Auckland, who in a very skilful and thorough manner has drawn the maps, Mr C. MacGregor, Custodian in Otago Museum, who always was able to find the material in the storerooms and Mr Douglas Forster by whom the photographs were taken.

It is not practical to name all the individuals who have made this study possible, but to all of them go my grateful thanks. To the Trust Board of the Otago Museum whose grant rendered possible the printing, I convey my respectful and warm thanks.

Copenhagen, 1965.

J. HJARNO.

## INTRODUCTION

Lack of exact information makes it difficult to be sure that any reconstruction of prehistory based on the collections of artifacts in New Zealand museums is correct. Usually the only information available is the locality where the artifacts were found. However, archaeological work (mostly in the South Island) has brought to light some cultural assemblages which contain highly distinctive artifacts, reflecting the Eastern Polynesian origin of their makers. In 1950<sup>1</sup> Dr Roger Duff defined an assemblage which he had excavated at Wairau Bar as being of the 'Moa-hunter Period of Maori Culture', or as Golson<sup>2</sup> has called it, 'The Archaic Phase of New Zealand Eastern Polynesian Culture'. C-14 dates, and the fact that these artifacts are sometimes found in association with bones of the extinct moa, place them in an early phase of the prehistory of New Zealand.

Other associated assemblages of artifacts were collected (mostly in the North Island) by the European explorers in New Zealand. These ethnographic assemblages are of the 'Classic Maori Phase of New Zealand Eastern Polynesian Culture',<sup>3</sup> and belong to the later phases of Maori culture.

There is a very definite difference between the late Classic Maori material culture and that present in the Moa-hunter sites, a difference which is, at least partially, a result of time depth. Mr Lockerbie<sup>4</sup> has shown that in the Murihiku region (that is the Otago-Southland area) there is a change in economy (about 1450 A.D.) from moa-hunting to shell-fishing and fishing, with some cultural innovations accompanying this change. However his many excavations have not yet satisfactorily documented the cultural changes which must have occurred during the period of scarcity and final extinction of moas and up to the late Classic Maori phase as seen in the assemblage from the early nineteenth century site of Murdering Beach.

There are several reasons for this failure to show the cultural development which was the basis for the late Classic Maori culture at Murdering Beach. But for the moment we will define the Classic Maori Phase in southern New Zealand on the basis of the assemblage at Murdering Beach. The reasons underlying the failure to document the cultural development from the Archaic Phase to the Classic Maori Phase will be discussed in the conclusion. It has here been found convenient to call that part of the Archaic Phase of New Zealand Eastern Polynesian Culture (Archaic Maori), in which the moa was the mainstay of the economy, the 'Early Archaic' phase, and the period from about 1450 when fishing and shell collecting became the main food sources the 'Late Archaic'.

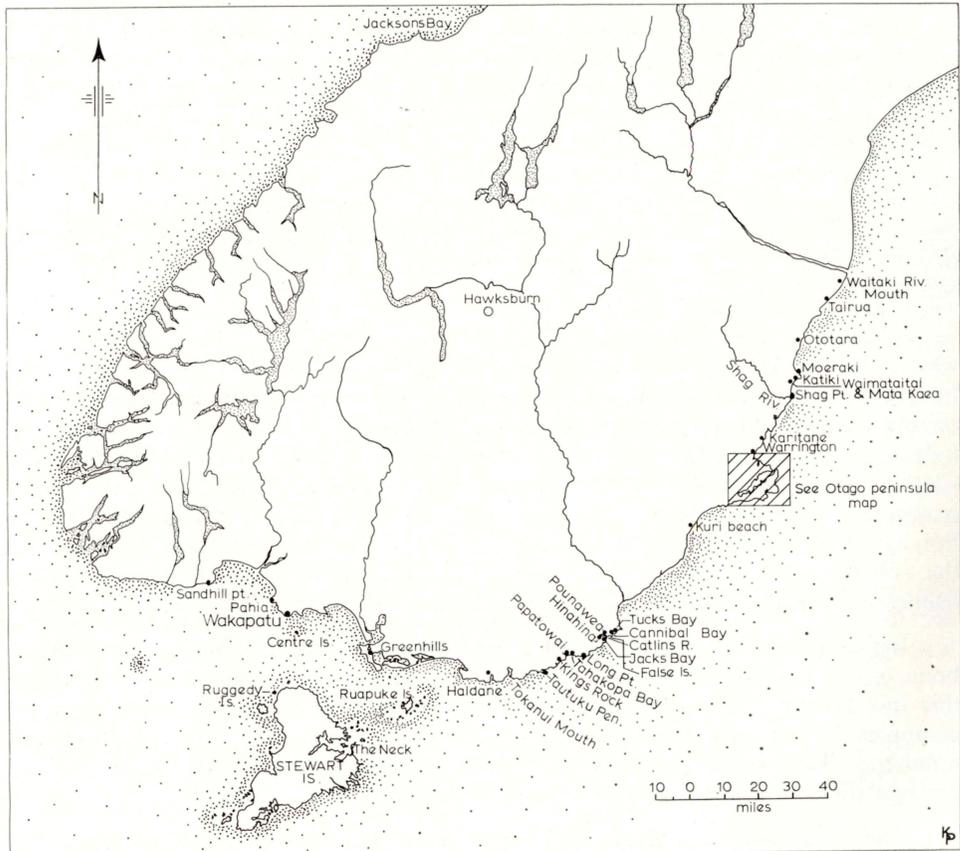
In Murihiku, materials suitable for manufacturing fish-hooks, particularly bone, are varied and abundant. Most of the sites are situated on dry sand, and this has favoured the preservation of bone fish-hooks to the exclusion of wood examples, which may have been quite common, but have not survived in any numbers. This study attempts to classify the fish-hooks of Murihiku, and to arrange them in a time sequence based on archaeological evidence.

The ideal way to classify fish-hooks is by function as observed when the hooks are actually in use. Unfortunately such information is available for only

one or two of the many hook types preserved in New Zealand museums or found archaeologically. In the following study it has therefore been found convenient to divide the hooks, points, and heads into morphological groups or types. Any such classification is to a certain extent an abstraction, as even in the types whose function is known or at least surmised there is great variability. This is understandable, because a craftsman making an artifact does not make an exact copy, but rather something which will do the job for which it is designed. There are, however, certain limits to the shape of particular groups of hooks if they are to function as required. These groups are here called 'types', but could equally well be called 'classes', 'forms' or any other suitable name. Since we have almost no knowledge of function, morphological characteristics must be the criteria by which the hooks are grouped or distinguished.

### THE SITES

As stated above, very little material secured from modern, systematic scientific excavations is available for this study. Most of the available fish-hooks were secured by fossickers. The most systematic and tireless of these fossickers



Map. 1. Murihiku sites.

was David Teviotdale,<sup>5</sup> who under Dr Skinner's guidance systematically investigated many South Island sites, between 1923 and 1948. The main purpose of Teviotdale's work was to secure localized material for further study of Skinner's definition<sup>6</sup> of culture areas based on the distribution of artifacts in New Zealand. Teviotdale's notebooks, preserved in the Hocken and Southland Museum libraries, are basic documents in Murihiku archaeology. Teviotdale was a self-taught excavator; but in accordance with the general opinion in New Zealand at the time, that stratification was unimportant, little interest was taken in recording the stratigraphic position of artifacts. However, Teviotdale does have some suggestions about the dates of his sites. As proof that moa-hunting had taken place on a site,<sup>7</sup> he cites the presence in the refuse of pelvis bones, vertebrae, ribs, etc., bones which he suggests would not have been used in manufacture and therefore would not have been carried any distance. This lack of exact information makes difficult any interpretation of Teviotdale's excavated material. Here it will be used mainly to illustrate the distribution of the different types in an area.

A summary of the available information on the prehistoric economy from Murihiku sites is given below.

**Pounawea**<sup>8</sup> (S. 184/1). (Excavated by Lockerbie.) Three occupation layers are recorded, the lowest layer dated by C-14 to A.D. 1140±60 years. About this layer Lockerbie says: 'At that time (A.D. 1140), moas were plentiful in the district, and the Moa-hunter's diet consisted principally of moa flesh, with some seal, whale, fish, bush and shore birds. Few shell-fish were eaten.'

In the intermediate layer, dated to A.D. 1450±60 years, the moa was becoming less plentiful in the district and greater quantities of fish and shell-fish were being consumed.

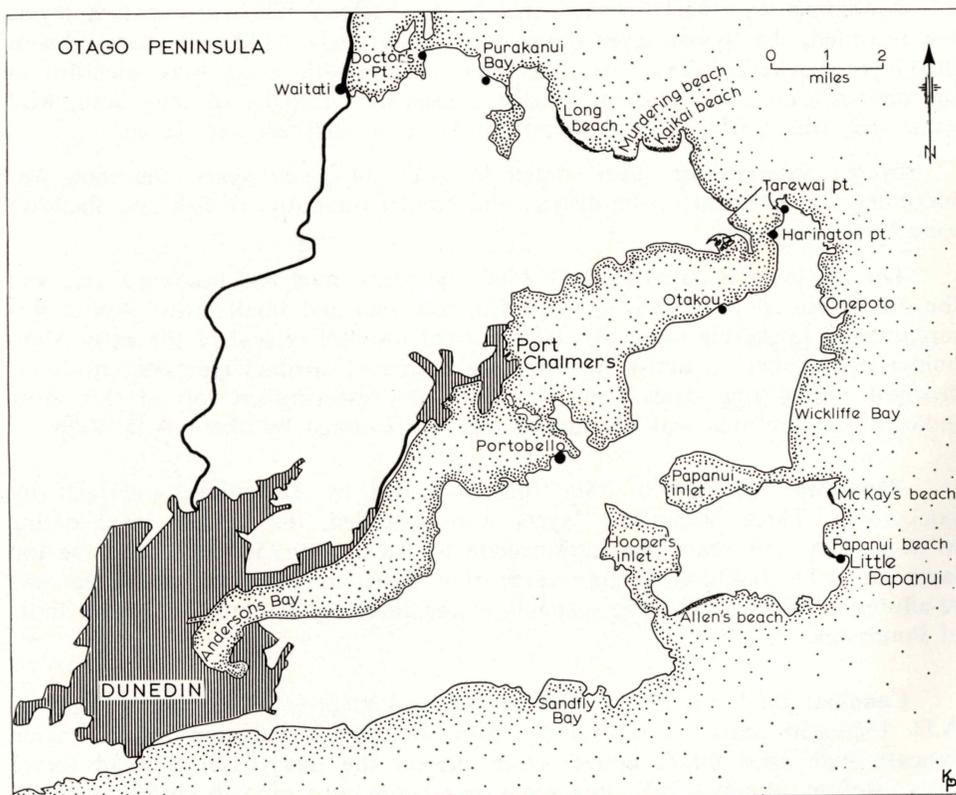
The top layer is dated to A.D. 1660±60 years, moa had become scarce and the diet consisted principally of shell-fish, fish, seal and small birds. About this top stratum Lockerbie says: 'Artifacts present are still typical of the early Moa-hunter period, but, as active moa-hunting decreased, artifact type concentrations changed.' Tree ring dates from the trees now growing on top of this layer indicate that the area was abandoned and re-afforested by about A.D. 1726.

**Papatowai**<sup>9</sup> (S. 184/5). (Site first excavated by Teviotdale, and later by Lockerbie.) Three occupation layers were recorded, the bottom layer dating to A.D. 1190±30 years, the intermediate to A.D. 1490±50 years, and the top layer to A.D. 1640±60 years. Tree ring dates indicate that the area was re-afforested about 1699. The contents of the three layers correspond with those of Pounawea.

**Cannibal Bay**<sup>10</sup> (S. 184/4). (Excavated by Lockerbie.) One site is dated to A.D. 1500±50 years. It is a single layer site, with occupation material lying beneath high sand dunes above which project the tips of large, dead totara trees. Refuse, although including some moa-bones, is composed chiefly of shells, and the bones of fish, seal and small birds.

**False Island**<sup>11</sup> (S. 184/3). (Excavated by Lockerbie, who says: 'Refuse and artifacts from False Island sites are almost wholly connected with fish and fishing, containing great quantities of fish bones, mussel, paua and cockle shells of exceptional size and the bones of small birds.' Artifacts made from moa-bone are common. The following C-14 dates are available: A.D. 1480±60 years, A.D. 1630±50 years, A.D. 1650±50 years, A.D. 1660±80 years, and A.D. 1735±50 years.

**King's Rock** (S. 184/6). (Excavated by Teviotdale and later by Lockerbie.<sup>12</sup>) The later excavator using here, for the first time in New Zealand, a modern excavation technique, he discovered a thin sand layer separating a bottom layer from the top layers. The bottom layer (6 inches) yielded evidence that moa-hunting had taken place on the site and this layer is regarded by the excavator<sup>13</sup> as being contemporary with the intermediate layer at Papatowai (the two sites are near each other). On top of the thin sand layer, the excavator records a 9-inch layer consisting mostly of loose shell, and on top of that again a 6-inch layer of shell grit. However he makes no distinction between the two top layers in his artifact record. There could easily be a wide time range represented in these two top layers. The practice of cannibalism and some of the artifacts



Map 2. Dunedin sites.

found here are typical of the Classic Maori Phase, whereas other artifacts closely resemble those of the intermediate sites in Murihiku. The attribution of material from these two top layers to phases is therefore doubtful.

**Kai Kai's Beach**<sup>14</sup> (S. 164/7). (Excavated by Lockerbie.) C-14 dates have not yet been published. The excavator summarizes his information as:

- (a) Immediately below the turf and surface soil an upper stratum of dark refuse, shell, fish bones, moa and other bird bones, human excreta, charcoal and artifacts typical of the moa-hunting period. (Dates to A.D.  $1050 \pm 60$  years.<sup>15</sup>)
- (b) Intermediate strata containing charcoal, occasional fish bones and other refuse material.
- (c) Immediately below the present turf a top stratum containing material typical of the recent period of Maori culture and of Maori-European contact.'

**Murdering Beach** (S. 164/16). (Excavated by Skinner-Teviotdale<sup>16</sup> and later by Lockerbie.<sup>17</sup>) The last excavator has worked on two sites, one situated on ancient sand-dunes at the back of the beach. This dune site revealed:

- (a) Immediately below the turf and surface soil an upper stratum of dark sand containing stones and charcoal.
- (b) A stratum of shells (3-9 inches) containing refuse bones including moa pelves, human and dog excreta, large 'quartzite' flake knives, worked moa bone, adzes and other material typical of the moa hunter period.'

Closer to the beach is a village site. When this village was first occupied is not known, but occupation ended, according to the most widely-held view, with the burning of the village by the visiting sealer Kelly in December 1817<sup>18</sup>. The correctness of the identification of Murdering Beach with this historical event is still an open question. Archaeological investigations have shown conclusively that a village was destroyed by fire, that the abandonment was sudden, and that the site was not reoccupied by Maori. When the site was abandoned is uncertain, but it was before 1838 when the first settler,<sup>19</sup> Richard Driver, started living there. As Skinner pointed out,<sup>20</sup> the presence of eight European objects suggests that some time before the abandonment of the village, the inhabitants at Murdering Beach had some form of contact with Europeans. The European items are: A copper gouge, an iron chisel, possibly made from a piece of hoop iron, two small fragments of china, one piece of thin bottle glass, a Brazilian coin dated to 1806 and one of the medals distributed by Cook during his second voyage (1772-5). There is a quite remarkable absence of such items as clay pipes, found elsewhere on sites known to have been occupied when direct contact with Europeans became more marked, about 1830.<sup>21</sup>

About this site the excavator, Lockerbie, says:<sup>22</sup> 'In what respects does the material culture of the early 19th century Murdering Beach differ from that of the Southern Moa-hunter.' [Lockerbie identifies Kelly with the burning of the village, and takes this as reason for abandonment. By Moa-hunter he means sites

belonging to what he has called the early and intermediate periods.] The quality of the workmanship and the quantity of the greenstone artifacts found there are undoubtedly the most noteworthy features of the Murdering Beach site. Nephrite is present in Moa-hunter levels, but is not plentiful. In the Murdering Beach Classic Maori level it is common. Adzes of the Moa-hunter occur in a wide variety of types and material. At Murdering Beach Classic period Maori site there are few adze types and these are principally of greenstone. Amulets of greenstone, including Hei-tiki, are relatively numerous, but they have not yet been recorded from Moa-hunter levels. Whereas large flake knives of 'jasperoid' rock and 'quartzite' are typical artifacts of the Southern Moa-hunter culture, Classic Maori flake knives are small. Slate knives, stone minnow-shaped shanks of composite fish-hooks, one-piece fish-hooks of the type illustrated, reel type and imitation whale tooth necklace units, and dentalium shell "reels" are typical of the southern Moa-hunter, but these features do not occur in the Murdering Beach 19th century site. *Patu* and *mere* have been recovered at Murdering Beach, but no moa-hunting site has yet yielded any such weapon.'

**Sandfly Bay**<sup>23</sup> (S. 164/80). Teviotdale says that he did not find any decisive proof of the moa being captured there, but says that moa bone had been freely used for all purposes and is found in all stages of manufacture. It may here be stated that the use of moa bone on a site can in no way be taken as evidence that the moa was being hunted. Fossil moa bone has been used even in the period of European contact for the manufacture of artifacts.<sup>24</sup> In his diary<sup>25</sup> Teviotdale describes the stratigraphy as follows: 'The midden is shallow, about 18 inches in the deepest places. There is a shallow layer of charcoal, then a thin layer of sand, and then 6 to 8 inches of ashes, shells and some bones. We got a lot of rough pieces of moa-bone principally in the lower level, though some were in the top layer and a few exposed by the weather on the surface.' No artifacts typical of the late Murdering Beach assemblage were found.

**Little Papanui** (S. 164/1). About this site Teviotdale says:<sup>26</sup> 'Moa-bone is very plentiful here, especially in the lower stratum, where it is found in larger pieces than is usual in the upper layers. As these pieces are all broken from leg bones, they cannot be taken as evidence of the moa being eaten here. Recently in the lowest stratum (a six inch layer of fishbones and scales, birdbones and ashes) I found the pelvis bone of a moa of a small species. This is the only time I have found moa-bone unfit for manufacture on this site, and it shows that at least one moa has been eaten here. Within a few feet from these bones, and in the same stratum I obtained three well-preserved one-piece hooks . . . and two bird spear points.' This last statement is interesting in that Mr Lockerbie says<sup>27</sup> that he has never found any bird-spear points in his early period, the first examples being found in his intermediate period. This compares with Wairau Bar,<sup>28</sup> where Duff records only one bird-spear point, but without any information as to the layer in which it occurred. The little evidence for moa being eaten at Little Papanui, and the occurrence of bird-spear points in the lowest stratum, may suggest that this site was first occupied when the moa was becoming scarce. Just under the surface soil a whale bone *patu* was found,<sup>29</sup> and the concentration of greenstone was greater in the top layers than in the lower layers. No European

artifacts were found. The presence of such late artifacts as patu<sup>30</sup> in the top layer may possibly indicate that the site was occupied or reoccupied over a long time.

**Shag River**<sup>31</sup> (S. 155/5). Much of this site was worked over before 1920 when the first records of diggings were kept. However Teviotdale found plenty of evidence that the moa had been eaten there. He also says:<sup>32</sup> 'At the Shag River site there are all manner of debris from food used by the Maori . . . bones of dogs, seals, fish and bird, shells etc.'

**Waitaki River Mouth**<sup>33</sup> (S. 128/1). One of the biggest moa-hunting camps in New Zealand, covering some 50 acres. A part of the camp site was first ploughed a few years ago, and turned up thousands of moa bones, but after a few months the bone material disintegrated and there is little sign left today. Teviotdale dug part of the site in 1931, and says:<sup>34</sup> 'On the Waitaki site little was noted but moa-bones.'

**Onepoto** (S. 164/3). About this camp Teviotdale reports:<sup>35</sup> 'Here the moa remains are not numerous, but I have obtained several pelvis bones from the lowest layers of the debris.' Shells of moa eggs are recorded as being found. European items are represented in the assemblage from this site, but very little is known about the stratigraphy.

**Purakanui** (S. 164/18). The assemblage from the heavily eroded shell middens includes artifacts such as hei-tiki, whale bone patu and other artifacts including European items suggesting that the site must have been occupied in the late phase at least.

**Tarewai Point** (S. 164/6). A single layer site consisting of 8 to 10 huts was excavated by Teviotdale,<sup>36</sup> who suggests that at least some of the European objects found there were in primary association with Maori. Greenstone adzes are common, and two patu were found at the site together with other artifacts similar to those of Murdering Beach late site, such as bone combs, bone flutes, greenstone pendants. The site was destroyed by burning. About the middle of the site Teviotdale found a funeral pyre<sup>37</sup> where four bodies had been cremated together, which he interprets as evidence of a family swept off by disease. It is known that one epidemic which decimated Otago Maoris some time between 1800 and 1830 only affected the Maori living at Otago Harbour. According to Sutherland<sup>38</sup> there may have been a village extending from the Otago Heads to Portobello, in which the community was practically exterminated. At first the bodies were buried, but later, when whole families died, burial was impossible. The huts were therefore set on fire and the bodies were thus cremated. It may be this epidemic that ended the occupation of Tarewai Point.

**Long Beach** (S. 164/20). The stratigraphy has been described by Skinner,<sup>36</sup> who describes one occupation layer containing ovens, shells and fish-bones, some bird-bones, human bone, some whale-bone, stone flakes and charcoal. From excavation reports<sup>40</sup> published by E. W. Dawson and J. C. Yaldwyn it is possible to see that the stratigraphy must have been as follows: Top layer windblown sand, then a layer of midden about 2-3 feet thick, resting on the original beach in which some burials were made. From the published excavation photographs it

looks as if the burial pit contains some midden material, however this interpretation is doubtful, especially when it is quite obvious that the excavators did not understand the significance of stratigraphy. As the excavators says:<sup>41</sup> 'Nothing more can be readily derived from a study of the deposit levels exposed in a cross section of the site and we would conclude this account, echoing the words of Roger Duff (1949) as he points out, "with a time framework of one thousand years or so an occupation layer of the first two centuries need look no older nor be bedded deeper than one dating from the two centuries immediately preceding European Settlement . . . stratification virtually does not exist."'

The midden contained several mollusc species, and the bones of several small shore and bush birds. Moa bones were found, but not in the midden layer. The artifact assemblage from Long Beach includes two hei-tiki, several greenstone ornaments, European objects such as glass beads, clay pipes, and a piece of china made into a pendant, all suggesting that the site was occupied well into the European period. In addition, the absence of moa bones in the middens could suggest a quite late occupation of the site.

**Moeraki.** Very little archaeological information is available, several sites are recorded, but all the material available was obtained by fossicking and cannot be localized to the exact site, the material can therefore only be used to show the geographical distribution of the various types.

**Tokanui Mouth.** Little is known about this site, except for an historical account<sup>42</sup> that a war party in 1836 left Ruapuke for the Tokanui Mouth, from there they went to Toitōi where they were joined by 25 men. This seems to indicate that there may have been some Maoris living there at least round about 1836. Artifacts have been recovered from small middens and from eroded sand dune deposits.

**Pahia.** The big collections from this area were obtained by fossicking. There seems to have been a large moa-hunting site, with a late pa-site also recorded. The assemblage contains late material such as hei-tiki and other greenstone ornaments, all indicating that the site has been occupied at various periods through the whole of New Zealand prehistory.

**Centre Island.** All the material was obtained by fossicking. The assemblage includes a hei-tiki and a clay pipe. There was no evidence of moa-hunting and no artifacts typical of Lockerbie's moa-hunting period are recorded. Centre Island evidently represents a very late site. A fortified headland and dune middens are reported on the island.

**Ruggedy Island.** Except for the assemblage of fish-hooks, which is very similar to that of Centre Island, no other artifacts have been recorded.

**Otakou** (S. 146/8). The site of the European-Maori whaling settlement, established 1831.<sup>43</sup>

**Katiki** (S. 146/4). The Maori name is Te Raka-a-Hineatea.) Excavated by M. Trotter, who says:<sup>44</sup> 'The Katiki Point site is Classic., (C-14 A.D. 1739±39. Ed)

**Tai Rua** (S. 136/1). (Excavated by M. Trotter and later by P. Gathercole.) Trotter says:<sup>45</sup> 'A fishing camp situated on "fossil" sand dunes on the south of a swamp . . . Much of the site is stratified with up to eight strata; the upper layers sealing a compound deposit of moa-hunter occupation.' Gathercole says:<sup>46</sup> 'There was no suggestion that these layers (the occupation layers), were of significantly different dates, the material from each being very similar.' Radio-carbon dates indicate late 14th or early 15th century occupation. A large number of bones were discovered,<sup>47</sup> which include at least two species of moa, dog, seal, several species of seabird and fish. Fragments of moa egg shell were found. The artifact content of the site was mainly fish-hooks and artifacts connected with fishing or the manufacturing of fishing gear. Concerning moa-hunting Trotter says:<sup>48</sup> 'Certainly the economy of the occupants of Tai Rua and Waimaitaitai was to a considerable extent based upon the hunting and utilization of moas, and there was a large amount of waste bone. Necks and heads were thrown aside at Tai Rua, and on both sites are quantities of leg bones that could have been used for artifact manufacture not even broken, thus indicating that moas were reasonably plentiful. Body bones occurred throughout the midden. At Ototara however every scrap of moa bone, even pelvis pieces, had been broken or worked in some way.'

**Ototara** (excavated by M. Trotter). A small site one and a half miles from the coast. The occupants seem to have been less concerned with fishing than with bird hunting, as indicated by the wide range of bird species found. There was evidence of only one Polynesian occupation, but the absence of a sealing stratum provides no guarantee that the occupation layer does not contain some intrusive material. Artifacts are of similar types to those found at Waimaitaitai and Tai Rua. Moa bones were found, but every scrap of moa bone had been broken or worked in some way. The site is C-14 dated to A.D.  $1422 \pm 52$ ,  $1483 \pm 70$ . (Revised dates per M. Trotter. Ed.)

**Waimaitaitai** (S. 146/2). (Excavated by M. Trotter.<sup>49</sup>) A fishing camp in sand dunes at the mouth of a coastal lagoon. It is a clearly stratified site with the main occupation deposit at a depth of two to seven feet overlaid by two others, each separated by a layer of clean sand. Only the bottom occupation layer yielded sufficient material to be amenable to quantitative analysis.

Bones of four species of moa and the extinct Giant Rail were found in the midden. A midden analysis showed 80% fish bone. No artifacts of acceptably Classic type were found. (C-14 A.D.  $1249 \pm 47$ ,  $1324 \pm 30$ . Ed.)

**Shag Point** (Mata Kaea) (S. 146/5). Excavated by M. Trotter, who says:<sup>50</sup> 'Situated on the coast this village was occupied between the time of the moa-hunter sites described above and that of Classic Maori. Moas were not used for food and are presumed to have been extinct at the time of occupation; moa bone was however used for the manufacture of artifacts, and several pieces of unworked subfossil bone have been obtained from the midden. The occupants were mainly concerned with fishing, with a certain amount of preparation and manufacture of files and cutters of local sandstone. There is no true stratification over most of the site, occupational remains being found from three to ten inches below the surface, with occasional well defined lenses of midden.'

**Karitane** (S. 155/1). (Excavated by P. Gathercole and L. M. Groube.<sup>51</sup>) The excavation is not yet published, but the assemblage contains a high proportion of greenstone resembling the Murdering Beach late site. Two clay pipes found in a disturbed layer together with greenstone adzes may indicate the lateness of this site.

**Jackson's Bay Cave, Westland** (S. 97/1). An assemblage of artifacts has been found on the floor of a recently discovered limestone cave at Jackson's Bay. The assemblage contains thirty-seven fish-hook points, two small greenstone adzes (Duff type 2B), two greenstone gouges, three pieces of human skull, one in the process of being cut, a few fish bones, shells and the jaws of five dogs, worked pieces of wood, a shank for a barracouta lure hook, and a possible composite bait hook shank. The greenstone artifacts, the pieces of worked human skull and the fact that all the points seem to have been made from human or dog bone, suggest that this assemblage is Classic.

Though as a whole little is known archaeologically about most of the sites, it seems possible to establish a chronology of the fish-hook material from Murihiku. Papatowai and Pounawea are the two earliest sites with good fish-hook assemblages; they were first occupied in the early moa-hunting or Archaic phase, and were finally abandoned about A.D. 1700. Most of the artifacts have been secured from the bottom (A.D. 1140) and the intermediate (about A.D. 1450) layers, and may therefore present a broad picture of the fish-hook kit in the earliest part of Murihiku prehistory. Sites such as False Island, Cannibal Bay, Tai Rua, Waimaitaitai, Ototara, Shag Point and Sandfly Bay and King's Rock bottom layer were first occupied when the moa was becoming scarce, and when seafood became an important part of the food, and are therefore late Archaic. C-14 dates suggests that Waimataita was occupied in the 13th and 14th centuries, Tai Rua, Cannibal Bay, False Island and Ototara in the 15th century. The absence of European objects and of the late Classic Maori artifacts of the Murdering Beach type, suggests that these sites were abandoned before Europeans arrived or European influence became strong. Late phase sites or Classic Maori are Murdering Beach, Karitane and Tarewai Point, all being occupied well into the European period. By comparing the fish-hook material from these three groups of sites, it is possible to gain some idea of the changes which took place in the fish-hook kit in pre- and proto-historic Murihiku.

### FISH-HOOK TERMINOLOGY

The terms selected for the parts, features and forms of the fish-hooks are illustrated in Figure 1.

### CLASSIFICATION LURE HOOKS

Three different forms for lure hooks are known from New Zealand, two of which were in use when the first Europeans explored the country and continued in use into the 19th century. These two forms were the kahawai lure hook and the barracouta lure hook. The third form is usually called the minnow-shaped lure hook, and is only known from archaeological contexts. All three forms are found in Murihiku.

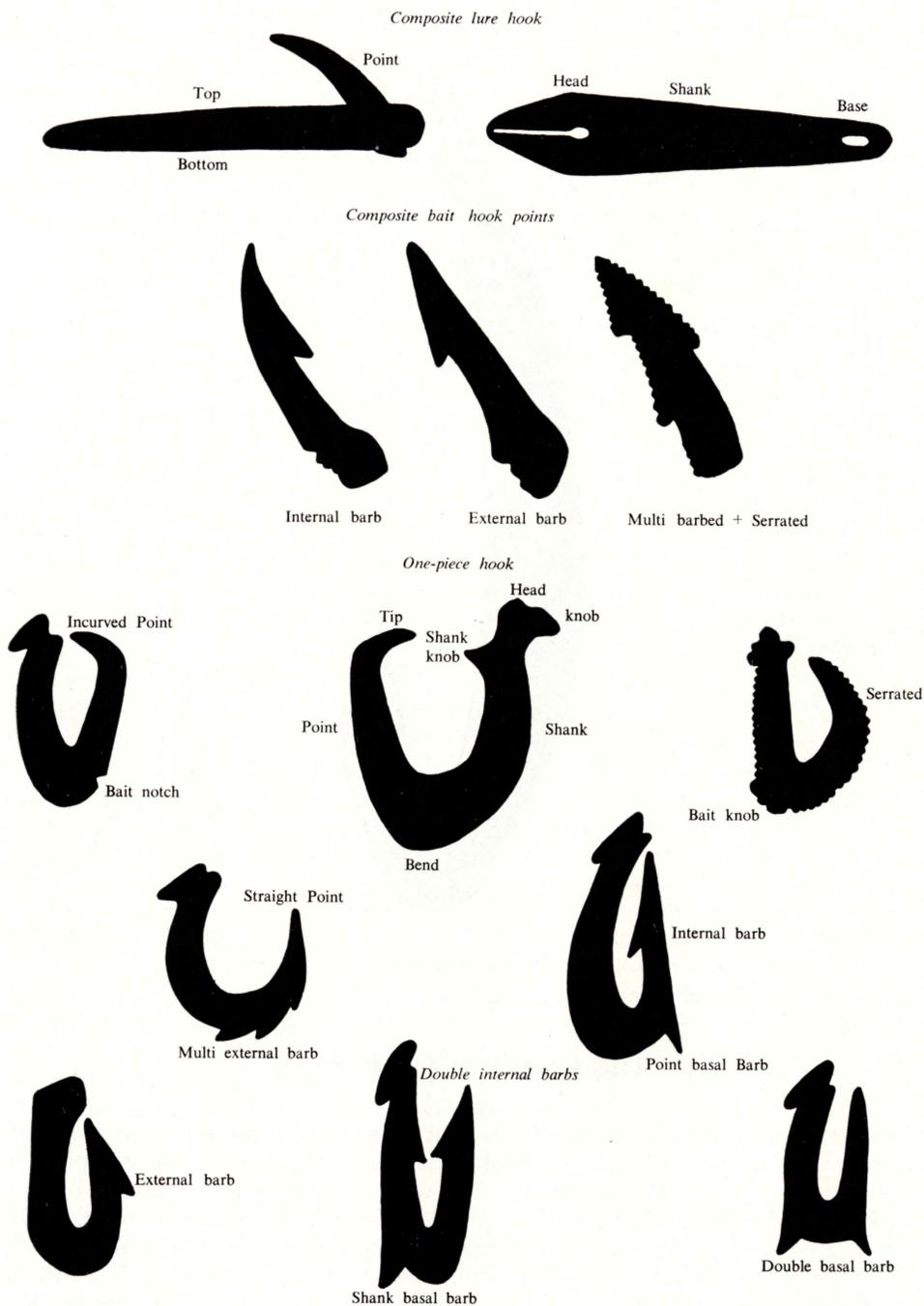


Fig. 1. Terminology.

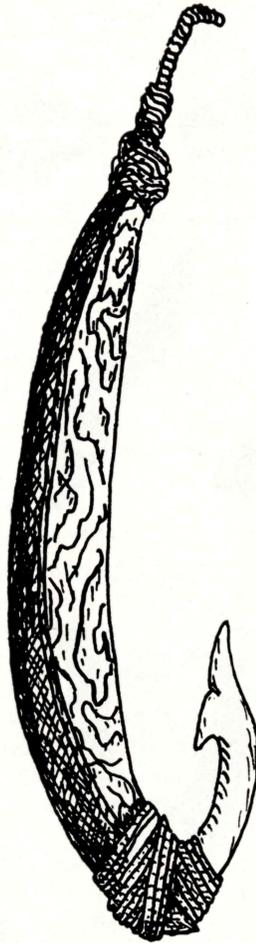


Fig. 2. Kahawai lure hook.

### THE KAHAWAI LURE HOOK

This form for the lure hook (see fig. 2) consists of three parts, the point, a slightly curved wooden back, and on the inner surface of the back a slender plate of shell, usually paua (*Haliotis iris*). The workmanship of the wooden back is finely done, for it has to be cut so as to receive the concave shell plate, which is not held by any special lashing, but is kept in place with the line lashing at the proximal end and the point lashing on the base, which were tied around the body of the lure. The line was fastened to the proximal end of the lure, where two lateral projections with an intermediate notch on the upper edge facilitate the attachment.

To prevent the point lashing from slipping, the wooden back terminates at the base in an abrupt bulge. The point is curved so that the tip runs parallel with the shank. There is no special base projection on the point, and the lashing is made secure with some notches on the base. The point normally has an internal barb and often has a hackle of feathers made from kiwi, kingfisher or penguin.<sup>52</sup>

This is the commonest form for the kahawai lure hook, but many atypical examples are known, for instance the wooden back of the shank is replaced by bone, or as in the example from Murdering Beach, is entirely of shell.

These kahawai lure hooks are very rare in the South Island, only three examples being known. This is possibly a reflection of the rare occurrence of kahawai in South Island waters. Complete hooks came from Murdering Beach and Karitane, both very late sites. The third South Island specimen of kahawai lure hook is a point found at Waipapa Landing, Marlborough. Both the complete examples from Murihiku still have the lashing intact, and as both sites were sites of late settlement, it is probable that the form itself is late, and moreover may be an importation at this period from the North, where this form has its widest distribution, and where it appears to have developed. How old the form is, is not yet known, but future excavations or serious study of the fish-hooks in the North Island museums may possibly give the answer. According to Duff,<sup>53</sup> the kahawai lure is a relatively modern product. As proof of this he says that no kahawai lure hooks have been found in the South Island. This is negative evidence. That the type is not present in the South Island can in no way be taken as evidence that the type is modern, but rather that local differences have persisted. In its original centre the kahawai lure hook may be quite ancient. It seems probable, however, that its spread to the South Island occurred in a relatively late period of New Zealand pre- or proto-history.

The kahawai lure hook is not known outside the Maori culture area, according to Anell,<sup>54</sup> who writes: 'On the Chatham Islands . . . a compound hook used for kahawai and barracouta is instanced. This consists of a "canoe-shaped bit of wood inlaid on the one side with a strip of bright shell of *Haliotis*.' Both in construction and use it seems to be closely related to the New Zealand kahawai spinners. Also specimens of more ancient spinner type are traceable, both the shank and the point made of bone, the latter having no projection at the base, but most often an inner barb.' Anell's second reference is not to lure-hook points, but to two-piece bait hooks. The other evidence quoted of an example of a canoe-shaped hook is taken from William Baucke's ethnographic report (written in 1928)<sup>55</sup> and involves confusion between the barracouta and kahawai lures, in use in Baucke's youth, both of which may have been introduced by the invading Maoris from New Zealand in 1835.<sup>56</sup>

### THE BARRACOUTA LURE HOOK

This form of lure hook is recorded from most parts of New Zealand, and consists of two parts (see figs. 3-7), the point being inserted in a wooden shank. The shanks rarely survive and the only indication of the presence of the lure hook form is normally the bone points. The wooden shank is as a rule made of rimu, and occurs with two different forms of lashing device, of which the one in fig. 4 is also found with the same lashing device on the top.

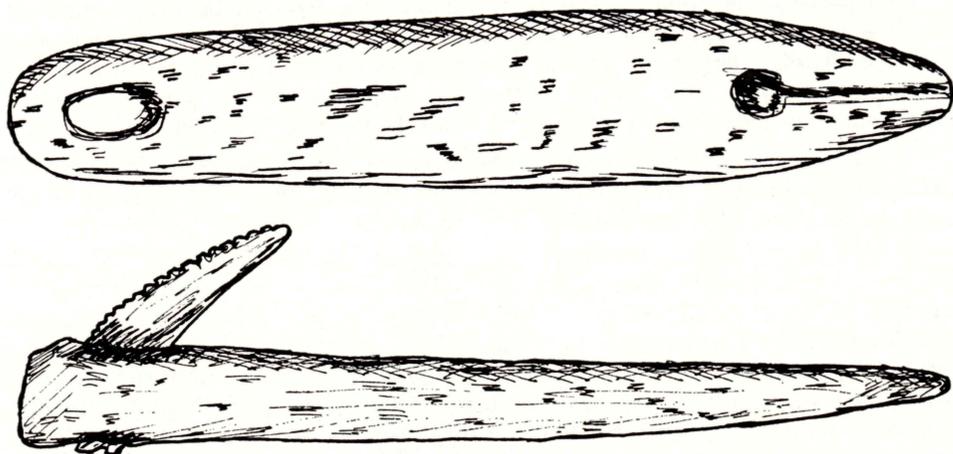


Fig. 3. Barracouta lure hook.

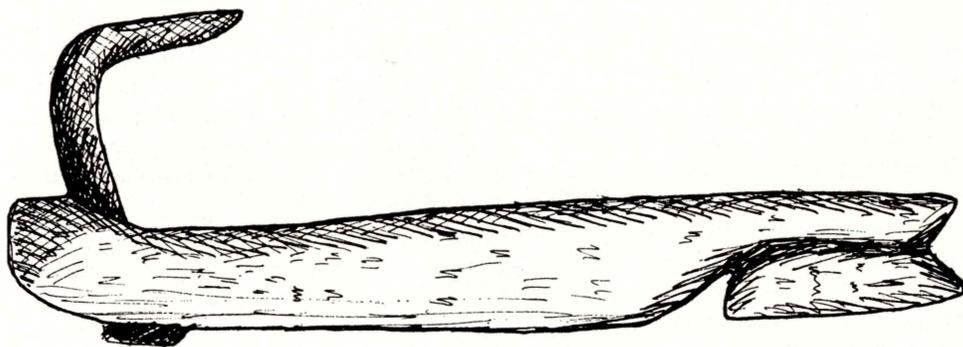


Fig. 4. Barracouta lure hook with iron point.

There is no archaeological evidence as to the relative age of the two forms. However no complete examples have been seen of the form in fig. 3 with a nail as a point, whereas this is quite common for the form in fig. 4. Another factor is the line lashing device, the one in fig. 3 is reminiscent of that on the bone minnow shanks, whereas the form in fig. 4 is unlike other line attachments of other lure hook forms found in New Zealand. It does seem that the type of line attachment illustrated in fig. 4 is a late innovation. This would mean that in Murihiku at least, the form in fig. 3 is older than that of fig. 4.

The composite fish-hook points which are generally believed to have been attached to the barracouta lure hook shanks, seem with some probability to fall into three main types.

**Type A.1** (fig. 5 a b c). Type A.1 is a long (mostly about 4 to 6 cm. long), slightly curved, barbless point, round or slightly oval cross-section, without

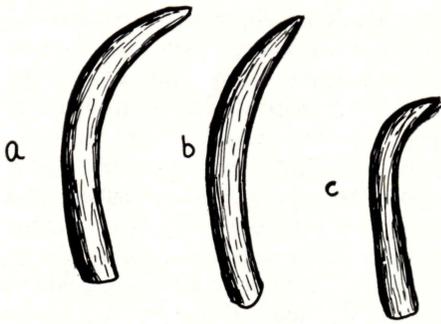


Fig. 5. a, b, c, Type A.1.

notching or other attachment devices. It must be pointed out that there is not as yet any archaeological evidence that could prove that this type of point was inserted in a wooden shank of barracouta lure hook form, but on the other hand this type seems to have functional meaning only when allied with a wooden lure hook shank.

This type of point is found in all assemblages studied from Murihiku, and seems to have been quite common all over New Zealand and the Chatham Islands,<sup>57</sup> but elsewhere it is only found in the Marquesas. Suggs<sup>58</sup> regards it as a local development in his Expansion period. The type seems, however, to have gone out of use very soon after, for his few examples all belong to a very restricted period.

That this type is present, and moreover is common on all sites in Murihiku, seems to contradict Dr Duff's view of its age, he says:<sup>59</sup> 'The barracouta points, common in recent sites, the exceptions are Grassmere, where Robson figures one, and Shag River, where they are numerous. . . Only one is known from Wairau.' This statement that only one example is known from Wairau may indicate that barracouta fishing was not practised to any extent at that site. Lockerbie reports finding the type in the intermediate layer at Pounaweia,<sup>60</sup> and at Papatowai<sup>61</sup> but without stating in which layer they occur. Teviotdale, in his diary, describes numerous barracouta points found in the bottom layer at Little Papanui.<sup>62</sup> The type is very common from King's Rock I, Tai Rua, Waimaitaitai, Ototara, False Island and Cannibal Bay. It is present in the assemblages from Murdering Beach and Karitane but is not common in these late sites. That this type is represented at the two early sites, seems to indicate that it early became a part of the fish-hook kit. At the same time the percentage occurrence of the type becomes less in the Classic sites, where its place is taken by a more developed barracouta point type.

**Type A.2** (fig. 6 d e). These points are shaped like type A.1, i.e. slightly curved point, with round or slightly oval cross-section, but notched on the outer surface. Proportionately this group is very small, but it is notable that the points are generally of fine workmanship. They do not occur in the assemblage from such sites as Papatowai, Pounaweia, Shag River, Tai Rua, Waimaitaitai, Ototara, whereas they are recorded in the top layer at King's Rock<sup>63</sup> and are present in the assemblage from False Island and Cannibal Bay, but False Island and Cannibal Bay material used here is doubtful, because it was obtained by fossickers and not by controlled excavations. Most of the material is believed to belong to the intermediate period.

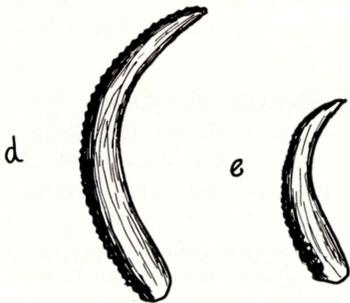


Fig. 6. d, e, Type A.2.

**Type A.3** (fig. 7 f g h). This type is often made of dog jaw, in contrast to the two other types which are usually made of moa bone. Type A.3 is also

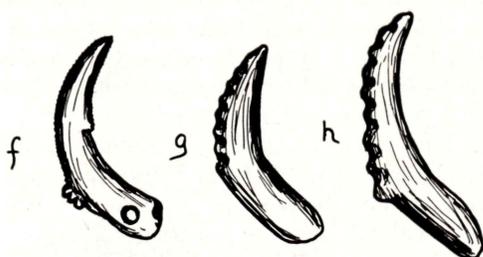


Fig. 7. f, g, h, Type A.3.

manufactured from seal tooth and other sorts of bone, one example being made of shell,<sup>64</sup> and a few of greenstone and other sorts of stone. As a whole the type can be described as a curved point, with flat oval cross-section, often serrated, and always having a sharp edge or a lug midway on the outside. From the lug down there is no serration. This lug is sometimes in the form of a stylized human head, but more often it is a triangle with a couple of grooves or notches on

the outside. Where the points are made out of seal tooth the cross-section is round or slightly oval. Some examples have a hole through the base, and others have small barbs.

Type A.3 is extremely common in sites such as Murdering Beach, Tarewai Point and Karitane, whereas it is completely absent in earlier assemblages from Shag River, Tai Rua, Waimaitaitai, Ototara, Pounaweia and Papatowai, etc. Teviotdale in his notebooks reports that he found the type in the top layer at Little Papanui, and on the surface at Long Beach. One specimen is recorded from the top layer at King's Rock,<sup>65</sup> and it is also found at Katiki. The type appears to be late and it was certainly very popular during the first years of European contact, because many points, especially those of seal tooth, were almost certainly made with metal instruments. This type of point is sometimes found in place, in its wooden shank. The perforation of the base is most common from sites where the assemblage contains many European objects. The increased use of seal tooth at the same sites may possibly be taken as a reflection of close contact with European sealers.

### THE MINNOW-SHAPED LURE HOOK

The third form for lure hook is generally known under the name 'Minnow-Shank' or minnow-shaped lure hook. These hooks are found all over New Zealand,<sup>66</sup> and must have been quite popular at one time. The material from which they are made varies very much from place to place as does the form. The following types can be distinguished.

**Minnow-shaped lures with triangular cross-section** (fig. 8). About these Dr Duff has said:<sup>67</sup> 'The more elaborate

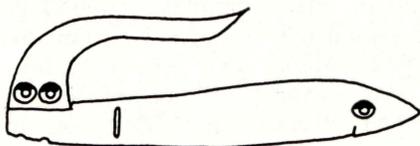


Fig. 8. Stone minnow shank lure and point Shag River.

southern form in particular represent such an accurate copy of the pearl shell *pa* of the tropics, even to the rarely found unbarbed biperforated points, that it is safe to assume, that these were copies in local material of the bonito lure as the first Polynesian immigrants to New Zealand would be quite familiar with it.'

In Murihiku two different varieties of this minnow-shaped lure hook type occur. The most common one with triangular cross-section as seen in profile is slightly concave. The transverse hole is drilled so as to resemble eyes, and directly under and behind the hole the shank has two fin-like projections which are very characteristic of this type. The base of the shank ends in a little platform, which is either filed down in the top or left in relief. To prevent the point lashing from slipping, one or two grooves are cut into the bottom side of the base.

This type is mostly manufactured in stone, but bone has been used, bone examples are known from Shag River and Pounaweia,<sup>68</sup> a peculiar example which instead of grooves on the bottom of the base has two transverse holes.<sup>69</sup> A transverse hole drilled through the base is also to be seen on a broken stone shank from Invercargill.<sup>70</sup> A serrated top is present on one specimen from Shag River.<sup>71</sup> The stone examples in this group are large compared with most stone minnow-shaped shanks found elsewhere in New Zealand.

The second group of minnow-shaped lure hooks with triangular cross-section always has a flat dorsal ridge. A transverse hole is drilled through the head of the shank, while the top of the base is made into a platform to hold the point. The underneath of the base has grooves to secure the point lashing. This group is most common outside Murihiku, being generally much smaller in size than the first group. A broken example from Little Papanui has serrated edges.

**Minnow-shaped lure hooks with oval or flat ellipse cross-section.** Lures with oval or flat ellipse cross-section are represented in Murihiku by two fragmentary specimens in stone, one coming from Little Papanui, the other from Lower Portobello.<sup>72</sup> Too little is left to give a description of the whole appearance of the lure. Minnow-shaped lure hooks with oval or flat ellipse cross-section are recorded in the North Island at Auckland and Wellington, but insufficient information is available as regards their distribution in time and space.

**Minnow-shaped lure hooks with flattened rectangular or rectangular with slightly rounded top cross-section** (fig. 9). Lures with this form of cross-section are commonly found on early Murihiku sites, and are nearly always made of bone, very rarely of stone. The hole in the top is drilled dorso-ventrally through the head while the point lashing device on the base has a few grooves on both sides of the lure. As a whole the lure has a shield-like form, with the front wider than the back.

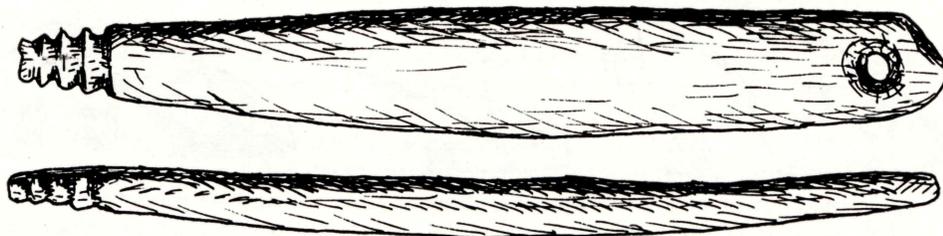


Fig. 9. Bone minnow lure shank Little Papanui.

Lures made in shell are not found in Murihiku. Wairau Bar and Marlborough seem to be the southern limit for this type.

Lockerbie states<sup>73</sup> that the minnow-shaped lure hooks are present only in the bottom and intermediate layers at Pounaweia and Papatowai, and that they are more common in the lower layer, where stone lures outnumber bone, whereas bone lures are more common in the intermediate layer.

Minnow-shaped lure hooks are represented by several specimens at Shag River (14 stone, 3 bone), Waitaki River Mouth (6 stone) and Pounaweia and Papatowai (the exact number is not recorded), this compared with Little Papanui, where 8 bone shanks and only two broken small stone shanks were found. According to Teviotdale moa-hunting does not seem to have been the basis for the economy at Little Papanui. The presence of bird-spear points in the bottom layer and the layer above, all indicate that Little Papanui's bottom layer is not one of the earliest sites in New Zealand. Minnow shanks seem to have gone out of use when the change in economy from moa-hunting to fishing took place. They are absent at King's Rock, Tai Rua, Waimaitaitai, Sandfly Bay, False Island, Ototara, Mata Kaea and represented by one specimen at Cannibal Bay, and are absent in all later sites.

The composite fish-hook points which are believed generally to have been attached to the minnow-shaped lure hook shanks, are grouped into the following types. Only one of the types is proved archaeologically to be connected with minnow shanks.

**Type B.1** (fig. 10). This type is made in bone or ivory and has a barbless, very curved point, with one or two perforations at the base. The type is rare in Murihiku, but several have been found at Wairau Bar. The point is recorded from the bottom layer at Little Papanui,<sup>74</sup> and at Shag River a shank was found in situ with its point<sup>75</sup> (fig. 8). Lockerbie figures one found in the intermediate

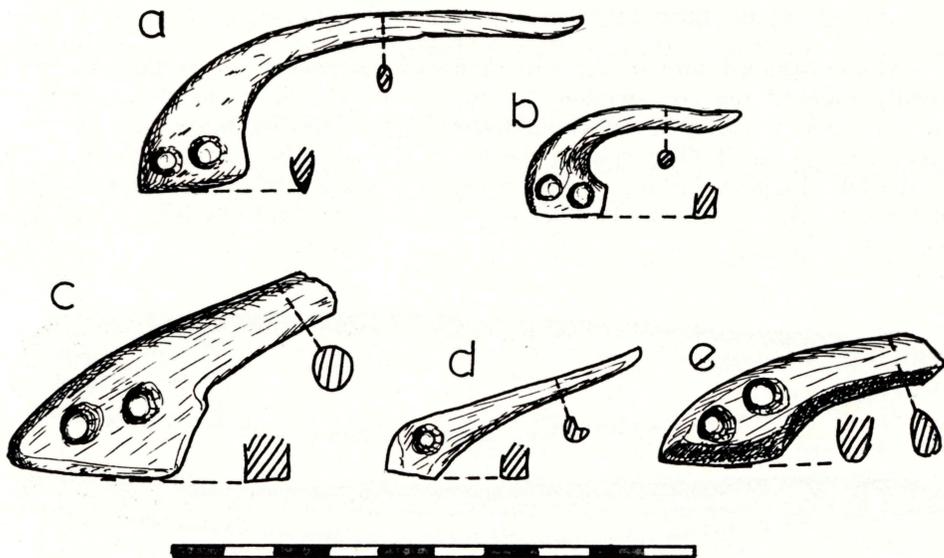


Fig. 10. Perforated lure hook points Type B.1.

layer at Pounaweia,<sup>76</sup> and comments: 'Generally found in early deposits associated with large bone shanks!' The type was possibly brought to New Zealand, where it seems to have survived up to the time when the change in economy took place, for it is not recorded in any later assemblages.

Other point types are often found in deposits with minnow-shaped shanks, and are generally believed to have been points for minnow shanks. Some of these points seem to have no functional meaning when not allied to a minnow-shaped shank, others could just as well be points of composite bait hooks. It is therefore a matter of opinion where to place the different types.

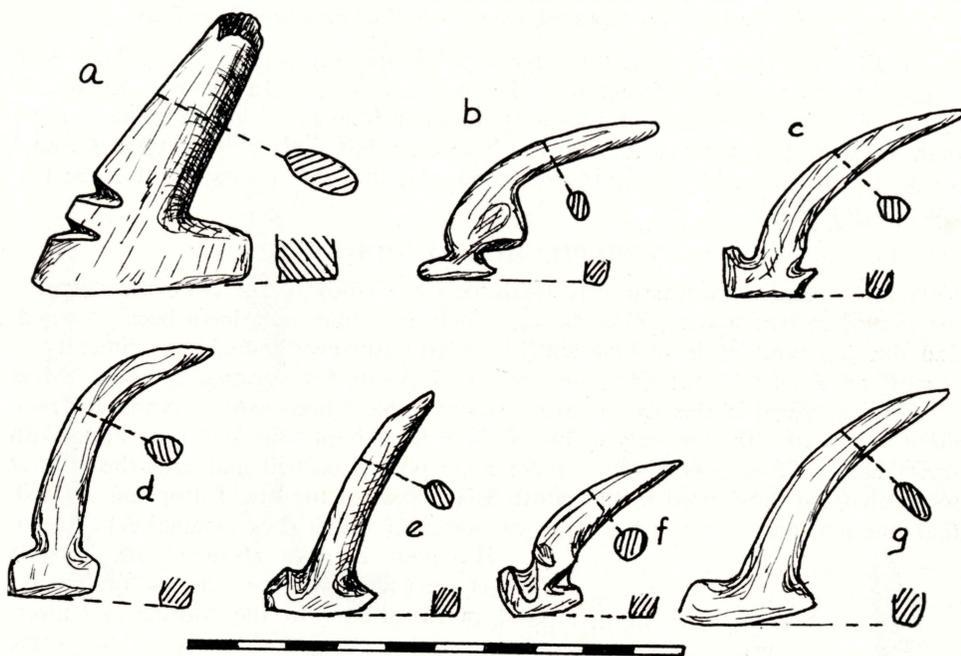


Fig. 11. Unperforated lure hook points with proximal and distal projection Type B.2a.

**Type B.2 Points which seem to have functional meaning only when allied to a lure hook shank** (fig. 11). The following variations can be seen:

**B.2a.** Slightly curved point (fig. 11), with distal and proximal projections at the base, the base is normally filed flat. When placed base down on a flat surface, the angle between the inside of the point and the flat surface is over 45 degrees. About this type of point Lockerbie says:<sup>77</sup> 'Points of this type are frequently found in association with shanks of stone and bone.' He figures one specimen found in the bottom layer at King's Rock.<sup>78</sup> This type seems only to occur at sites where minnow-shanks have been found, the exceptions being King's Rock and Long Beach, each having one in the assemblage.

The type is known from archaeological excavations in the Marquesas,<sup>79</sup> where Suggs found it in his early period. The type seems to have been in use in the early Archaic phase, but to be no longer used by early in the late Archaic phase.

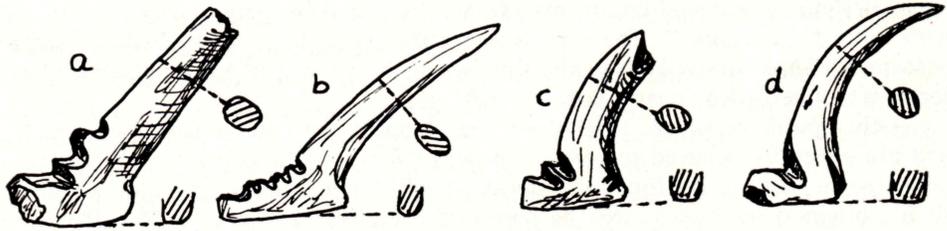


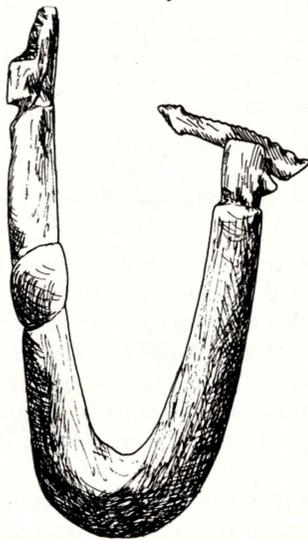
Fig. 12. Unperforated lure hook points with distal projection Type B.2b.

**B.2b.** This type is a slightly curved point (fig. 12), with a heavy base with distal projection. The underneath of the base is filed flat. In order to distinguish this point from type C.2a, it is necessary to define B.2b as having an angle of more than 45 degrees, when placed with the base on a flat surface. The type is found in all sites where minnow shanks are found, and it is safe to assume that the two are contemporary.

### TWO-PIECE BAIT HOOKS

Very little detailed information is available for a study of the complete shape of the two-piece bait hooks. The shanks, which as a rule must have been of wood, and the flax binding, have long since decayed. However there is no difficulty in identifying a large group of bone objects as points for composite hooks. Most of those described in this section are believed to have been used as points for two-piece bait hooks, though only a few of them have been found in association with their shanks. Taken as a whole these bone points, barbed and unbarbed, differ so much from those used in the North Island<sup>80</sup> when the first Europeans arrived, that one can only surmise the types of hooks to which they originally belonged.

However, it does seem to be possible to get an idea of the shapes of shanks used in Murihiku. In the Moritzson collection in the Otago Museum are some wooden shanks, one even with the flax lashing and the bone point intact. Unfortunately they have no history, but Skinner<sup>81</sup> regards the whole collection as being from Otago. The two-piece bait hook specimens are all of the same shape (fig. 13). The figured hook is made of manuka wood.<sup>82</sup> They have shank and point leg in one piece, the lashing device consisting of a backward facing knob, and from here the shank tapers to a point. Under the knob is a groove running round the whole of the shank, and the point lashing is secured by a knob and a groove.



D18 150

Fig. 13. Wooden bait hook and bone point Otago.

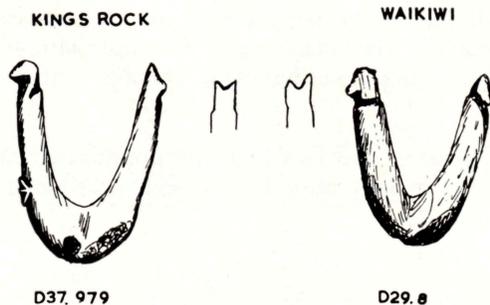


Fig. 14. Bone bait hooks with provision for attaching a point.

Fig. 14 shows two examples in bone of the shank described above; both were found in Murihiku, one coming from the bottom layer at King's Rock,<sup>83</sup> the other from Waikiwi near Invercargill. These two bone examples are almost identical, made of the same sort of bone (human pelvis), and worked in the same way, possibly made by the same person.

Another type (fig. 15) consists of a long slender wooden shank of a half U shape. The line attachment consists



Fig. 15. Wooden bait hook and bone points Sumner Canterbury.

of a knob at the back, and from here the shank tapers to a point. The bend ends in a groove, in which the point was placed. To secure the point lashing the lower outside of the shank is grooved on the underside. The figured examples are from Canterbury:<sup>84</sup> no wooden example of this type has yet been recovered in Murihiku. The points found in association with these wooden shanks in Canterbury are commonly found in Murihiku, and three similar bone shanks are known, two found in the top layer at Little Papanui and the other at Moeraki.

Occasional hooks with a carved mask or a figure on the wooden shank have been collected, but only very rarely is any locality available. From Tokanui Mouth comes a two-piece bait hook with shank and point made out of bone, having a carved face on the inside head of the shank (plate 9).

Under the face is a groove around the shank, which itself is perforated. The shank is in shape of a half U. The base of the shank is a solid half-circle of bone. Two deep grooves are cut into this half-circle on both sides of the shank and joined together in a deep groove on the front of the base. In this groove is placed a barbed serrated point, which has two perforations near the base. Whether this hook has actually been used for catching fish is doubtful, as the perforation under the carved head weakens the shank. It is possible that this hook had a purely ceremonial or ornamental purpose. A double perforation on a barbed point with serrated surface is also recorded in a few other cases. One is from the top layer at King's Rock,<sup>85</sup> a broken specimen was found at Tarewai Point, and one is from Long Beach. The dating of King's Rock top layer is doubtful, and too little is known about the site at Tokanui Mouth. Long Beach seems to have been occupied in the intermediate and late phase, and Tarewai Point in the late phase. This last argument and the

fact that many carved shanks were collected in the last century in other areas, may indicate the lateness of this complete specimen from Tokanui Mouth. Beazly figures a New Zealand masked hook with a point having double perforation, but without provenance.<sup>86</sup>

The points studied can be roughly divided into two main groups, unbarbed and barbed, and within each of these two main groups it has been possible to distinguish the following types or forms.

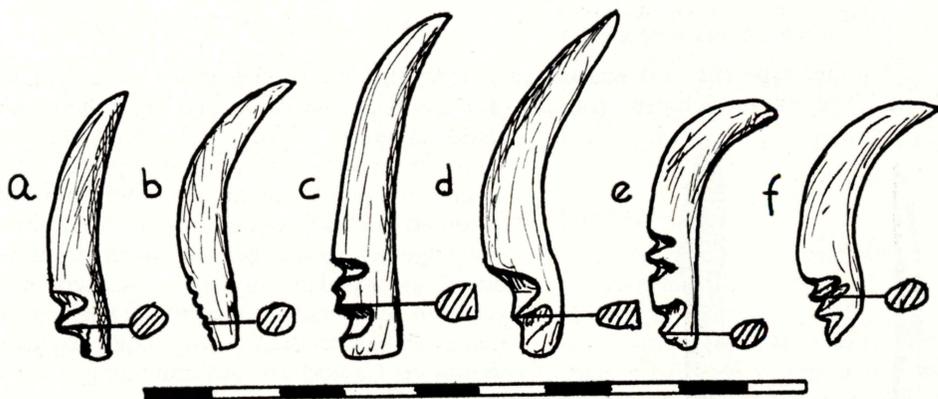


Fig. 16. Small unbarbed points Type C.1a.

**Type C.1a** (fig. 16). This is a slightly curved or straight point with round or slightly oval cross-section. The outside of the base is notched to secure the lashing to the shank. This type has been wrongly identified as a barracouta lure hook point. It resembles type A.1 in shape, but differs in having notches on the base. It may have been used in a wooden barracouta lure hook shank, but such a shank would completely cover the notches, which would then serve no useful purpose either from a functional or ornamental point of view. Furthermore some of the points have been filed flat on the opposite side to the notches, which again indicates that this type was probably meant to be tied to something, the wooden shank of a composite bait hook.

The type occurs in most of the sites studied. It is an easy type to make, and was possibly in use throughout the pre- and proto-historic periods.

**Type C.1b** (fig. 17). This variant is a fairly straight point, usually with a thickened basal projection. On the outside of the base are notches or a groove, and the opposite side is filed flat. The cross-section on the middle of the point is round or slightly oval. The points are always made from very massive bone (moa or whale). Some of the points in variants b and c may have been used as points

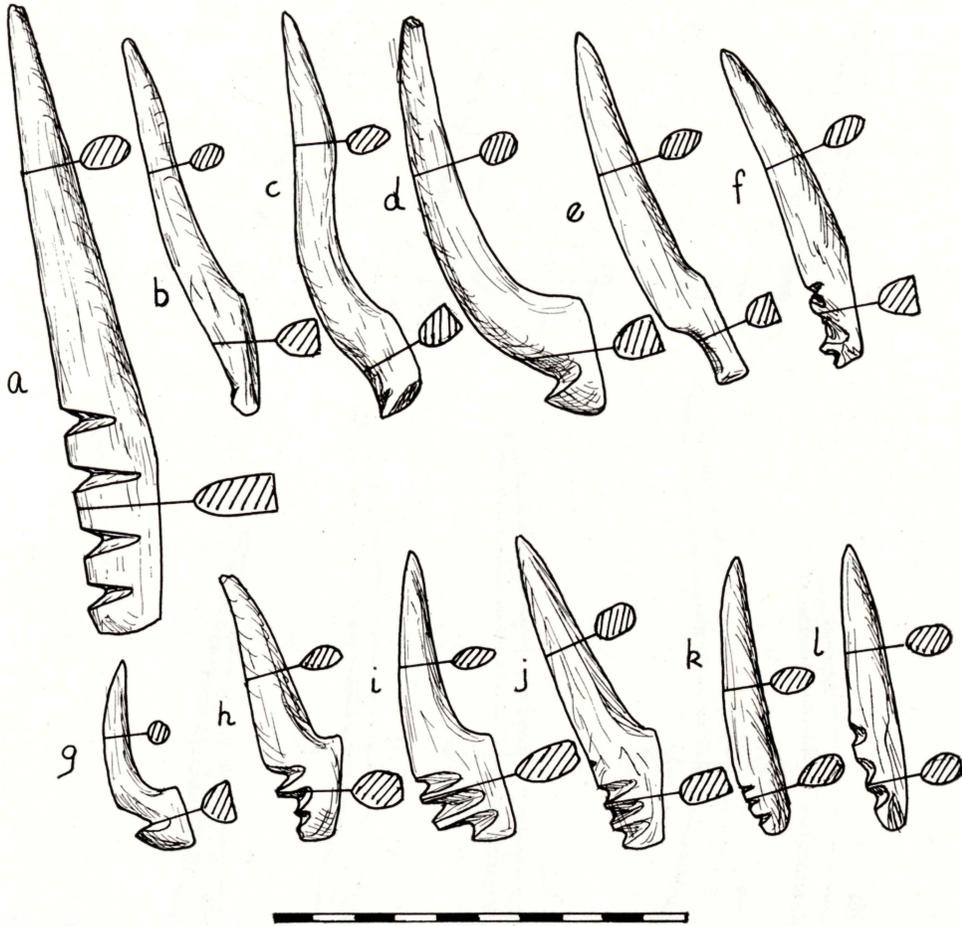


Fig. 17. Large unbarbed points Type C.1b.

for minnow-shaped lure hooks, but nearly all are too large for the stone shanks and the majority are too large for the largest shanks made of moa bone. It is much more probable that they were attached to very large wooden bait hook shanks.

This type is recorded from Papatowai and Pounaweā<sup>87</sup> in layers associated with minnow-shaped lure hook shanks. At Pounaweā we know that at least one was found in the intermediate layer. The type is also found at Tai Rua and in the bottom layer at King's Rock. It is not found in assemblages from False Island, Cannibal Bay, Ototara, Waimaitaitai, Mata Kaea and Sandfly Bay and is absent in Classic sites, which suggests that the type became obsolete in the period when the economy changed from moa-hunting to fishing, that is the early part of the late Archaic phase.

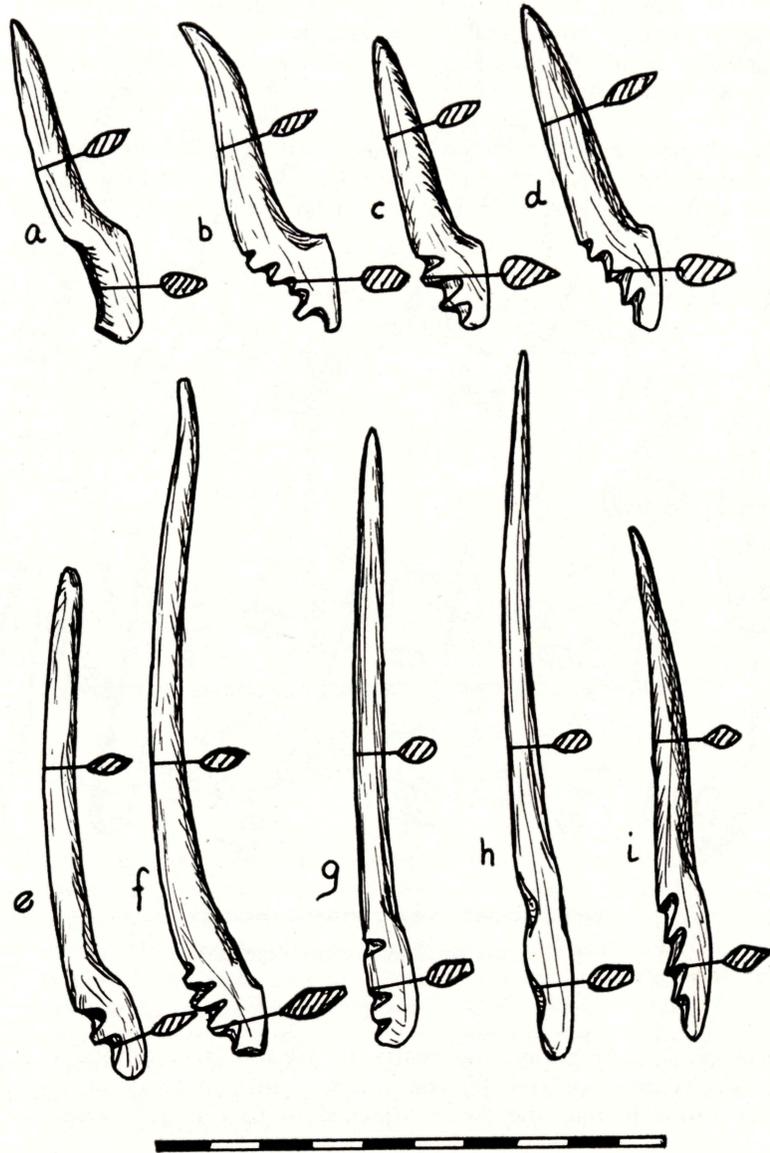


Fig. 18. Unbarbed points and long slender unbarbed points Type C.1c.

**Type C.1c** (fig. 18). This type is one of the most beautiful point types found in Murihiku. It is an elegant, barbless, thin and slightly curved point, with a thickened base. Generally there are notches on the outside of the base, but examples with only one or none at all are known. The cross-section of the point is oval. The base ends in a chisel edge, as if this type of point was meant to be inserted in a groove in a wooden bait hook shank.

Lockerbie reports that the type is found associated with minnow-shaped shanks at Pounaweia.<sup>88</sup> It is also found at Papatowai, in the bottom layer at Little Papanui,<sup>89</sup> in the Archaic site at Murdering Beach and in the assemblage from Shag River and Onepoto. The type seems to have been present in the early phase, but is absent in the assemblages from Tai Rua, King's Rock, Waimaitaitai, False Island, Cannibal Bay, Ototara, Mata Kaea, and Sandfly Bay and Classic Maori assemblages. The type was possibly developed in the early Archaic phase, and used up to the beginning of the Late Archaic phase.

**Type C.2** (fig. 19). This group consists of three specimens all found at Shag River. The characteristic feature which places them in a separate group is the presence of a small curved, pointed knob just under the base, otherwise they

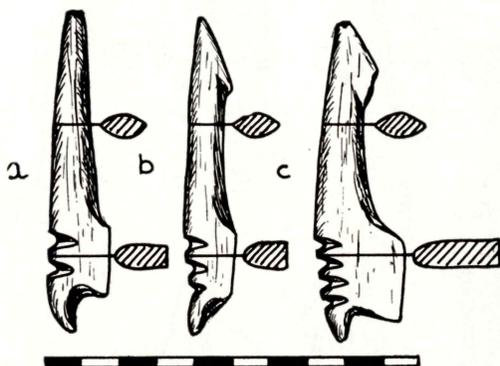


Fig. 19. Points with basal barbs Type C.2.

are straight points, with a thickened base, notched precisely on the outside, and with a flat platform on the inside of the base. The work on the base of these three points is so unusual, yet so similar, that one may conjecture that they were made by the same man. However, even though the base work is similar, the tips are not. One example is barbless, whereas the two other examples have small barbs. The interesting thing about these points is the presence and absence of barbs on hooks otherwise similar. One may conjecture that these were optional features.

**Type C.3** (fig. 20). This is a barbed point, with a lashing device on the outside of the base, which is normally one or more notches cut into the bone. It is divided into two varieties, one in which the internal barb is placed opposite the lashing device, and the other in which the external barb and lashing device are on the same side of the point.

**Type C.3a** (fig. 20 a-m internal barbed point.) Cross-section flat oval, the size varies, but usually about 3-5 cm. long. Bird bone other than moa is the most used material, but dog, ivory and tooth are quite common. A few examples are made of other sorts of bone, possibly moa, seal or whale, and greenstone points have been found. This type is very common, and is found in most sites. It is not found in the two early sites Papatowai and Pounaweia, but is recorded in all the Late Archaic sites such as the bottom layer at King's Rock,<sup>90</sup> False Island,<sup>91</sup> Cannibal Bay, Sandfly Bay, Waimaitaitai,<sup>92</sup> Ototara, Mata Kaea. The type is present at Murdering Beach and Tarewai Point, but not in any great numbers, and is completely absent in the assemblage from Karitane. The first occurrence is in the period when the change in economy takes place. It is very common through the whole of the Late Archaic phase, but seems to become scarce in the Classic phase.

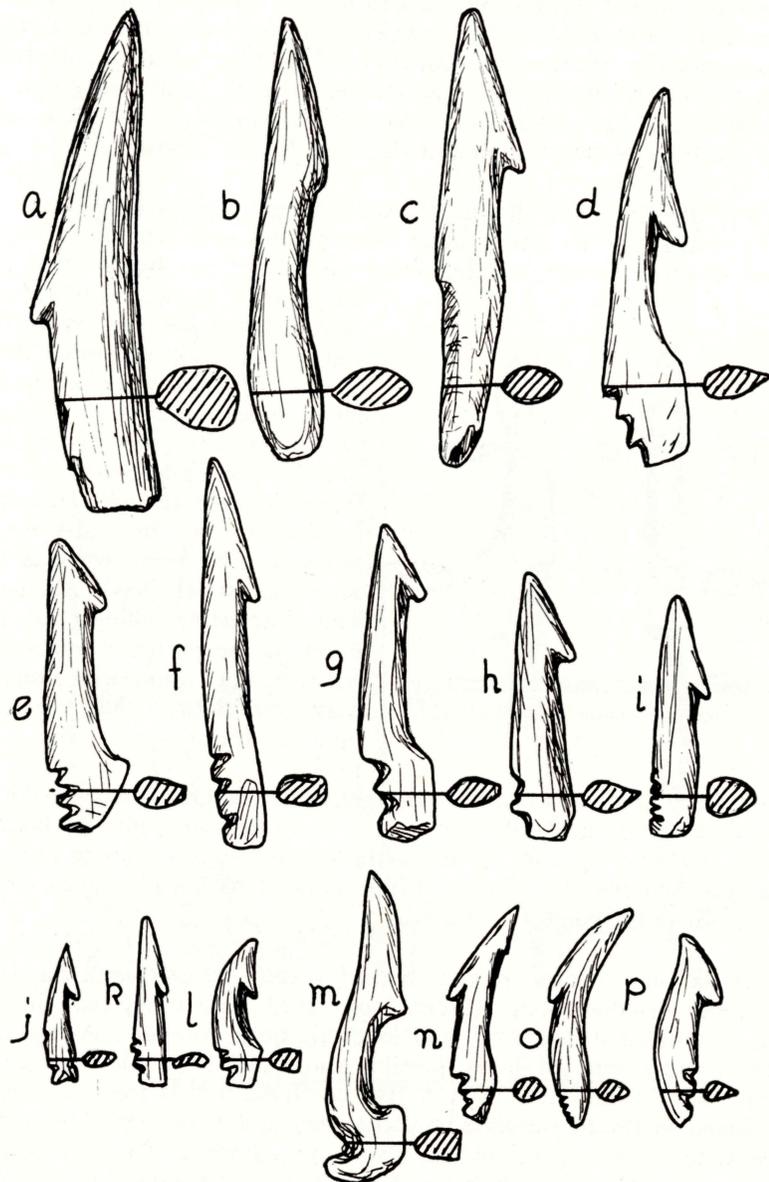


Fig. 20. Large and small barbed points Type C.3.

**Type C.3b** (fig. 20 n-p, external barbed point.) Barb and notches are here placed on the same side, in everything else it resembles variant a. Proportionately this type is unimportant compared with variant a in Murihiku. (This does not apply to other parts of New Zealand.) The type is present at Tai Rua and Waimaitaitai,<sup>93</sup> both sites occupied when the moa was beginning to become scarce. From Normanby<sup>94</sup> in South Canterbury there is an assemblage of fish-hooks in which this type is common. From both Normanby and Tai Rua there are specimens with the barb placed very close to the notches or in which the top notch seems to have evolved into a bar. This feature variant b however never seems to have become popular in Murihiku. The type is present only in Late Archaic and Classic sites.

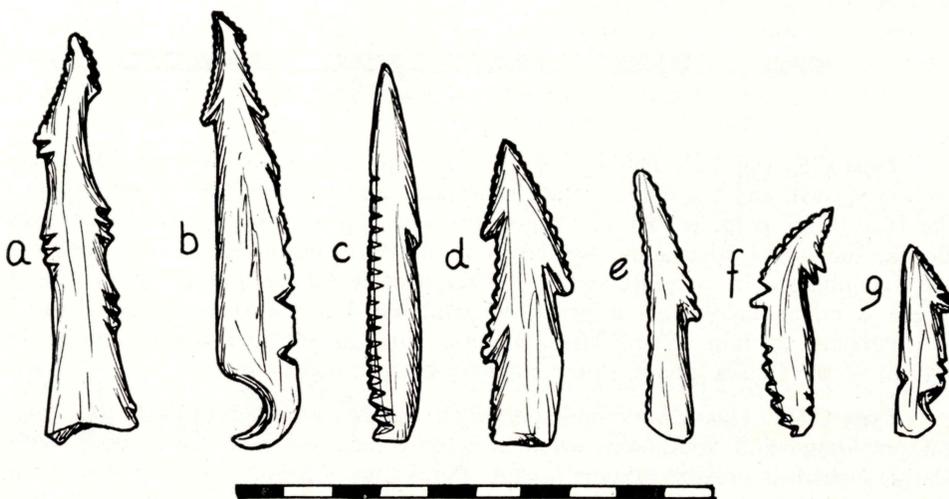


Fig. 21. Serrated and multi-barbed points Type C.4.

**Type C.4** (fig. 21). The word baroque seems to suit this type. It varies somewhat in shape as well as size and in the number of barbs. The main criterion, but a very marked one, is the plethora of notches and supplementary barbs on all sides of the point.

Archaeological investigation shows that the type is present in the top layer at King's Rock.<sup>95</sup> It is common in the assemblages from Tarewai Point, Murdering Beach and Karitane. All this indicates that a love for notches was popular in the latest phase. Perhaps we can speculate that here, as is illustrated in some European cultures, we have the impact of a new metal technology on an ancient craft, with increasing ornamentation being applied in an effort to demonstrate skill, and to equal the attraction of the more durable metal items. Perhaps too, before metal hooks became general, the greater ease and freedom in working conveyed by metal tools is here having its effect. Serrated edges on fish-hooks are known in earlier assemblages, but are extremely rare, whereas in the three late assemblages from Murdering Beach, Tarewai Point and Karitane there is a very high proportion of hooks and points with serrated edges. The type is characteristic of the Classic phase.

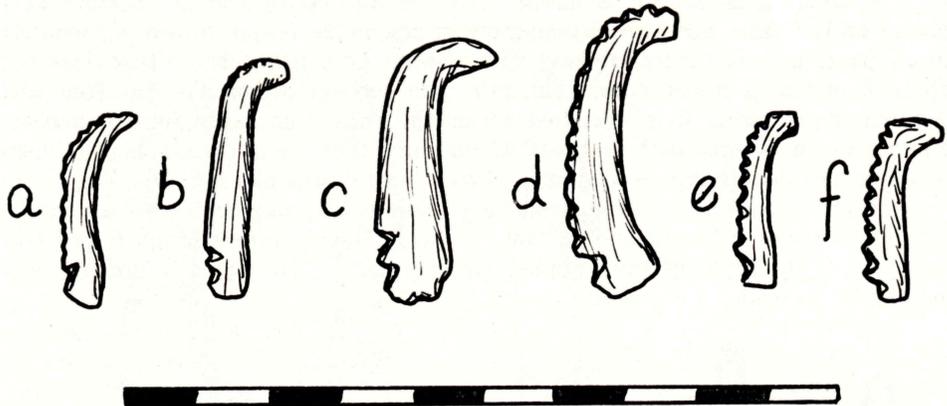


Fig. 22. Serrated incurved points Type C.5a.

**Type C.5a** (fig. 22). This is a small point with a strongly bent tip. The cross-section is oval, and the outer surface is serrated and has a couple of notches near the base. This point is rare in Otago sites, one specimen is found at Murdering Beach, and a few other sites also have one or two examples. It is often found in the assemblages from Southland, at Pahia, Centre Island and Ruggedy Island. There is no archaeological information available, but the assemblages in which it occurs all contain some Classic material, and as serrated edges seem to be typical of the Classic phase, this point may be regarded as late.

**Type C.5b.** This is very similar to C.5a, but has an external barb. It is very rare in Otago and Southland, where it is only recorded in an assemblage from Catlins, which is possibly Classic, and at Purakanui. Recently some were found in a cave at Jackson's Bay, in what seems to be a Classic assemblage. Thus the type is believed to be a Classic feature in Southern New Zealand.

### ONE-PIECE BAIT HOOKS

One-piece hooks in New Zealand, unlike those of Hawaii,<sup>96</sup> cannot be classified into a few conventional types. In Murihiku there is no rigid pattern employed in making hooks, and it is obvious that those who fashioned them were less bound by tradition than their fellow craftsmen in Hawaii. Despite this absence of conventional types, the Maori one-piece hooks do have features, such as line attachment, which make their Polynesian origin indisputable.

Complete hooks are not common, and the classification used here is therefore divided into two parts, first a description of the different head shapes, and then a classification based on the complete specimens and a few broken specimens where the whole shape of the hook can still be recognized.

The bone hooks were made in the following two ways: When a particular piece of bone of suitable size had been chosen, a series of holes was drilled in the middle. It was then possible to knock out the thus weakened middle part with a well-placed blow. The inside curve of the hook was then filed smooth. The other method employed instead of drilling was to cut out the middle piece

with a flake. This method is generally known as pecking. Pecking was rarely employed in Otago, but several sites show evidence that it was known; by contrast in the Southland sites there seems to be a higher proportion of hooks manufactured by pecking. Drilling was known but does not seem to have been very common.

One-piece hooks in stone are represented in Murihiku by two specimens, a complete one in greenstone, the other an unfinished fragment with drill holes, made in hard limestone.

### HEAD SHAPES

The most common form of head found in Murihiku (fig. 23) has a flat or slightly rounded top, a backward pointing knob, and a groove where the head joins the shank. Often, as in all types of one-piece hooks in Murihiku, there is a projection on the inside of the shank leg under the head. This projection appears to have been left there in order to strengthen the shank or to prevent the lashing from slipping down the shank. This head shape is found in the assemblages from Papatowai, Pounawea, Tai Rua, Waimaitaitai, King's Rock and Cannibal Bay. It seems to have been common all over New Zealand, though its distribution is not well known. A backward pointing knob followed by a groove is common on many East Polynesian hooks,<sup>97</sup> it seems therefore safe to assume that this type of head is one of the oldest types in Murihiku. It is common in the early Archaic assemblages, present in the late Archaic phase, but absent in the Classic assemblages. The last is mainly due to the almost complete absence of one-piece hooks in the late phase.

The next row of heads is very similar to the first described, but instead of having a flat or rounded top, all this group have a groove on the top of the head. They are common, especially in the Shag River assemblage, and are recorded from Papatowai, Tai Rua and Waimaitaitai. The type is known in East Polynesia,<sup>98</sup> and possibly resembles that brought to New Zealand by the first emigrants. It was in use in the late Archaic phase, but is not known from the Classic phase.

The examples in the third row have a head consisting of a backward pointing knob, into which have been cut two grooves. On a few specimens it is evident that the carver intended to symbolize a human head. This group consists only of

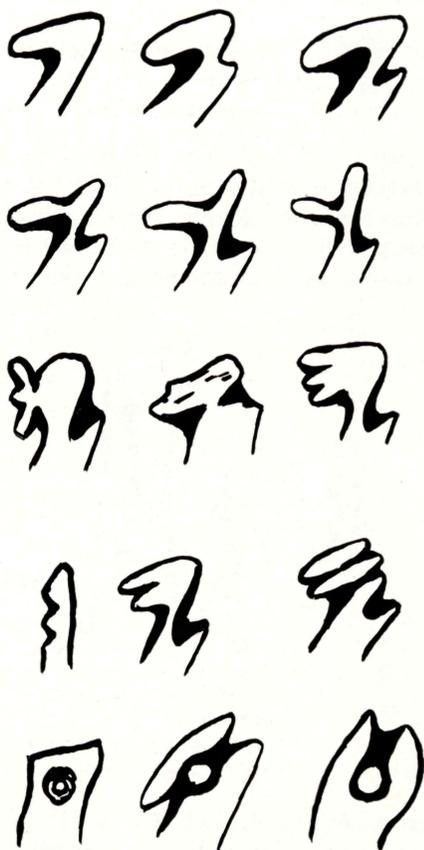


Fig. 23. Head shapes of one-piece bait hooks.

a few specimens, most of them made from human skull. Single examples are recorded from Purakanui, Centre Island, Kai Kai's Beach, Waitati and Katiki. They do not occur in the big one-piece assemblages from the Archaic phases, and are possibly a late innovation in the Classic phase.

Rows four and five illustrate head shapes which are occasionally found in the assemblages. They do not seem to represent any stable type, but are more likely to be occasional products of a maker. Until more material from controlled excavation is available little can be said about their significance in the different phases of the Murihiku pre- and proto-history.

The complete one-piece hooks can be divided into the following types.

**Type D.1** (fig. 24). The commonest type of one-piece hook found in Murihiku is a U-shaped bone hook with plain surface, shank and point of equal length, sometimes having a bait notch on the bend. The catching device consists of an incurved point.

This type is recorded from Papatowai, Pounaweia, Tai Rua, King's Rock,<sup>99</sup> Cannibal Bay<sup>100</sup> and Murdering Beach. It was common all over New Zealand, and is also recorded in most of East Polynesia. The type seems to have been present through the whole of the pre- and proto-history. The following variations are present in the Murihiku fish-hook kit.

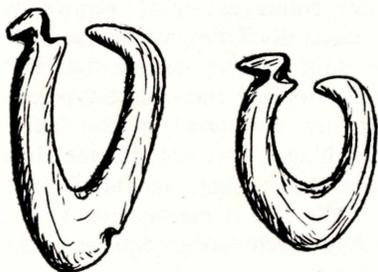


Fig. 24. U-shape one-piece hooks Type D.1.

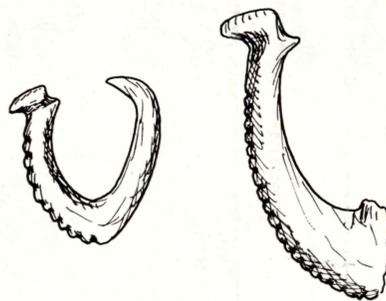


Fig. 25. Serrated one-piece hooks Type D.1a.

**Type D.1a** (fig. 25). This variation has serrated outer surface, the serration varies from hook to hook, sometimes only the shank is serrated, and sometimes the whole of the surface has this form of decoration. Possibly the oldest example yet found came from Tai Rua, another is in the assemblage from Sandfly Bay, and other specimens are from Little Papanui, Long Beach, Ruggedy Island, Kai Kai's Beach, all sites containing some late material. It is not found in the big assemblages from Shag River, Papatowai and Pounaweia, and it seems therefore to be a later feature.

**Type D.1b** (fig. 26). Occasionally the bait was kept in place by a knob on the bend. Two examples, both made from human skull, and having a bait knob carved to represent a human head, are known in Murihiku. The head of the hooks are also carved like human heads, and the outer surface is serrated. There are two specimens, one found at Katiki and the other at Waitati. They are possibly late classic.

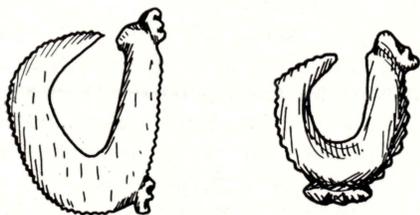


Fig. 26. Serrated and knobbed one-piece hook Type D.1b.



Fig. 27. Circular one-piece hook type D.2.

**Type D.2 Circular hooks** (fig. 27). Circular hooks are rare in Murihiku. Their distribution can be seen in table III. Too little is known to place these hooks in time, but circular hooks are known from several places in East Polynesia. They are possibly an old feature in New Zealand.



Fig. 28. Large one-piece hook in moa bone Type D.3a.



Fig. 29. One-piece hook Type D.3b.

**Type D.3 One-piece hooks with straight points.** The following variations are known:

**D.3a** (fig. 28). Shank leg longer than point leg. Only one example is known, coming from the bottom layer at Little Papanui.<sup>101</sup> This specimen is the biggest one-piece bone fish-hook found in Murihiku, and is made of moa bone.

**D.3b** (fig. 29). Shank and point leg of almost equal length, with plain surface. This type is occasionally found in the earlier assemblages. It is recorded archaeologically from King's Rock,<sup>102</sup> and is found at Shag River. The type does not seem to have been common, but may possibly have been made in the Archaic phase.

### BARBED ONE-PIECE HOOKS

Barbed one-piece hooks are rare in Murihiku. Very few specimens are complete, but the following variation in placing the barbs can be noticed.

**Type D.4a External barb.** No complete specimens yet found in Murihiku, but several broken points archaeologically recorded from Tai Rua suggest (P.12) that this type was made in the early part of the late Archaic phase.<sup>103</sup>

**Type D.4b Lower barb** (fig. 30). Five complete hooks all having a lower barb are shaped like a pear, the point is straight. One of these specimens also



has an internal barb. These five hooks come from the following places: two were found in a burial at Papanui Inlet, one at Sandfly Bay, one from Little Papanui and the last was found at Onepoto. The hook from Onepoto has no head, but instead it is perforated. This hole weakens the hook and would militate against its use as anything but an ornament. All the specimens here are finely done, and may have been used as ornaments. They are related to the greenstone fish-hook pendant, the hei-matau, which is a very stylized fish-hook, without any functional meaning,<sup>104</sup> but which very often has a suggested outer or lower barb like the bone examples here described.

Fig. 30. One-piece hook with lower point barbs  
Type D.4b.

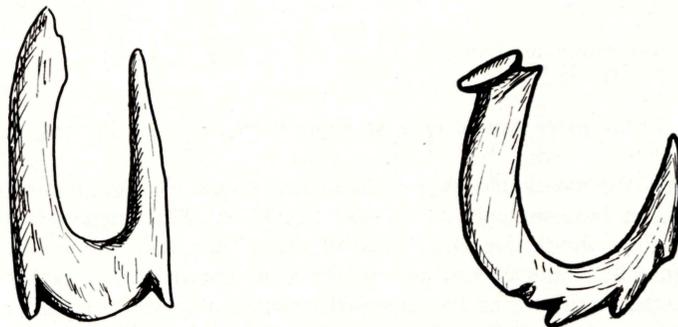


Fig. 31. One-piece hook with basal barbs on point and shank Type D.4c.  
Fig. 32. Multi-barb one-piece hook from Shag River Type D.4d.

**Type D.4c Double Bend barb** (fig. 31). Two examples are known, one made of whalebone from Long Beach, and this is a straight point, the other from Pleasant River is made of greenstone and has the point curving slightly outwards.

**Type D.4d Multi-point barb** (fig. 32). A circular hook with three barbs on the outside of the point was found at Shag River. This is the only specimen found in Murihiku.

**Type D.4e Shank barb** (fig. 33). U-shaped hooks with straight points having a shank barb, represented only by one complete specimen, coming from Kai Kai's Beach, but broken shanks with shank barbs are often found, some very beautiful examples at Shag River.



Fig. 33. Fragment of hook with basal shank barbs Type D.4e.

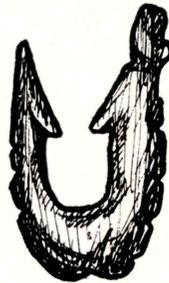


Fig. 34. One-piece hook with double internal barbs Type D.4f.

**Type D.4f Double inner barb** (fig. 34). U-shaped hooks with double inner barb. One example comes from Murdering Beach, and is made of human bone, having serrated outer surface. A broken point in the assemblage from Karitane, with barb and serrated outer surface, is probably of this type. The type has its widest distribution in the North Island, around the East Coast. Its occurrence in Murihiku is late. A broken ivory shank from Stewart Island has a knob on the inside of the shank. Trotter has suggested that this hook belongs to the same group, but is atypical.<sup>105</sup>

How old the barbed one-piece hook is in Murihiku is at the moment difficult to decide. No barbed hook has yet been found at Papatowai or Pounawea, but in the assemblage from Tai Rua are four broken one-piece hooks with barb. This occurrence at Tai Rua is proof that the barbed one-piece hook was present early in the late Archaic phase. Except for the double inner barb variant we do not know if any of the other forms of barbed one-piece hooks were used in the Classic phase.

### BROKEN AND RE-USED ONE-PIECE HOOKS

When a one-piece hook broke it was sometimes repaired, and used again. All the hooks described here are in fact composite bait hooks, but it is believed that most of them started off as one-piece hooks (fig. 35).

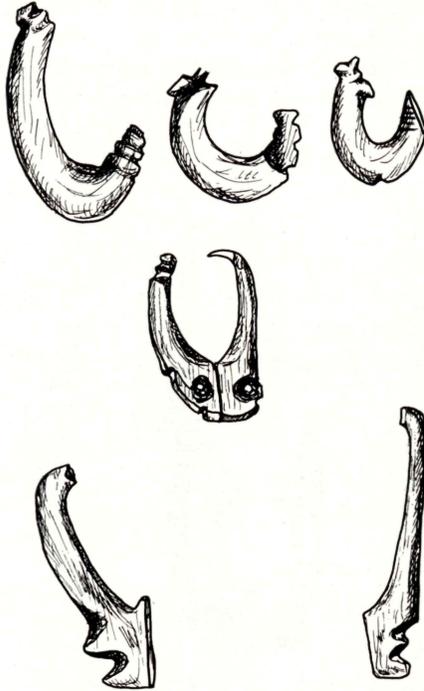


Fig. 35. One-piece hook forms made in two pieces Type D.5a, D5.b.

**Type D.5a** (fig. 35, top row). From Shag River, Katiki and Wakapatu come three hook, in which the tip has broken off. The broken point leg has subsequently been ground flat along one face and grooved on both edges to secure the attachment of a new point.

**Type D.5b** (fig. 35, middle). When the hook was broken in the middle of the bend, it could be repaired either by drilling two holes, one at the base of the point and the other at the base of the shank to lash the pieces together, or else by filing a couple of notches on the outside of the two bases. Sometimes grooves on the bases serve the same purpose as the holes. This type of hook as Lockerbie suggests was sometimes made in two halves.

Type D.5b is archaeologically recorded in the intermediate layer at Pounaweia<sup>106</sup> and a fine half specimen was excavated at Tai Rua. It is in no way common.

### CONCLUSION

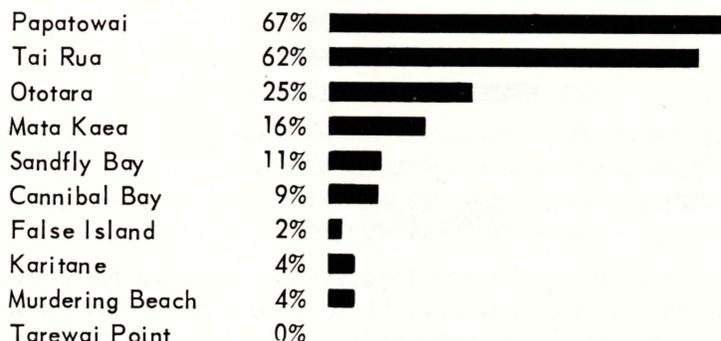
The 'life' of an artifact type can be divided into three phases: 1. Developmental phase, in which the type is invented. 2. Climax phase, when the type is most intensively used. 3. Regressive phase, when the type either dies out or evolves further. Such changes vary in time from artifact to artifact. If the type is functionally good it may have a long life. However evolution does not always proceed in the direction of better functional types. Occasionally other factors, such as ornamentation and the use of different materials, create types that functionally are no better than the types they evolved from.

In the light of these ideas the fish-hook material in Murihiku gives a fairly reliable picture of the changes which have taken place in the prehistory of Murihiku, and as suggested earlier a possible sequence for some Murihiku sites

can be deduced from the content of the middens. We have regarded Papatowai and Pounaweia as early Archaic sites, well established in the moa-hunting phase, but surviving well into the late Archaic phase. However we also know that the greater part of the fish-hook material has come from the two early layers. Tai Rua, Waimaitaitai, Ototara, Mata Kaea, False Island, Sandfly Bay and Cannibal Bay were first occupied when the moa was less plentiful or extinct, and when the basic economy was fishing and shellfish-collecting. The three late phase or Classic sites — Murdering Beach, Tarewai Point and Karitane — all of which contain some European objects, must have been occupied in the early European contact period.

If we plot the percentage distribution of one-piece hooks from these sites the following pattern emerges. (There is not sufficient material available from Pounaweia for analysis.)

#### PERCENTAGE DISTRIBUTION OF ONE PIECE HOOKS



Graph 1. Percentage distribution of one-piece hooks.

#### GRAPH 1

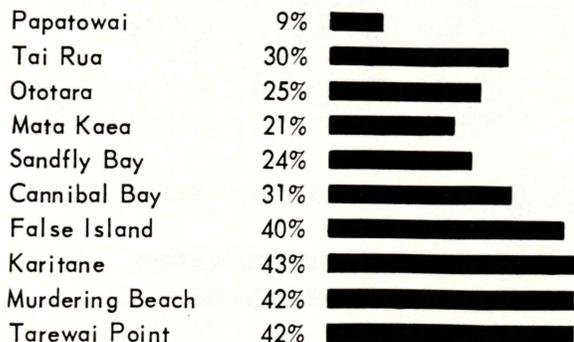
The order in which the sites are placed is to show a decreasing percentage of one-piece hooks. This order is believed to have chronological significance, for it is quite remarkable that all sites which on midden content appear early, have a very high percentage of one-piece hooks, whereas the percentage of one-piece hook material in the three Classic sites is very low. A similar high proportion of one-piece hook material in early sites seems general for the whole of New Zealand. At Wairau Bar (see p.214) Duff noticed a similar high percentage of one-piece hooks, and Golson<sup>107</sup> at Sarah's Gully (C-14 dates to 1369 A.D.±50) describes the following fishing gear: 'Large numbers of one-piece hooks, usually with incurved point, and a single unbarbed unperforated lure hook point.' From Opito Bay<sup>108</sup> (C-14 dated 1319 A.D.±50), Golson reports finding one-piece fish-hooks with the type of snooding device known at Wairau Bar and Shag River, the majority have incurved point, and a single unbarbed unperforated lure hook point. In contrast to this, at the late site of Oruarangi<sup>109</sup> there are only three one-piece hooks and one in course of manufacture compared with 248 points of composite hooks and numerous fragments. It must therefore be concluded that

in the earliest phase the one-piece hook was a very popular form, gradually losing its popularity through the late Archaic and Classic phases.

In contrast composite hooks were less popular in the early Archaic phase but increased during the late Archaic and Classic phases.

Some of the more specialized but highly distinctive types are plotted below.

#### PERCENTAGE DISTRIBUTION OF BARRACOUTA HOOKS

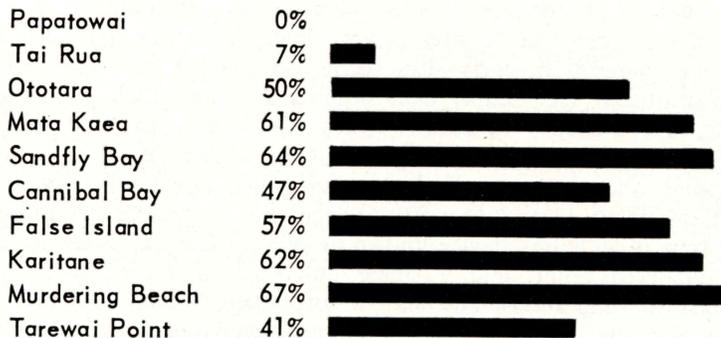


Graph 2. Percentage distribution of Barracouta lure hook points.

#### GRAPH 2

Barracouta lure hook points (type A.1-3). Papatowai shows a fairly low percentage of barracouta lure hook points, however at Tai Rua and later sites the barracouta lure hook points seem popular. All that can be said for the moment is, that this type of fishing gear may have been used occasionally in the early phase, but first became popular in the late Archaic and Classic phases. The serrated types (A.2, A.3) increase considerably in the Classic sites, and so does the use of points made of seal tooth, the latter possibly being due to the influence of European sealers.

#### PERCENTAGE DISTRIBUTION OF BARBED HOOKS



Graph 3. Percentage distribution of barbed hook points.

## GRAPH 3

Illustrates the distribution of the groups of barbed composite bait hook points.

This group's position is not yet known in the early Archaic phase; no barbed points have yet been found at Papatowai and Pounaweia, but at Tai Rua (occupied about A.D. 1400-1500) a few barbed points have been found. At the moment all we can say about the barbed points' existence in the early Archaic phase, is that if they were known, they were extremely rare.

## PERCENTAGE DISTRIBUTION OF HOOKS WITH SERRATED EDGES

Papatowai	2%	■
Tai Rua	1%	
Ototara	0%	
Mata Kaea	0%	
Sandfly Bay	1%	
Cannibal Bay	1%	
False Island	14%	■
Karitane	85%	■
Murdering Beach	73%	■
Tarewai Point	53%	■

Graph 4. Percentage distribution of hooks with serrated edges.

## GRAPH 4

Serrated points are extremely common in Classic assemblages. None have been secured from the controlled excavations from early and late Archaic sites, and it may therefore be assumed that these forms of points belong only to the Classic Maori of Murihiku.

## GRAPH 5

This graph shows the two groups of barracouta lure hook points. A represents the plain point (type A.1) and B the two serrated types (A.2 and A.3). Few are present in the early Archaic sites, but already Tai Rua shows that this type of fishing gear is well established, and one would think it had replaced the earlier types of lure hooks. It is common in all late Archaic assemblages, and still present in the Classic assemblages though it seems to have lost popularity. Serrated points are represented in great numbers only in the Classic sites. Only the two late Archaic assemblages from Cannibal Bay and False Island (obtained by fossicking) have a few, which cannot be taken as proof that the type was present in late Archaic sites. All the controlled excavations have failed to show this type in late Archaic assemblages. We may therefore surmise that these forms of points were used only in the Classic phase.



more popular; although such points are known in Eastern Polynesia from Hawaii<sup>110</sup> it is only in this late Archaic phase that the type is recorded in an archaeological context. They are rare in the early part of this phase as seen in the assemblage from Tai Rua, but they rapidly became popular. The one-piece hook is still an important type in the early part of this phase, but seems to become less important during the period. The types from the early phase were still used, but at Tai Rua for the first time barbed one-piece hooks make their appearance towards the beginning of the late Archaic. Barbed one-piece hooks are known in Eastern Polynesia,<sup>111</sup> but are first recorded in Murihiku during this late Archaic phase. The few points found suggest that barbed one-piece hooks were of little importance. The barracouta lure hook points are of the same type as those of the early phase, but increase in numbers. At an early date they seem to have replaced the minnow-shaped lure hook which does not seem to have survived the change in economy. Unbarbed composite bait hook points are usually simple in shape, the large variety seen in the early phase having been dropped, and only the simple type C.1a survives during the whole of this late Archaic phase.

The Classic Maori assemblages contain a large variety of baroque types of fish-hooks; the one-piece hooks have almost been abandoned, and the few examples known vary widely. A few plain one-piece hooks are similar to those of the two Archaic phases, but serrated one-piece hooks recorded only twice in late Archaic sites are now just as common as the plain hooks. In the barbed one-piece hooks we find the double internal barbs which Trotter<sup>112</sup> has shown have their widest distribution in the East Coast area of the North Island, and seems to be an importation to Murihiku in the Classic phase. One-piece hooks with bait knob and with heads shaped as human faces are recorded only in Classic sites. The presence of a few plain points of type A.1 barracouta hooks suggests that this type was still used. However the large majority of barracouta hooks are serrated, some with small barbs, most of them angular. There is a great variety of completely new and unknown types compared with the late Archaic phase in Murihiku. Furthermore a completely strange type of lure hook, the kahawai lure hook, is represented by two examples. Kahawai are rare, so once again this is probably an introduction from the North Island where the form is common. The composite bait hook point is represented by a great variety of types including a few plain unbarbed points (C.1a) and some plain barbed points so common in the late Archaic phase. New are the serrated and multi-barbed points, which show such great variety that one may be impressed by the fantasy displayed in their making.

This short resumé clearly shows that the two Archaic phases are very similar, and the differences can all be explained as a development in time. This explanation should apply also to the material culture of the Classic phase. But first of all there are no prototypes found in Murihiku which could explain the many new types. The evidence suggests a sudden break in material culture, with an assemblage which is not a cultural development from the earlier phase. Such marked change is normally explained archaeologically by a migration of new people into an area. If it is a migration it is possible to find the area from where these immigrants came and where they developed their special culture. As we have seen, some of the fish-hooks found in Murihiku, the double internal barbed one-piece hook and the kahawai lure-hook, suggest for their origin the East Coast

area of the North Island. Tradition records that the Ngai-Tahu<sup>113</sup> moved southward from the North Island. Lockerbie's comparison between the Archaic phase and the Classic phase (see *Murdering Beach*, P. 7), shows that this great difference is not limited to fish-hook types, but includes a wide variety of artifacts. One may be safe in assuming that the material culture as displayed in the Classic Maori phase was brought to Murihiku by people coming from the North Island, probably from the East Coast area. Before further archaeological investigations have taken place in the North Island little can be said about the origin and development of the Classic Maori material in Murihiku.

The earliest C-14 dating for Murihiku ( $1050 \pm 60$  years), comes from Kai Kai's Beach. Until further dates are available this must serve as the only date of the first occupation in Murihiku. A few other sites seem to have been occupied shortly afterwards, Pounaweia ( $1140 \pm 60$  years), Papatowai ( $1190 \pm 30$  years). In the 13th century, Hina Hina and Waimataitai seem to have their first occupation. All these early sites are situated near the coast. The inhabitants were largely dependent on moa-hunting but in the 15th C. sites, such as Tai Rua, increasingly dependent on fishing. After 1450 a number of sites on the coast are still occupied, these are Cannibal Bay, False Island, Sandfly Bay, Ototara, Mata Kaea. Possibly all the earlier sites were still occupied. The main economy was fishing and shell collecting. In this late Archaic phase are found the first inland sites, such as Hawksburn<sup>114</sup> (14th to 16th century), which suggests that when food was scarce on the coast the inhabitants in their efforts for survival were forced to seek the moa inland. The latest C-14 datings available for this late Archaic phase, when the inhabitants of Murihiku were forced to range both the coast and the interior in their quest for food, is dated at False Island to  $1735 \pm 50$  years. Tree ring datings suggest that Hina Hina<sup>115</sup> (1715), Pounaweia (1726) and Papatowai (1699) were first abandoned about 1700 A.D. All these dates suggest that the Late Archaic phase was still in existence at the end of the 17th century and possibly well into the 18th century.

The question now is, when did the North Island Maori move into Murihiku? As we have seen, the South Island Maori in the late Archaic phase were forced inland to hunt the diminishing moa species but continued to live on the coast in many places. It is hardly likely that life was as secure and stable in Murihiku as for the Maori living in the North Island, who to a great extent depended on agriculture. What would have caused the North Island Maori to move South? War may have been one of the reasons, although the pressure on land in the North Island was not considerable. Groube<sup>116</sup> has suggested that during the early part of the proto-historic period the Maori population in the North Island was increasing.

It is difficult to explain the movement of an agricultural people into a non-agricultural region when the area was already occupied and land was still available in the home area.

Gathercole<sup>117</sup> has suggested that the late site of *Murdering Beach* was a manufacturing site for greenstone artifacts exported to the North Island and also supplied potatoes to European ships. The earliest record of potato growing in Murihiku was made in 1809, when Stewart reported seeing a field of considerably more than one hundred acres of potatoes at Bluff.<sup>118</sup> Kelly<sup>119</sup> in 1817 was intent

upon securing a supply of potatoes for his ship. So the Maoris at this period no doubt depended to a great extent upon potatoes for food and trade.

The form of agriculture practised in the North Island was tuber growing (kumara, taro, yams). It is a world-wide experience for the introduction of a similar crop such as potatoes into a tuber-growing agriculture to be rapid, whereas it is very difficult to introduce a plant which has to be cultivated in a different way. Historical records show that the Maoris quickly took to potato growing, whereas wheat and corn had to be introduced again and again before this form of agriculture was finally adopted. The late Archaic people in Murihiku, and the Morioris in the Chatham Islands, were non-agricultural and would possibly have found it difficult to adapt to agriculture in such a short period. In the Chatham Islands the Morioris did not undertake potato growing until forced to do so by the New Zealand Maoris after the conquest of 1835.<sup>120</sup>

The success of potato growing in Murihiku in 1809 suggests either a very early introduction of potato<sup>121</sup> or the influence of the agriculturally experienced northern Maoris. With the possibility of a late migration they may have been North Island Maoris. As argued above it is hardly likely that the North Island Maori would have come south in the prehistoric period, when there was presumably still plenty of land to use in the North Island. If the Maori had the potato it would be much more logical for him to go south, where he could still practise agriculture as in the North Island, and at the same time trade with the many European sealers who in the early proto-historic period came in large numbers to the good harbours on the coast of Murihiku. This may also explain the many late sites in Foveaux Strait, which flourished in the Classic phase, sites such as Centre Island, The Neck or Stewart Island, Ruggedy Island, Tokanui Mouth, the main centre being on Ruapuke Island. It is clear that the Maori very early understood the importance of trading with Europeans, as Groube<sup>122</sup> says: 'European trade, especially in flax, may have led to the founding of many flat land trading settlements. The "village" which flourished on the beach opposite Cook's anchorage in Queen Charlotte's Sound on his third voyage was established after Cook's arrival for trade.'

The date of the Classic phase of New Zealand Eastern Polynesian culture in Murihiku may be very late. If the incursion of the North Island Classic Maori preceded the introduction of the potato by even one generation it may have been difficult for the new crop to be accepted. Both Cook and Banks describe the resistance of the Queen Charlotte Sound natives to the introduction of potatoes. A crop planted on Matuara *pa* was allowed to lapse by the inhabitants between two of Cook's voyages. At that time Cook says that no agriculture was practised in the area. Such an introduction may not have been so unsuccessful in the North Island.<sup>123</sup> It is much more likely that the Maoris of the North Island were able to expand their cultural area into the South Island with the aid of the more tolerant white potato. Thus the Classic Maori phase in Murihiku may be fully proto-historic.

Barbed bird-spear points so commonly found in sites with late Archaic material are not recorded at Papatowai, Pounaweia and Tai Rua whereas they are quite common in sites such as Sandfly Bay, False Island and Cannibal Bay. In the late sites such as Karitane and Murdering Beach, only a few barbed bird-

spear points have been found, so one may presume that bird-spear hunting became unimportant in the Classic phase. This reinforces the previous argument as it is unlikely that pre-potato immigrants could have afforded to abandon fowling. Similarly there appears to be an absolute reduction in the number of fish-hooks from the Classic phase (e.g. 51 hooks from the rich site of Murdering Beach, 6 from Katiki Point and so on). Such a reduction in fishing and fowling argues a new food source.

Evidence for cultural regionalism in New Zealand, with marked difference in many aspects of culture between the North and South Islands was first suggested by Dr Skinner<sup>124</sup> in 1921. For the fishing material within Murihiku there is little difference from North to South in the early and late Archaic phases. In the Classic Maori phase, there seems to be a difference between the sites about Otago Harbour and those around Foveaux Strait, the Southern group having more one-piece hooks, and favouring a little point type C.5a, which is very common from these Southern sites, but unimportant in Otago. The recently found assemblage from a cave in Jackson's Bay consists of fish-hook types such as C.5b (extremely rare in Murihiku) and barracouta lure hook points, but they are slightly different from those in any other assemblage. This shows that the Classic phase, though short, was able to create distinctive differences within small areas. This evidence supports Groube's<sup>125</sup> postulation of a rapid change in material culture in the proto-historic period from Cook's first arrival in 1769 and up to about 1840. Contact with European culture caused a shift in the economy towards producing articles of value for trade with Europeans, made possible by the new stability given by the white potato.

Dr Skinner<sup>126</sup> has shown that many greenstone adzes have been converted into hei-tiki, an artifact which he considers important and typical of the 1769 Maori. Groube says:<sup>127</sup> 'Although there is no doubt that tiki were used when Cook was on the coast, they do not appear to have been as common as fifty years later. On the other hand, the rei-puta ornament, commonly described by the earliest explorers, seems to have been rare by 1820.' He further suggests that a great number of tiki were converted from greenstone adzes in the proto-historic period.

This may mean that many artifacts of non-European origin owe their popularity to European influence. The fish-hooks of the Classic phase are notable for their elaborate ornamentation (this is general for most of New Zealand), possibly due to several factors: the greater ease in working bone with metal instruments, or the efforts of an ancient craftsman to demonstrate skill and to equal the attraction of more durable metal items, or to the cultivation of potatoes which gave the Maoris leisure and thus time to apply ornamentation.

**TABLE 1.**  
**SITE DISTRIBUTION OF COMPOSITE HOOK POINTS OF**  
**BARRACOUTA LURE HOOK TYPES IN MURIHIKU**

Types/Sites	A1	A2	A3	Total	Types/Sites	A1	A2	A3	Total
<b>OTAGO SITES:</b>					<b>Sandfly Bay</b>				
Allan's Beach	2	0	0	2	Shag River	130	0	0	130
Anderson's Bay	0	0	0	0	Tai Rua	32	0	0	32
Cannibal Bay	20	1	0	21	Tarewai Point	0	0	7	7
Catlins	4	1	4	9	Waitati	1	0	0	1
Clifford Bay	1	0	6	7	Waimaitaitai	2	0	0	2
Doctors Point	0	0	0	0	Warrington	1	0	2	3
False Island	19	5	1	25	Wickliffe Bay	1	0	1	2
Hooper's Inlet	3	0	0	3	<b>SOUTHLAND SITES:</b>				
Kai Kai's Beach	234	3	41	278	Centre Island	13	4	21	38
Kaikorai Mouth	1	0	0	1	Green Hill	4	0	0	4
Karitane	2	0	18	20	Haldane	5	2	0	7
Katiki	0	0	1	1	Long Point	0	0	0	0
Kuri Beach	0	0	0	0	Pahia	114	7	3	124
Little Papanui	251	3	53	307	Ruggedy Island	3	4	0	7
Long Beach	72	2	55	139	Ringa Ringa	4	0	0	4
Mata Kaea (Shag Point)	13	0	0	13	Sandhill	2	0	0	2
McKay's Beach	10	0	0	10	Stewart Island	2	1	0	3
Moeraki	16	3	1	20	Wakapatu	2	0	0	2
Murdering Beach	5	0	21	26	Tokanui Mouth	0	0	0	0
Onepoto	125	2	0	127	<b>WESTLAND SITES:</b>				
Ototara	1	0	0	1	Jackson's Bay Cave	0	2	22	24
Papatowai	4	0	0	4					
Purakanui	18	0	3	21					

**WAIRAU BAR FISH HOOKS**

One-piece bait hooks—						
Complete	18				Portions	148
Stone shanks of composite lure hooks—					Complete except for	
Complete	34				eyes and tail	13
Complete except for					Portions	114
eyes	7					
Shell shanks of composite lure hooks—					Portions	40
Complete	11					
Complete except for						
eyes	14					
Bone shanks of composite lure hooks—					Portions	4
Complete	3					
Bone points for lue hooks—					Portions	6
Complete	1					
Ivory points for lure hooks—					Portions	18
Complete	9					
Complete with barb	1					
Points of composite bait hooks—					Portions	4 certain
Complete	0					1 probable

(In every case point itself missing, thus unable to determine whether barbed.)

TABLE II.  
SITE DISTRIBUTION OF COMPOSITE HOOK POINTS, EXCEPT  
POINTS OF BARRACOUTA LURE HOOK TYPE

Types/Sites:	B1	B2a	B2b	C1a	C1b	C1c	C2	C3a	C3b	C4	C5a	C5b	?	Total
<b>OTAGO SITES:</b>														
Allan's Beach								2					2	4
Anderson's Bay								1						1
Cannibal Bay	1			2	2	1		30	1	1			3	41
Catlins								2		4		1	1	8
Clifford Bay								3		1				4
Doctors Point								3						3
False Island				1				32		4				37
Hooper's Inlet				1				3					1	5
Kai Kai's Beach	2	2	3	17	3	14		189	2	42			182	456
Kaikorai Mouth						1		2						3
Karitane				1				1		23				25
Katiki										2				2
Kuri Beach				1										1
Little Papanui	2	1	3	23	18	19		108	4	87	1		64	330
Long Beach		1	1	19	1	2		169	6	61	1		8	269
Mata Kaea (Shag Point)				one composite unbarbed				37						38
McKay's Beach				1				3						4
Moeraki			1	2	2			13	1	4	1		1	24
Murdering Beach				2		(1*)		6	1	11	1		2	26
Onepoto		2	2	8	8	9		29	1	5				64
Ototara								2						2
Papatowai		1	1	3	4	1								10
Purakanui				5	2	1		20		6		1		35
Sandfly Bay				3				86	2	1			4	96
Shag River	1	10	5	13	17	13	3	20	1	1			11	105
Tai Rua				3	1	1		2	2					9
Tarewai Point								1		6			3	10
Waitati								6		1	1			8
Waimaitaitai								4	1					5
Warrington					1			2		1				4
Wickliffe Bay														
<b>SOUTHLAND SITES:</b>														
Centre Island				4				38	3	23	1		2	77
Green Hills				1									1	2
Haldane		1		1				8						10
Long Point											1			1
Pahia	1	6	5	12	6	4		22		27	2		4	88
Ruggedy Island										2	5			7
Ringa Ringa		2		1	2									5
Sandhill								1						1
Stewart Island								1		1	1			3
Wakapatu								1						1
Tokanui Mouth								5	1	2				8
<b>WESTLAND SITES:</b>														
Jackson's Bay Cave										4		9		13



**TABLE IV.**  
**SITE DISTRIBUTION OF MINNOW-SHAPED LURE HOOK**  
**SHANKS IN MURIHIKU**

**Minnow-shaped lures with triangular cross-section**

Sites:	Complete	Complete except for eyes	Complete except for eyes and tail	Portions
Invercargill	0	0	0	1s
Kai Kai's Beach	0	0	0	2s
Papatowai	1s	0	0	0
Pounaweia	1b	0	0	2s
Purakanui	0	0	0	1s
Pahia	1s	0	0	1s
Cannibal Bay	1s	0	0	0
Shag River				
Waitaki River Mouth	2s	2s	0	1s
Little Papanui	1s*	0	0	1s

**Minnow-shaped lures with oval or flat ellipse cross-section**

Little Papanui	0	0	0	1s
Lower Portobello	0	0	0	1s

**Minnow-shaped lures with flattened rectangular or rectangular with  
slightly rounded top cross-section**

Little Papanui	8b and 1s	0	0	1b
Shag River				
Papatowai	1s and 1b	0	0	0
Pounaweia	1b	0	0	0
Kai Kai's Beach	1b	0	0	2b
Onepoto	1b	0	0	1b

- \* Locality doubtful  
s Manufactured in stone  
b Manufactured in bone

**TABLE V.**  
**SITE DISTRIBUTION OF BARBED ONE-PIECE**  
**HOOKS IN MURIHIKU**

Types/Sites	D4a	D4b	D4c	D4d	D4e	D4f
	C.P.	C.P.	C.P.	C.P.	C.P.	C.P.
Tai Rua	1	2				
Long Beach			1		2	
Murdering Beach						1
Kai Kai's Beach					2	
Pahia					2	
Shag River	1			1	4	
Onepoto		1				
Papanui		2				
Little Papanui		1				
Sandfly Bay		1				1
Karitane	1					

**TABLE VI.**  
**SITE DISTRIBUTION OF TYPE D.5**

Types/Sites	D5a			D5b		
	C	P		C	P	
		S	Pt.		S	Pt.
Shag River				1		
Pahia	2	1				
Tai Rua	1					
Little Papanui		1				
Kai Kai's Beach		1				
Wakapatu	1				1	
Katiki					1	
Pounaweia	1					

\* Exact locality uncertain.

C Complete.

P Portions.

S Shank leg.

Pt Point leg.

#### REFERENCES

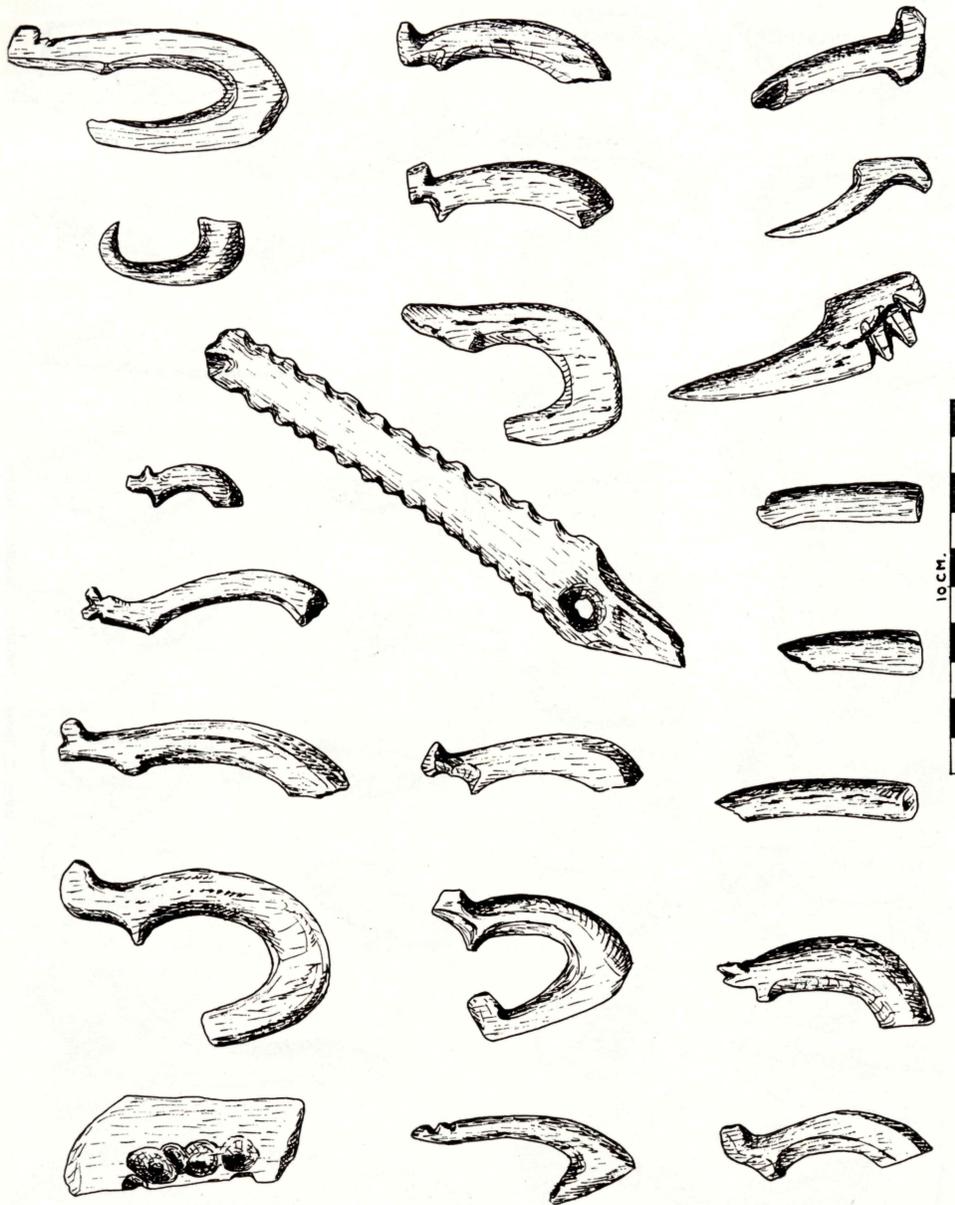
- ANELL, B. 1955 Contribution to the History of Fishing in the Southern Seas. *Studia Ethnographica Upsaliensia* 9. Uppsala.
- BEAZLY, H. G. 1928 Pacific Islands Records, Fish-hooks. London.
- COLENZO, W. 1879 On the Moa. *Trans. N. Zeal. Inst.* 12.
- DAWSON, E. W. 1949 Excavation of a Maori Burial at Long Beach, Otago with notes on Associated Artifacts. *Journ. Polynesian Soc.* 58.
- DAWSON, E. W. & YALDWYN, J. C. 1952 Excavations of Maori Burials at Long Beach, Otago. *Journ. Polynesian Soc.* 61.

- DIEFFENBACH, E. 1843 *Travels in New Zealand*. 2. London.
- DUFF, R. 1956 *The Moa-hunter Period of Maori Culture* (second edition). Wellington.
- DURWARD, E. W. 1933 *The Maori Population of Otago*. *Journ. Polynesian Soc.* 42: 49-82.
- EMORY, K. P., BONK, W. J. & SINOTO, Y. H. 1959 Fish-hooks, Hawaiian Archaeology. *Bernice P. Bishop Mus. Special Publication* 47.
- FAIRFIELD, F. G. 1933 *Maori Fish-hooks from Manukau Heads*. *Journ. Polynesian Soc.* 42.
- FISHER, V. F. 1935 *The Material Culture of Oruarangi Matatoki, Thames, 2. Fish-hooks*. *Rec. Auck. Mus.* 1 (6).
- GATHERCOLE, P. 1961 *Tai Rua. N. Zeal. Arch. Ass. Newsletter* 4.
- 1962 *Murdering Beach, Otago — a suggestion*. *N. Zeal. Arch. Ass. Newsletter* 5.
- GOLSON, J. 1959 *Culture Change in Pre-historic New Zealand*. *Anthropology in the South Seas*. New Plymouth.
- GROUBE, L. M. 1964 Unpublished paper presented to the N.Z. Science Congress.
- GRIFFITHS, G. 1941 *Discovery and Excavation of an old Maori (No. 1) Camp near Normanby, Timaru*. *Journ. Polynesian Soc.* 50.
- HAMILTON, A. 1905 *Notes on Matters Connected with the Sea, etc.* *Dom. Mus. Bull. No. 1*.
- LOCKERBIE, L. 1940 *Excavations at King's Rock, Otago, with a Discussion of the Fish-hook barb as an ancient feature of Polynesian Culture*. *Journ. Polynesian Soc.* 49.
- 1953 *Further Excavations of the moa-hunter camp sites at the mouth of the Tahakopa river*. *Journ. Polynesian Soc.* 62.
- 1959 *From moa-hunter to Classic Maori in Southern New Zealand*. *Anthropology in South Seas*. New Plymouth.
- MCNAB, R. 1909 *Murihiku. A History of the South Island of New Zealand and the Islands Adjacent and Lying to the South, from 1642 to 1853*. Wellington.
- SINOTO, Y. H. 1962 *Chronology of Hawaiian Fish-hooks*. *Journ. Polynesian Soc.* 71.
- SKINNER, H. D. 1919 *Some Maori Fish-hooks from Otago*. *Trans. N. Zeal. Inst.* 51.
- 1921 *Culture Areas in New Zealand*. *Journ. Polynesian Soc.* 30.
- 1923a *The Morioris of the Chatham Islands*. *Mem. Bernice P. Bishop Mus.* 9. (1).
- 1923b *Archaeology of Canterbury, Moa-bone Point Cave*. *Rec. Cant. Mus.* 2.
- 1933 *Maori Amulets in Stone, Bone and Shell*. *Journ. Polynesian Soc.* 42.
- 1940 *The Maori Hei-Tiki*. Otago Museum, Dunedin.
- 1953 *Stratification at Long Beach, Otago*. *Journ. Polynesian Soc.* 64.
- 1942 *A Classification of the Fish-hooks of Murihiku*. *Journ. Polynesian Soc.* 51.
- 1958 *David Teviotdale*. *Journ. Polynesian Soc.* 67.
- 1959 *Murdering Beach: Collecting and Excavating the first phase 1850*. *Journ. Polynesian Soc.* 68.
- 1960 *Excavations at Little Papanui, Otago Peninsula*. *Journ. Polynesian Soc.* 69.
- & BAUCKE, W. 1928 *The Morioris*. *Mem. Bernice P. Bishop Mus.* 9. (5).
- & SIMMONS, D. R. 1966. *The Maori Hei-Tiki*. Otago Museum, Dunedin.
- SUGGS, R. C. 1961 *The Archaeology of Nuku Hiva, Marquesas Islands, French Polynesia*. *Anthrop. papers American Mus. Nat. Hist.* 49. (1).
- TEVIOTDALE, D. 1924 *Excavations near the mouth of the Shag River*. *Journ. Polynesian Soc.* 33.
- 1929 *Notes on Stone and Moa-bone Fish-hook Shanks in Otago University Museum*. *Journ. Polynesian Soc.* 38.
- 1932 *The Material Culture of the moa-hunters in Murihiku*. *Journ. Polynesian Soc.* 41.
- 1935 *Evidence of Cremation by the Otago Maori*. *Journ. Polynesian Soc.* 44.
- 1937 *Progress Report on the Excavation of a moa-hunter's camp at the mouth of the Tahakopa river*. *Journ. Polynesian Soc.* 62.
- 1938a *Further Excavations at the moa-hunters' camp at Papatowai*. *Journ. Polynesian Soc.* 47.
- 1938b *Final report on the excavation of a moa-hunter camp at the mouth of the Tahakopa river*. *Journ. Polynesian Soc.* 47.
- 1939a *Excavation of Maori implements at Tarewai Point, Otago Heads*. *Journ. Polynesian Soc.* 44.
- 1939b *Excavation of a moa-hunter camp near the mouth of the Waitaki river*. *Journ. Polynesian Soc.* 48.
- Unpublished paper: *Notes on line fishing in Otago and Southland*. Otago Museum. Teviotdale's diaries are in the Hocken Library, Dunedin.
- TROTTER, M. M. 1956 *Maori Shank Barbed Fish-hooks*. *Journ. Polynesian Soc.* 65.
- 1965 *The Barbed Fish-hook: its place in the Murihiku Cultural Sequence*. Awaiting publication.

## KEY TO NOTES.

1. Duff 1956:p.13.
2. Golson 1959:p.36.
3. Golson 1959:p.47.
4. Lockerbie 1959:p.87.
5. Skinner 1958:pp.321-323 and plate.
6. Skinner 1921:pp.71-78 and map.
7. Teviotdale 1932:p.99.
8. Lockerbie 1959:pp.82-85.
9. Lockerbie 1959:pp.80-82, cf. also
10. Lockerbie 1959:p.88.
11. Lockerbie 1959:pp.88-89.
12. Lockerbie 1940:pp.398-401, 427-431  
cf. also Lockerbie, 1959:p.89.
13. Personal communication.
14. Lockerbie 1959:p.90.
15. Personal communication.
16. Skinner 1959:pp.219-238.
17. Lockerbie 1959:pp.91-93.
18. McNab 1909:pp.225-230.
19. Lockerbie 1959:p.92.
20. Skinner 1959:pp.225-226.
21. Personal communication.
22. Lockerbie 1959:pp.92-93.
23. Teviotdale Diary 2/1-30.
24. Colenso 1879:p.65, cf. also Dieffen-  
bach 1843:p.44.
25. Teviotdale Diary 1930 and personal  
communication.
26. Teviotdale 1932:p.99.
27. Personal communication.
28. Duff 1956:p.225.
29. Skinner 1960:p.193.
30. Teviotdale 1932:p.100.
31. Teviotdale 1924:pp.4-24.
32. Teviotdale 1932:pp.97-98.
33. Teviotdale 1939b:pp.167-185.
34. Teviotdale 1932:p.97.
35. Teviotdale 1932:p.99.
36. Teviotdale 1939a:pp.108-115.
37. Teviotdale 1935:pp.32-35.
38. Durward 1933:p.69.
39. Skinner 1953:pp.400-402.
40. Dawson 1949:pp.58-60 and Dawson  
and Yaldwyn 1952:pp.283-291.
41. Dawson and Yaldwyn 1952:pp.290-  
291.
42. Durward 1933:p.66.
43. McNab.
44. Personal communication.
45. Trotter 1965.
46. Gathercole 1960:p.14.
47. Gathercole 1960:p.14.
48. Personal communication.
49. Trotter 1965.
50. Trotter 1965.
51. Personal communication.
52. Hamilton 1905:p.34.
53. Duff 1956:p.198.
54. Anell 1955:p.187.
55. Skinner and Baucke 1928:p.360.
56. Skinner 1923:p.32.
57. Skinner 1923: Plate 12.
58. Suggs 1961:p.84.
59. Duff 1956:p.198.
60. Lockerbie 1959:p.104, fig. 40.
61. Personal communication.
62. Teviotdale Diary 23/12-1928.
63. Lockerbie 1940:p.440, figs. 28-31.
64. Little Papanui, Otago Museum No.  
D29.1102.
65. Lockerbie 1940:p.446, fig. 51.
66. Duff 1965:pp.200-211.
67. Duff 1956:p.200.
68. Lockerbie 1959:p.100, fig. 33.
69. Teviotdale 1929:pp. 270-280.
70. Teviotdale 1929:p.280.
71. Skinner 1942:p.266, fig. 44.
72. Skinner 1960:p.198, plate 1A No. 2  
from left is from Lower Portobello,  
No. 4 from left from Little Papanui.
73. Personal communication.
74. Teviotdale 1929:p.279.
75. Teviotdale 1929:p.270 and fig. 1.
76. Lockerbie 1959:p.101, fig. 45.
77. Lockerbie 1959:p.104.
78. Lockerbie 1940:p.442, fig. 45.
79. Suggs 1961:p.84.
80. For the North Island see: F. G. Fair-  
field 1933, pp.145-155.
81. Skinner 1918:p.267, plate.
82. Skinner 1918:p.267.
83. Lockerbie 1940:p.401.
84. For Canterbury see also Skinner  
1923:p.99.
85. Lockerbie 1940:pp.400 and 445, fig.  
49.
86. Beazly 1928:plate 27.
87. Lockerbie 1959:p.101, figs. 34 and 44.
88. Lockerbie 1959:p.101, fig. 43.
89. Teviotdale Diary 16/11-1933.
90. Lockerbie 1940:p.442, figs. 42-43.
91. Lockerbie 1959:p.101, figs. 46-47.
92. Trotter 1965:figs. 11-12.
93. Trotter 1965:fig. 4.
94. Griffiths 1941:p.221, figs. 31-32 and  
35-37.
95. Lockerbie 1940:p.440, figs. 27 and 49.
96. Emory-Bonk-Sinoto 1959:pp.14, 24-26,  
37-38, 40.
97. Marquesas: Suggs, 1961:p.79, fig. 26  
f-i-k-n.  
Hawaii: Sinoto 1960:p.163, fig. 1 type  
HT1 A and B.
98. Marquesas: Suggs, 1961:p.79, fig. 26  
h-j-i.  
Hawaii: Sinoto, 1962:p.163, fig. 1 type  
HT4.
99. Lockerbie 1940:p.439, fig. 25.
100. Lockerbie 1959:p.99, fig. 30.
101. Teviotdale Diary 16/11-1933.
102. Lockerbie 1940:p.439, fig. 20 and  
1959:p.90, fig. 26.

103. Trotter 1965:fig. 3.
104. Skinner 1933:p.315.
105. Trotter 1956:pp.245-251.
106. Lockerbie 1959:p.101, fig. 42.
107. Golson 1959:p.45.
108. Golson 1959:p.44.
109. Fisher 1935:pp.297-298 and plate 72.  
The counting included the hooks in Otago Museum.
110. Emory-Bonk-Sinoto 1959:p.16.
111. Emory-Bonk-Sinoto 1959:p.14.
112. Trotter 1956:pp.275-251.
113. McNab 1909:pp.101-117 & 225-230.
114. Lockerbie 1959:pp.85-87.
115. Lockerbie 1959:p.85.
116. Groube 1964.
117. Gathercole 1962:pp.194-196.
118. McNab 1909:pp.101-117.
119. McNab 1909:pp.225-230.
120. Simmons personal communication.
121. There is no evidence to suggest that the potato was grown in New Zealand before 1800. (Elder J. R. "Letters and Journals of Samuel Marsden 1765-1838 Dunedin 1932).
122. Groube 1964.
123. Information supplied by L. M. Groube.
124. Skinner 1921:pp.71-78 and map.
125. Groube 1964.
126. Skinner 1966:p.10.
127. Groube 1964.

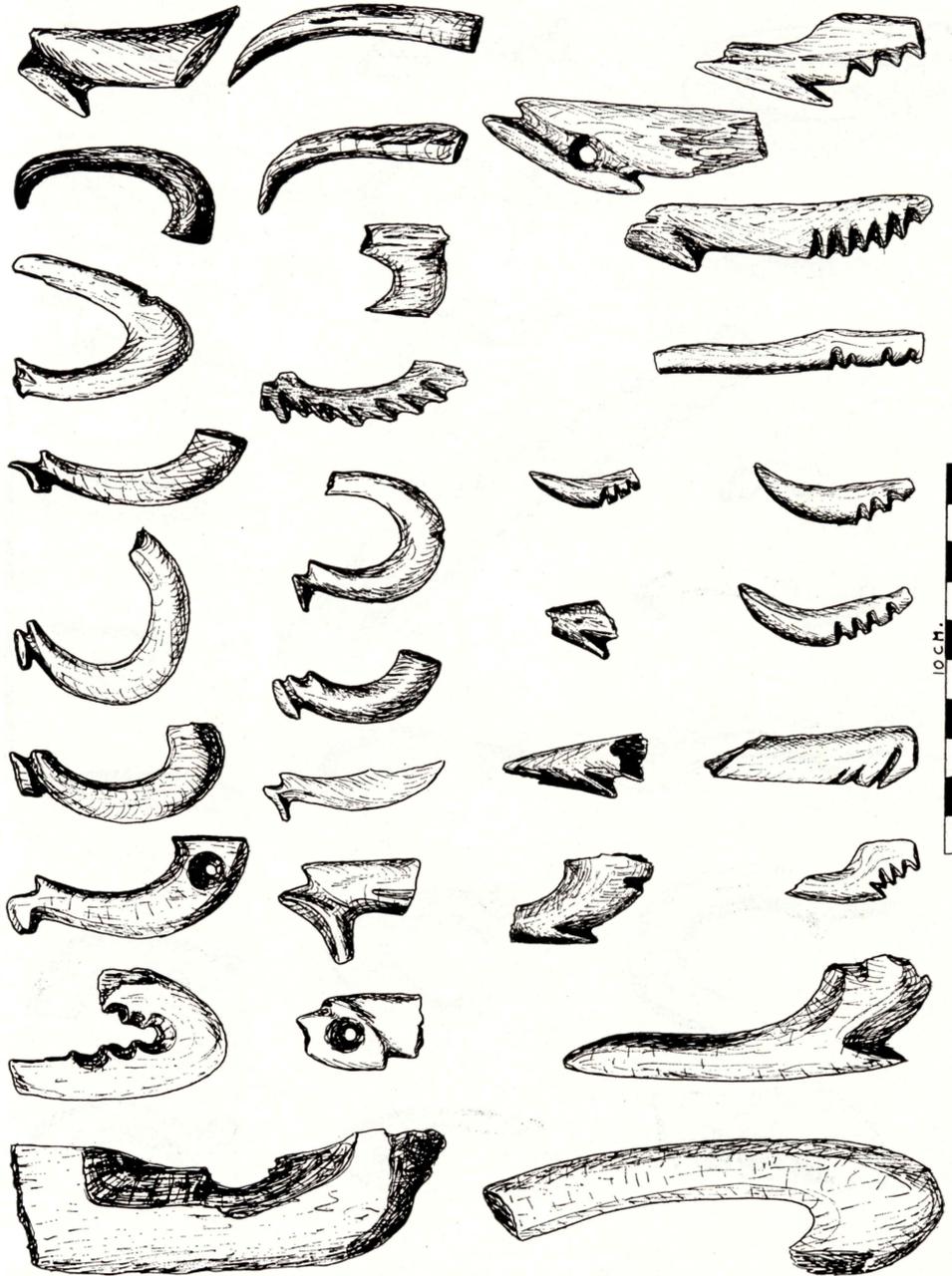


**PLATE I. PAPTOWAI**

1st row: No number (O.M.) - D44,164 - No Number (O.M.) - No Number (O.M.) - D30,109 - D36,113 - D37,535.

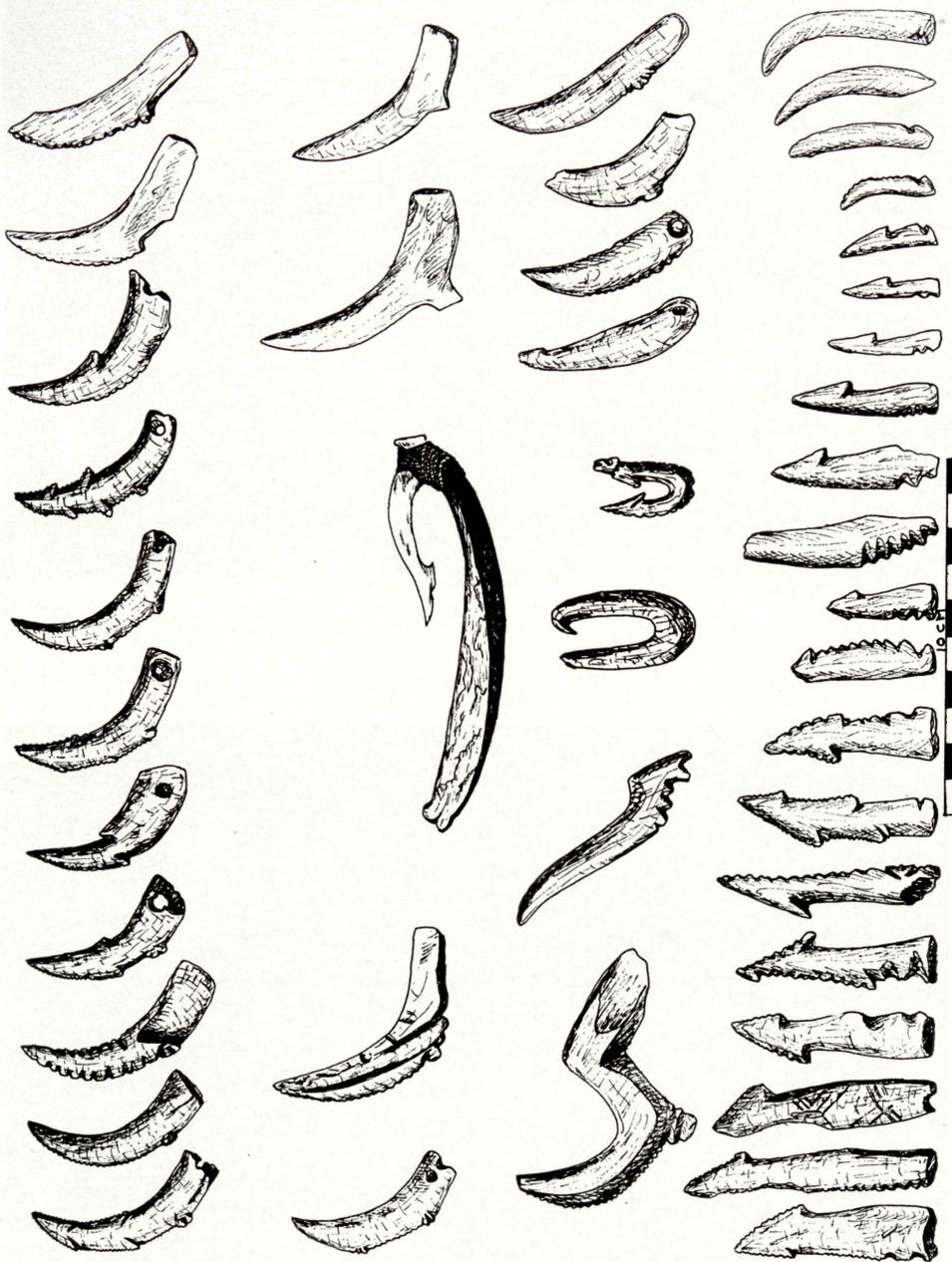
2nd row: D37,578 - D36,114 - D45,1179 - D37,536 - D37,540 - D36,117.

3rd row: D36,316 - D44,165 - D36,317 - D36,319 - D36,120 - D36,185 - D36,180 - D36,125.



**PLATE II. TAI RUA**

The hooks illustrated are in the Otago Museum (M. Trotter Coll.) or in the Anthropology Department, University of Otago.



**PLATE III. MURDERING BEACH**

- 1st row: D29.1802 - D29.1810 - D25.640 - D50.407 - No number (O.M.) - D31.674 - D25.638 - D25.152 - D25.639 - D25.185 - D51.237.
- 2nd row: D25.144 - D50.408 - No number (O.M.) - D24.1441 - D29.1816.
- 3rd row: D29.1812 - D50.405 (this point was found in the moa-hunter deposit at the back of the beach) - D25.626 - D49.212 - No number (O.M.) - D51.247 - D29.1811 - D50.406.
- 4th row: D49.232 - D27.846 - D24.1443 - D25.645 - D25.529 - D25.646 - No number (O.M.) - D24.1442 - No number (O.M.) - D25.643 - D25.653 - D25.644 - D25.647 - D25.649 - D29.4706 - D25.648 - D51.256 - D29.2687 - D51.248 - D34.12.



**PLATE IV. FALSE ISLAND**

1st row: D54.59 - D52.670 - D54.68 - No number (O.M.) - D54.71 - D54.69 - No number (O.M.) - No number (O.M.)

2nd row: No number (O.M.) - No number (O.M.) - No number (O.M.) - No number (O.M.) - D57.497 - D57.488 - No number (O.M.) - No number (O.M.)



**PLATE V. SANDFLY BAY**

1st row: D45.595 - D31.2019 - D45.586 - No number (O.M.) - D45.464 - D45.481 - No number (O.M.) - No number (O.M.) - D45.496

2nd row: D65.530 - D30.20 - D65.535 - No number (O.M.) - No number (O.M.) - D45.482 - No number (O.M.) - No number (O.M.)

3rd row: D45.583 - D45.601 - No number (O.M.) D30.22 - No number (O.M.) - No number (O.M.) - D30.43 - D30.26



**PLATE VI. CANNIBAL BAY**

1st row: D64.595 - D64.573 - D64.576 - No number (O.M.) - D64.570 - No number (O.M.) - No number (O.M.).

2nd row: No number (O.M.).

3rd row: No number (O.M.) - D54.77 - D54.79.

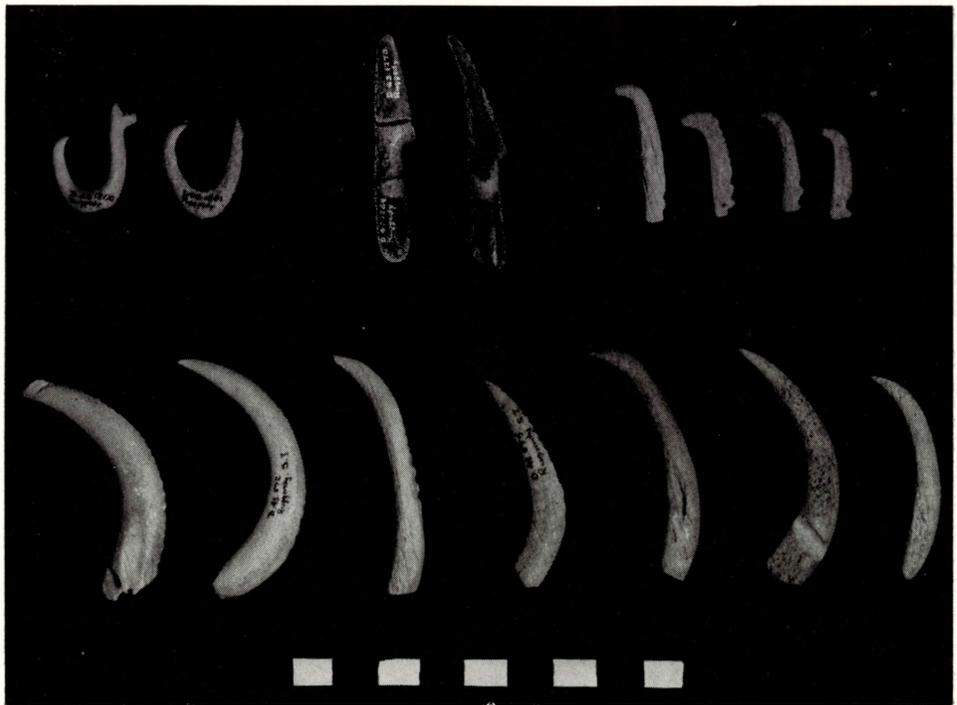


**PLATE VII. CENTRE ISLAND**

1st row: D27.1404 - D27.1403 - D31.611 - D27.1396 - D27.1395 - D27.1393 - D21.614 - D35.515 - D31.517 - D31.516 - D31.582 - D31.518.

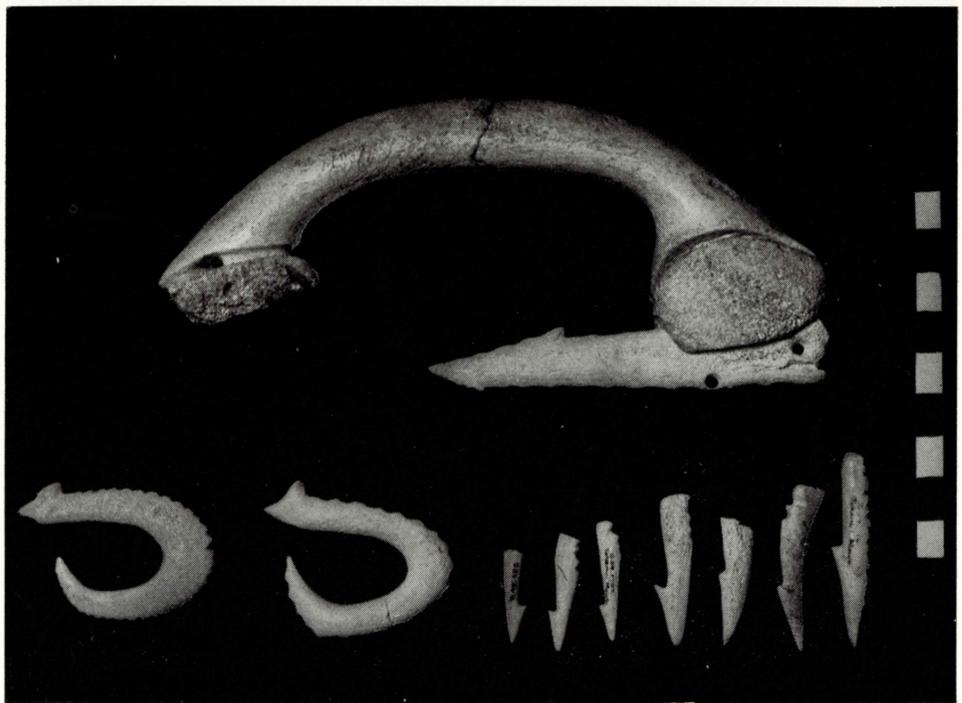
2nd row: D31.620 - D31.538 - D31.538 - D31.538 - D31.560 - D31.547 - D31.559.

3rd row: D27.1401 - D27.1402 - D31.534 - D31.550 - D31.557 - D31.541 - D30.1088 - D27.1388 - D27.1389 - D27.1390 - 27.1391.



**PLATE VIII. RUGGEDY ISLAND**

1st row: D43.1260 - D43.1261 - D43.1269 - D43.1271 - D43.1266 - D43.1265 - D43.1264 -  
D43.1263.  
2nd row: D43.1258 - D45.572 - D43.1267 - D45.575 - D45.575 - D45.573 - D45.571 -  
D45.574.



**PLATE IX. TOKANUI MOUTH**

1st row: No number (S.M.) - No number (S.M.) - D45.483 - D38.11 (S.M.) - D39.1707 -  
D32.443 - No number (S.M.) - D41.34 (S.M.) - D39.1708.  
2nd row: No number (S.M.).

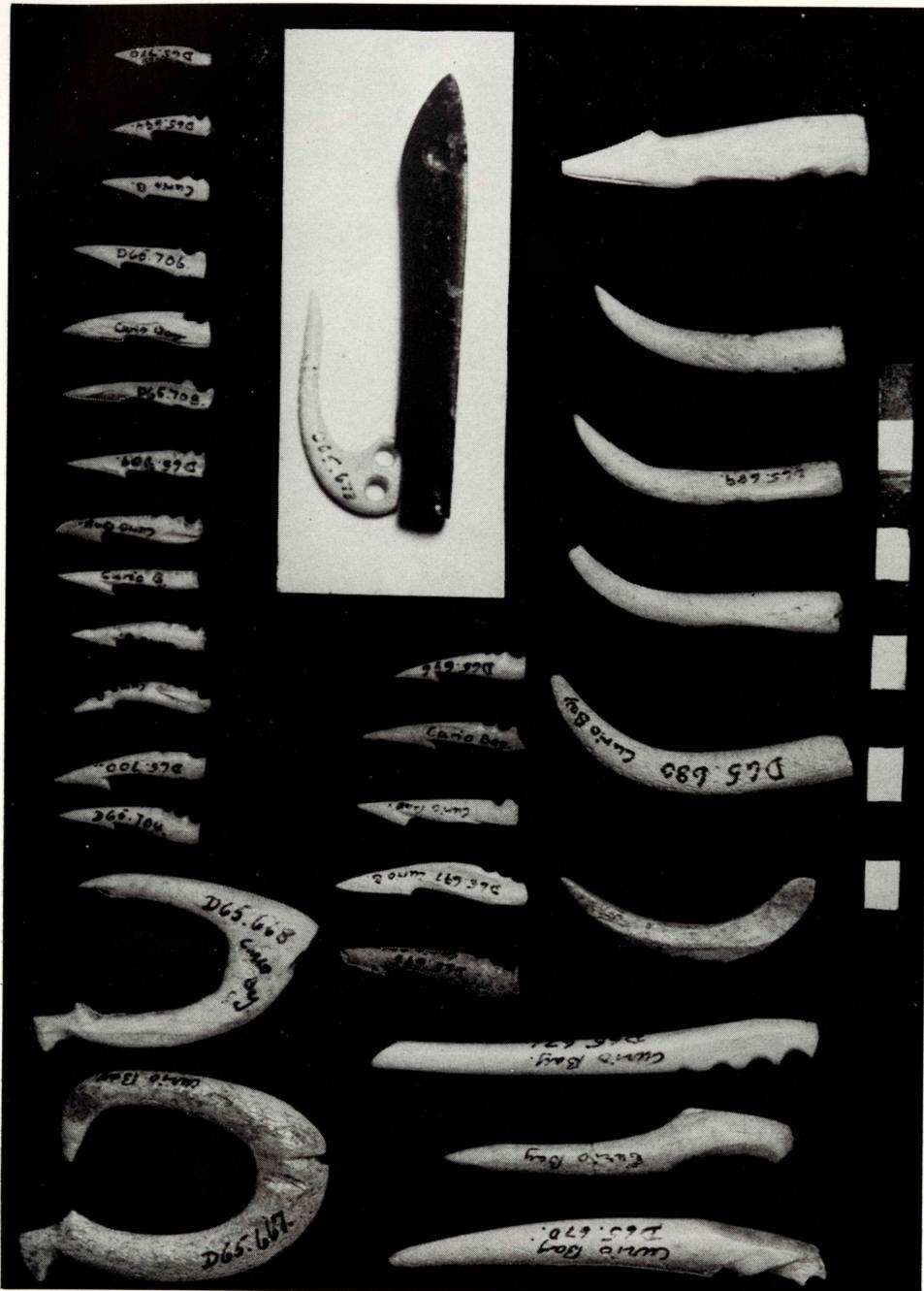


PLATE X. CURIO BAY (CANNIBAL BAY)

1st row: D65.667 - D55.668 - D65.704 - D65.700 - D65.711 - D65.698 - D65.705 - D65.701 -  
 D65.709 - D65.708 - D65.702 - D65.706 - D65.707 - D65.694 - D65.710.



**PLATE XI. KATI KI : OTAKOU : TAREWAI POINT**

1st row: KATI KI D27.797 - D23.93 - K445 (M. Trotter Coll.). OTAKOU D27.430 - D27.376.

2nd row: TAREWAI POINT D41.589 - D35.253 - D34.973 - D29.603 - D36.236 - D34.972 - D32.1054.

**PLATE XII. SHAG RIVER**

- 1st row: D27.977 - D27.975 - D27.976 - D27.934 - D30.978 - D27.1161 - D27.1171 - No number (O.M.) - D27.1163 - D32.1401 - D27.1164 - D27.1167 - No number (O.M.).
- 2nd row: D27.989 - D27.979 - D27.996 - No number (O.M.) - D27.1063 - No number (O.M.) - A41.29 - D27.1061 - D35.371 - A41.22 - D35.1126.
- 3rd row: D30.981 - D27.980 - D27.984 - D63.122 - A41.10 - D27.1152 - A41.24 - D27.1127 - D27.1118 - D27.1112 - D27.1116.
- 4th row: D27.987 - D27.982 - A39.54 - D27.979 - D57.485 - D63.126 - D27.1056 - D27.1057 - D27.1128 - D27.1173 - D30.979 - 27.1170 - D22.130 - D27.1176.



**PLATE XIII. LONG BEACH**

- 1st row: D51.395 - D28.406 - D28.452 - D65.544 - D28.452 - D20.151 - D24.1431 - D23.569 - D28.453 - D29.5297 - D24.1283 - D37.88 - D45.456 - D65.555 - D32.707.
- 2nd row: D51.394 - D28.404 - D24.1280 - D45.452 - D35.1094 - D23.572 - D24.1434 - D38.284 - D32.702 - D35.1095 - D27.773 - D19.201 - D23.573 - D28.442 - D36.1053 - D24.1435 - D32.717.
- 3rd row: D32.682 - D28.409 - D29.1297 - D37.415 - D38.685 - D32.672 - D22.95 - D51.229 - D45.856 - D28.472 - D65.558 - D20.146 - D29.5305 - D45.465 - D45.464 - D28.445 - D28.430 - D32.686 - D28.413 - D28.218 - D24.533 - D28.443.
- 4th row: D22.84 - D28.405 - D27.377 - D22.131 - D29.5300 - D28.448 - D28.436 - D27.835 - D23.564 - D32.658 - D28.423 - D35.1092 - No number (O.M.) - D23.575 - D28.449 - D32.667 - D27.841 - D28.451 - D23.574.



PLATE XIV. Examples showing manufacturing methods for bone fish hooks.

