FISHHOOKS

INTRODUCTION

Hawaiian fishhooks (*makau*), adapted for catching various kinds of fish by different methods of fishing, have a wide range of sizes and shapes. The following text and illustrations are based on the types and variations which I found in the more than 200 perfect hooks and innumerable parts and broken fragments in the Museum collections at the time of the study. New material from recent archaeological excavations will undoubtedly add new data.[7]

Fishhooks may be divided into simple hooks, made from one piece of material, and composite hooks, made of two pieces joined by a lashing. The materials are shell, bone or ivory, turtle shell, and wood. Among the material collected from caves and fish shrines are pieces of bone which illustrate the various stages in making bone hooks.

Human long bones, particularly the thigh bone, were cut in lengths probably with sharp-edged pieces of stone flakes. The lengths were cut into rectangular pieces to correspond with the length and width of the proposed hook. The lower

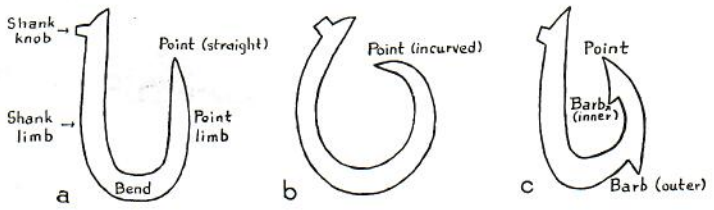

FIGURE 219.—**a,** U-shaped form of fishhook with the two limbs straight and parallel: shank limb has a shank knob on outer side of its upper end to prevent lashing of snood or line from slipping off; point limb ends in a straight point in some small hooks used with a rod and in bonito hooks, also used with a rod; the two limbs join in an even bend. **b,** the two limbs are evenly curved and result in the circular form of hook; point is incurved, which is most common form of point. **c,** illustrates subcircular form with a fairly straight shank limb and a curved point limb.

angles were rounded off to form the outer curve of the bend, and the edges were smoothed off with coral rasps. A hole was then drilled through the piece and enlarged to correspond, more or less, with the inner edge of the bend. In larger hooks a second hole was drilled above the first and enlarged to cut into the upper margin of the lower hole. The projecting points at the sides left by the two holes were cut away, as well as the part above the second hole. The inner, open part was smoothed and shaped with small coral rasps or files, and the hook took shape with a lower curved bend connecting two limbs. The upper ends of the

[7] Kenneth Emory reports that more than 1,000 hooks have now been collected. He believes that the additional material will contain new types and variations and provide data as to the origin and evolution of Hawaiian fishhooks. Also he believes that this larger collection will indicate which hooks are most truly representative of specific areas and periods.—EDITOR.

two limbs were then shaped, one for the cord attachment of the line and the other to form the functioning point. The shape of the hook depended on the treatment of the inner edges of the two limbs. If the two limbs were left fairly straight, a U-shaped form was produced (fig. 219, *a*). If the two limbs were evenly curved, a circular form resulted (fig. 219, *b*). A straight limb and a curved limb produced a subcircular form (fig. 219, *c*). The subcircular form is common in small shell hooks, bone hooks, and turtle-shell hooks.

Hawaiians believed that fishhooks made from the bones of people without hair on their bodies, who were termed *'olohe*, were more attractive to fish than hooks from normal bones. Thus the *'olohe* individuals ran the risk of being prematurely dispatched to supply the luck-bringing material.

Terminology

Different terms have been applied by various authors to the same parts of a hook. Therefore, to avoid confusion, the terminology used in this work is illustrated in figure 219. Hawaiian terms vary for the different islands not only as regards the parts of a hook but as to the different forms of hooks. In fact, both Malo (1951, pp. 79, 210) and Kamakau give so many names which cannot be correlated with actual hooks that it would serve no useful purpose to enumerate them.

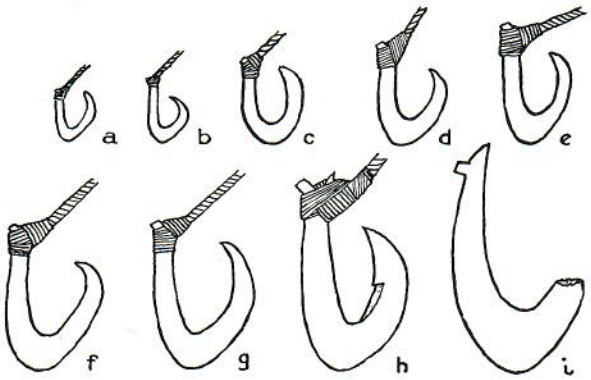

Figure 220.—**a-i,** simple shell fishhooks.

SIMPLE HOOKS

Shell

Shell hooks were usually made of pearl shell (*uhi*), in small and medium sizes. The small shell hooks were termed *makau paweo* and were used for catching *'opelu*. Perfect specimens of a larger size are scarce, as the points break off easily. An assortment of sizes is shown in figure 220.

The smallest of these hooks (fig. 220, *a-e*) range in lengths from 11 to 26 mm. and in greatest width from 8 to 15 mm. The thickness of the shell is 2 to 3 mm. All are more or less subcircular in form, with the exception of figure 220, *c*, which is U-shaped; and all have incurved points. Two hooks (fig. 220, *f*, *g*) are 31 and 32 mm. long, have 19 and 21 mm. maximum widths, and a shell thickness of 6 and 4 mm. respectively. Both have incurved points. The hook shown in figure 220, *h* is 41 mm. long and 22 mm. wide. The point has an inner barb, which is not usual with Hawaiian shell hooks. A broken hook (fig. 220, *i*) is 47 mm. long. All the hooks have a shank knob, and the way in which the ends project beyond the binding shows how they prevented it from slipping.

Bone

Small hooks made of human and dog bone resemble the small shell hooks in form. In a private collection obtained from a cave in Hawaii the majority have the incurved point. However, some with a straight point were probably used with line and rod, a form of fishing termed *paeaea*. The preferred bait was shrimp, but any small fry was useful. According to Malo (1951, pp. 208, 212) angling with rod, line, and hook was termed *koi* (Emerson, *mokoi*).

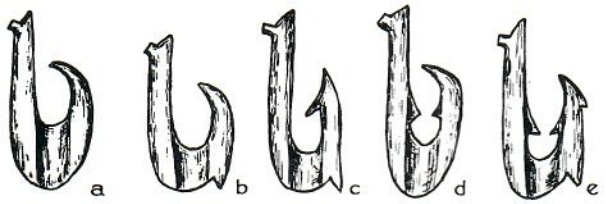

Figure 221.—**a-c,** simple human-bone hooks: *a,* incurved point with very deep bend; *b,* incurved point and low external barb; *c,* inner barbed point and low external barb, **d, e,** retaining the two side points left between holes drilled in manufacture of hooks: *d,* with incurved point; *e,* with external barbed point and low external barb.

A larger hook made from human bone (*makau iwi kanaka*) was shaped from sections of long bone, as described in the introduction to this section. Various forms of this hook, ranging from 38 to 45 mm. in length and 17 to 20 mm. in width, with a general thickness of 4 mm., are illustrated in figure 221. The simplest form has an incurved point and a very deep bend (B.1503); another has an incurved point and a low external barb (L.2478); and a third (9452) has an inner barbed point and a low external barb (fig. 221, *a-c*). Two hooks are peculiar in that they retain the two side points left between the two holes drilled in the manufacture of the hooks. One (fig. 221, *d*) has an incurved point; the other (fig. 221, *e*), an external barbed point and a low external barb. Though these two hooks look peculiar in shape, they were an established form, as proved by their discovery in caves with old material. All show the inner concave surface of the bone, and the somewhat ridged appearance on each side is apparent.

A still larger type of hook, more circular in form, was made of whale ivory (*palaoa*) and, less frequently, of human bone. The ivory hooks were termed *makau palaoa,* which is merely descriptive of the material, as is *makau iwi kanaka* for the human bone hooks. A series of these larger hooks, shown in figure 222, range in length from 38 to 59 mm., in width from 27 to 34 mm., and in thickness from 4 mm. in the smaller hooks to 9 mm. in the largest hook. All have the incurved point, but in two (fig. 222, *d, e*) the barbs are high enough to augment the incurved point in keeping the fish on the hook.

The term barb has been used by some ethnologists as a synonym for point, despite the fact that straight points and incurved points are usually without a barb. However, the barb is defined in Webster's Dictionary as a projection ex-

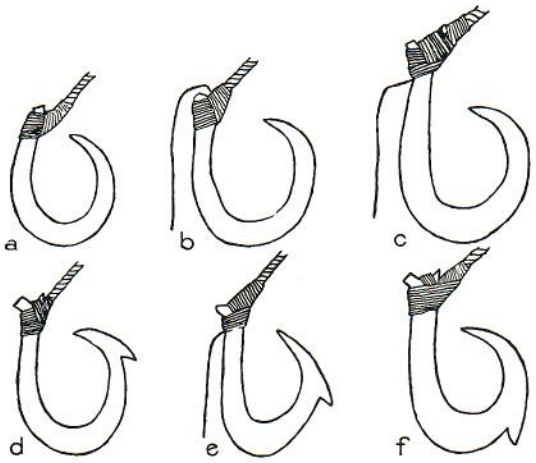

FIGURE 222.—Bone and whale-ivory (simple) hooks: **a,** circular in form; **b,** almost U-shaped; **c,** subcircular; **d-f,** showing different levels of outer barb: *d,* of human bone, high; *e,* medium; *f,* low.

tending backward from the point of a fishhook or an arrow to prevent easy extraction. To prevent easy extraction, in the first place, the barbed point of a fishhook should completely pierce the lip or throat. This is possible with inner barbs; but with outer barbs, it is only possible with the high and medium-high barbs. These then comply with the function of a barb in preventing easy extraction. The low outer barb is below the inner level of the bend; and as further penetration would be prevented by the bend, or bottom, of the hook, so to speak, it could not penetrate the lip. A recognition of this is implied by the fact that all hooks with a low outer barb are provided with an inturned point. The low outer barb probably served as a cleat for tying on the bait with a bait string (*mali*), a feature found in New Zealand hooks.

Very large hooks were made of whale bone. The larger of the two illustrated here (fig. 223, *a*) is 147 mm. long and 69 mm. wide, and the bone is 8 mm. thick.

The point has a well-formed inner barb. The other (fig. 223, *d*) is 129 mm. long and 59 mm. wide. It has a low outer barb, in addition to a functioning inner barbed point. The treatment of the upper end of the shank limbs in both hooks follows the regular pattern of a rectangular shank knob and pointed shank limb seen in all of the smaller hooks. The combination of an inner and an outer barb is also found in the smaller, ivory hook. One of the two illustrated is 48 mm. long, 26 mm. wide, and 7 mm. thick (fig. 223, *b*). The other is 67 mm. long, 39 mm. wide, and 8 mm. thick (fig. 223, *c*).

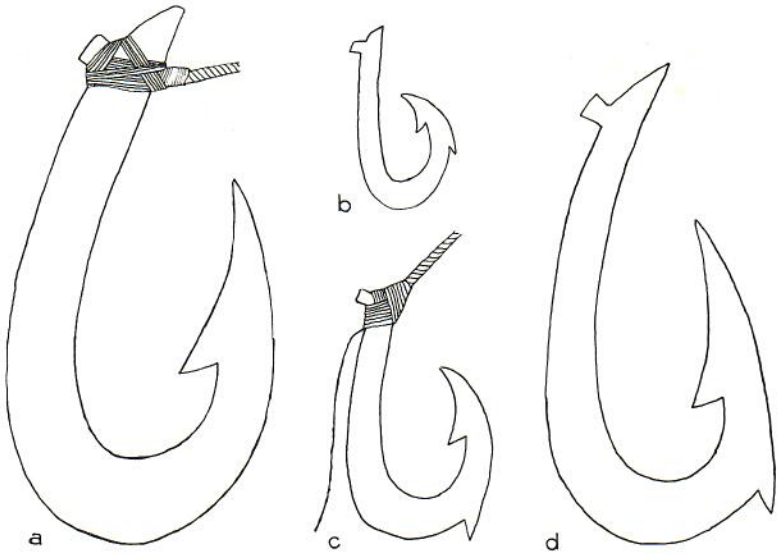

FIGURE 223.—**a-d,** single- and double-barbed bone hooks: *a, d,* very large.

Two even longer simple bone hooks, for catching sharks, are described with the composite shark hooks (p. 342) because of the shark-hook treatment of the snood attachment.

TURTLE-SHELL

Turtle-shell hooks (*makau 'ea*) are the most numerous in the Museum collection, and the question arises as to whether some of them were not made for sale and barter in the early days of white contact. They occur in practically all forms used for the bone and ivory hooks except the human-bone type (fig. 221).

Several small turtle-shell hooks are illustrated. Their lengths range from 21 to 28 mm. and their widths, from 14 to 17 mm. The thickness, 3 mm., is common to all. Three hooks are subcircular in form (fig. 224, *a-c*); another is practically U-shaped (fig. 224, *d*); and one is subcircular with a low outer barb (fig. 224, *e*). All have incurved points.

Wood

Wood could not compete with shell, bone, and turtle shell as material for small one-piece hooks; but extremely large hooks, such as composite shark hooks, were made of wood. On the other hand, only one specimen of a wooden one-piece hook (B.6716) is found in the Museum collection. It is distinguished from the shark hooks by the fact that it is made of one piece and has an incurved point and an outer shank knob (fig. 226). Its length is 7.5 inches, and its greatest outer width is between the shank and point limbs. Its cross thicknesses at the bend are 28 and 23 mm. This hook thus conforms in shape and size to those of some shark hooks. However, the doubts raised by the point and the shank knob are justified by J. S. Emerson's label of *pakau ulua*, a hook for *ulua*.

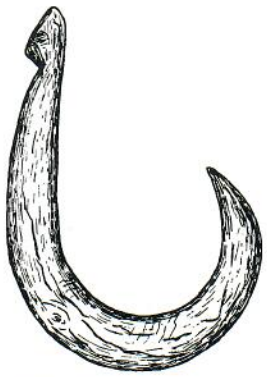

Figure 226.—One-piece wooden hook.

COMPOSITE HOOKS

Composite hooks, which combined two pieces of material, fall into three general types. The first type consists of two pieces of bone combined in small, medium, and large hooks. The second type consists of the well-known bonito hook, with a pearl-shell shank and a bone point. The third type includes the large shark hooks made of wood and a bone point.

Bone

In the two-piece bone hooks, it is better to allude to the shank limb simply as the shank. Points may be simply termed points, as they are so short there is no real point limb. The three sizes made—small, medium, and large—are all similarly constructed. The shanks are fairly straight, with but little curve. The upper end has an outer shank knob similar to that in the simple hooks; and above the shank knob, the shank slopes upward and inward to meet the inner edge at a point, a constant feature in the simple hooks. The lower end, which

increases somewhat in width as it curves inward to end in a straight vertical edge, is expanded laterally and has a notch or an outward projection to prevent slippage of the binding at the point. The points have an inner concave curve from below upward, but the actual points (*maka*), with few exceptions, do not curve inward like the incurved points of the simple hooks. When lashed to the shanks, the points are of the straight variety. The lower ends have the deep vertical edge and the notched expansion found in the shanks.

The small hooks were evidently made in fairly large numbers, to judge by the pieces collected from fish shrines and other sources. In the Museum collection, these pieces are mostly of points, the small shanks being comparatively few. As the Museum has no complete specimen, a number of small shanks and points are figured. The three shanks illustrated (fig. 227, *a-c*) range in length from 23 to 36 mm. All have the shank knob and the lower expanded end for lashing. The first two are notched and the third is unnotched. The points (fig. 227, *d-k*) range in length from 12 to 26 mm., and all have the lower notched

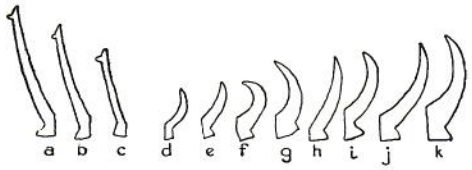

FIGURE 227.—Small composite hooks: **a-c,** shanks; **d-k,** points.

expansion. In complete hooks the vertical lower edge of the points were fitted against the similar edge on the shanks and lashed with transverse turns of a fine thread above the notches. Of the points illustrated, figure 227, *f* is the only one with an incurved point.

The medium-sized hooks are represented by the four shanks and four points figured, as there is no complete hook in the collection. The four shanks illustrated (fig. 228, *a-d*) range from 41 to 53 mm. in length; the width above the lower expansion, from 6 to 8 mm.; and the thickness, from 3 to 4 mm. All have an inner concave curve and the shank knob at the upper end. The lower vertical edge is fairly deep (13 and 14 mm.) with the exception of that shown in figure 228, *a*, which is only 9 mm. Two hooks have a notch at the lower end for the binding (fig. 228, *a, d*), and two have projecting knobs (fig. 228, *b, c*). The four points range in length from 39 to 60 mm. The point shown in figure 228, *e* is somewhat incurved, but the others have less curve on the inner side. The lower vertical edge is much deeper in figure 228, *e-g* than those of the shanks, none of which they would fit. One point (fig. 228, *h*) has a low vertical edge of 7 mm. The points shown in figure 228, *e, f, h* have the lower notched base for lashing, but that shown in figure 228, *g* is abnormal, with three notches, one quite high.

In some of the shanks and points, the vertical edge for joining is perfectly flat; others have a tongue-and-groove arrangement. A marked median ridge is present in the shank shown in figure 228, *c*; but usually the vertical surface is convex in one and concave in the other, so that they fit neatly together before lashing. The tongue may be on either the shank or the point. Skinner (1942) noticed this neat tongue-and-groove technique in some Maori composite hooks.

The large composite hooks, while sharing the general principles of construction with smaller hooks, form a unique type in that all the points have an inner barb. Three points and a complete hook are shown in figure 229, *a-d*.

The three barbed points range in length from 62 to 75 mm., and they have the common inner barb and an outer projecting knob at the lower end as a stopper for the lashing. (The outer knob was not noted on the points of the smaller hooks.) The lower vertical edge is deep, ranging from 24 to 26 mm. in the three points. This downward projection of both shank and point allows ample room for lashing the two parts together.

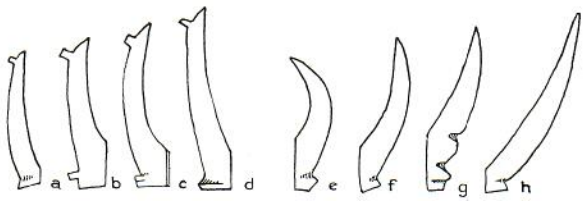

FIGURE 228.—Medium composite hooks: **a-d,** shanks; **e-h,** points.

The complete hook (fig. 229, *d*) clearly demonstrates how the two parts were lashed together by transverse turns with a thread above the lower stopper knobs on each side. A constant feature of the complete hooks was the use of small wooden wedges, driven in between the lashing and the hook to tighten up the lashing, which were used on both sides of the hook. The joining of the two parts completes the bend of the hook. In the hook illustrated the shank is 104 mm. long, and the point 73 mm. long. The greatest width of the hook is 38 mm., and the width at the bottom edge is 20 mm.

The large composite bone hook with an inner barb is by no means rare. Bishop Museum has three; the Oldman collection, which was sold to New Zealand, contains six perfect specimens; and there are others in various museums. However, the presence of a functioning inner barb as a constant feature of one type of hook has raised the question of whether the inner barb was original or derived from copying the barb of introduced trade hooks made of metal, particularly as the points of the smaller composite hooks lack the barb. Fortunately, the answer is supplied by a barbed hook of this type in the British Museum which was collected in Hawaii during the Vancouver Expedition in 1792. Thus the

presence of a recognized native technique could also account for the occasional use of the inner barbed point in other forms of hook.

Composite Bonito Hook

The Hawaiian bonito hook was termed *pa uhi*, after the pearl shell (*uhi*) of which the shank was made or *pa hi aku* after its use in trolling (*hi*) for bonito (*aku*). The term *pa* is used for pearl-shell bonito hooks throughout Polynesia. The New Zealand trolling hook with a wooden shank inlaid with *Haliotis* shell was named *pa* in memory of the pearl-shell trolling hooks of a former Polynesian home. The Hawaiian *pa* is thus a local form of a general Polynesian type

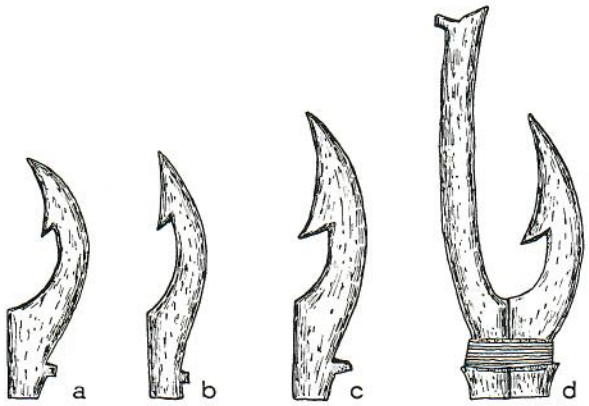

Figure 229.—Large composite hooks: **a-c,** points; **d,** complete hook.

which is uniform as regards the pearl-shell shank but varies in the point material and its attachment to the shank. The Hawaiian hook consists of a pearl-shell shank and a point, usually of bone but rarely of pearl shell or turtle shell. The complete hook includes the lashings, the hackle, and the snood.

SHANKS

Bonito hook shanks, also termed *pa* or *uhi*, were formed of segments cut through the thick hinge (*pu'u*) and shell of the pearl oyster (fig. 230 *a*, *b*). Some local shell was small, so the lengths of the shanks varied considerably. In the 83 shanks examined, the lengths range from 50 to 120 mm. The average length of the shanks of larger hooks is about 80 mm.; of smaller ones, between 50 and 60 mm. The segment of shell is shaped to a point at the thick hinge end, and the sides slope upward to meet in a median edge, below which is a transverse hole, drilled from side to side. From the pointed hinge end, the shank widens out to a greatest width of 11 to 19 mm., with the average 14 mm. The edges of the shank

then narrow gradually to reach a minimum width at the end of 4 to 8 mm., with the greatest number of shanks 6 mm. wide. The narrow end of the shank is characteristic of the Hawaiian hooks.

The projection of the hinge part is on the inner surface of the shell; and as this surface is uppermost during trolling, it is convenient to term it the upper surface or front of the shank. The under surface, which is the outer surface of the shell, may be termed the back. The back of the shank in the natural state of the shell is covered with a thick, dull layer which is ground off to expose the iridescent color of the shell beneath. Shell colors are variations of yellow, red, black, and white; and these various hues were selected for trolling under differing light conditions. Kalokuokamaile of Kona, Hawaii, referred to the various shank colors under the general term of *muhe'e* and paid particular attention to streaks (*no'a*) in the color. He gave me the names of 14 different *muhe'e* which, with the exception of two general colors, were named after fancied resemblances to some color feature of fish (five), plants (four), and a bird, a crab, and a coral. Some of them are given in the following list.

muhe'e kikakapu: spotted like the kikakapu fish
muhe'e pua hau: reddish like the fading flower of the hau
muhe'e 'ohiki: whitish streaks (no'a) like the legs of the 'ohiki sand crab
muhe'e koa'e: white with three streaks like the tail of the brown petrel (koa'e)
muhe'e 'ako'ako'a: worm eaten below red like the ko'a branching coral [?]
muhe'e laenihi: white (ke'oke'o) shank with two curves like the head of a *laenihi* fish (according to Kaloku, the best form of shank)

The thick end of the shank was termed *ihu* (nose) by Kaloku, the hole, *puka ihu* (nose hole), and the other end, the *muli*. This follows the canoe terminology in which the bow is the *ihu* and the stern, the *muli*. For descriptive purposes, I will term the thick end the head; and the hole, the head hole in preference to the "eye" recommended by some ethnologists. For consistency, the other end will be termed the tail, particularly as it carries the hackle which is usually meant for the tail of the small fish which the lure represents.

POINTS

The bone point (*lala*) curves upward and forward from a fairly long base (*kapuahi*) above which one hole (*humu*) is drilled. The length and curve of the points vary a good deal. The normal curve is shown in figure 230, *a*. A few points are incurved (fig. 230, *c*), and a fair number are obtuse-angled (fig. 230, *d*). However, when shown assorted specimens of the Museum hooks, Maunupau, an experienced fisherman of Kona, Hawaii, declared that the incurved point and the obtuse-angled point were both *hewa* (wrong). When the point was lashed to the shank, the inner end of the snood stretched tautly between the point hole and the head hole a little above the front surface of the shank. The gape (*hamama*) of the point was thus the vertical distance between the sharp end of the

point and the taut inner snood and, according to Maunupau, this should be the height of the thumb nail. Thus before the point was finally fixed, the gape had to be measured so that it could be altered if necessary. The point was placed in position on the shank and a fiber or thread loop stretched taut between the two holes. Holding the point in position with one hand, the workman measured the gape with the vertical thumb nail of the other hand. If the point was too high, the front part of the point base was ground down to lower the point; if too low, the back part of the base was ground down to elevate the point. Differences in the height of individual thumb nails led some fishermen to make their standard a little higher than the nail, whereas others made it a little lower. The base having been satisfactorily adjusted, the next step was to lash the point to the shank.

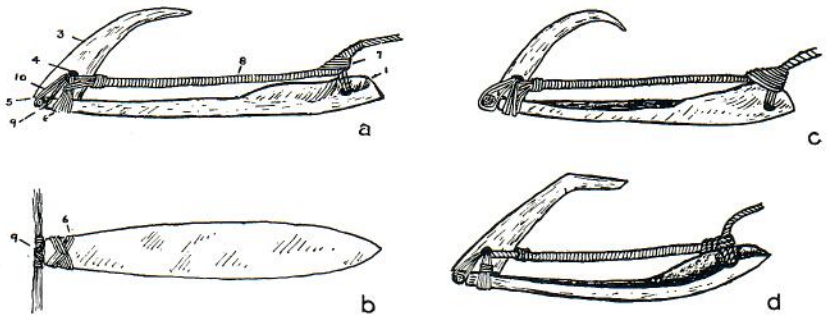

FIGURE 230.—Bonito hooks: **a,** with normally curved point and showing technique of point and snood lashings (1-10); **b,** shank, showing point lashing (6) and hackle lashing (9); **c,** with incurved point; **d,** obtuse-angled point.

POINT LASHING

The point was placed in position with the back part of the base projecting slightly beyond the end of the shank. The projecting part was termed the *'auwae* (chin). A thread 3 or 4 feet long was tied at one end to the head hole with an overhand knot. With the point to the right, the thread was stretched back and passed through the point hole from the near side. It was passed forward to go through the head hole from the far side. Two or more long loops were made between the two holes, and the thread was then carried in a number of turns around the shank and through the point hole. The turns were made obliquely on the back of the shank, with alternate turns crossing the others so that a neat chevron pattern was formed on the back of the shank (fig. 230, *b*, 6). Maunupau stated that there was no set number of turns but that they were continued until the fisherman was satisfied that the point was firm. In the lashings examined there were usually four turns each way. The remaining length of the binding thread was left free for future use.

SNOOD LASHING

One end of the line forming the true snood was passed through the head hole and an open overhand knot was made at a point where the short end would be long enough to reach the point and return. The short end was then stretched to the point, passed through the point hole under the previous long loops of the binding thread, and passed back through the open overhand knot at the head hole for an inch or so. The knot was adjusted so that the two lengths to the point hole were drawn taut and the knot tightened. The short end and the main line were pulled upward from the knot to form what was termed the *pou*. The short end was frayed out.

The long end of the binding thread, which had been left free, was wound around the snood and passed back through the point hole and a number of diagonal turns made between the point hole and under the projecting chin (*'auwae*) of the point base. The thread was brought forward from the last turn through the point hole to the snood, where it was fixed with a half-hitch. The binding thread then made close seizing turns (*'uo*) around the snood line and its previous long loops as far as the shank head (fig. 230, *a*, 8), where some figure-of-eight turns were made around the *pou* (fig. 230, *a*, 7) to make it stand up. A figure-of-eight turn was made through the head hole and around the *pou* and the thread fixed with some turns and half-hitches around the snood beyond the head hole. Any extra length of frayed fibers of the short end were cut off, completing the snood lashing to the head hole. The *pou*, which consisted of the long and short parts of the snood line combined, is a characteristic feature of the Hawaiian snood lashing. It was made to prevent the hook from wobbling when trolled.

HACKLE LASHING

The Hawaiian hackle (*hulu*) was made of white or black pig bristles. It was peculiar in that it was lashed crosswise to the long axis of the shank, instead of trailing directly behind, as in the bonito hooks of other Polynesian islands. The small bunch of stiff pig bristles, about 2 inches long, was held with its midpoint under the projecting chin of the point base and against the end of the shank (fig. 230, *a*, *b*, 9). A thread was tied with an overhand knot around the snood in front of the point, passed through the point hole from the near side, carried obliquely down from the far side to cross over the hackle, then under it to return to the point hole on the near side. The next turn from the far side passed under, then over, the hackle to cross the first turn diagonally over the middle of the hackle. Two more similar turns were made, followed by two single turns around the hackle to the outer side of the diagonal turns on the far side. The thread was crossed directly to make two similar turns around the hackle on the near side, and the thread was either passed directly to the snood or indirectly through the point hole, if there was room for it. Some half-hitches were made around the

snood in front of the point to complete the lashing (fig. 230, *a*, 10). In some hooks a couple of turns were made around the oblique turns between the hackle and the base chin before the thread was brought up to the snood. Maunupau said that the transverse position of the hackle made the lure ride on its back with the point uppermost when trolled, and he held that more than two turns around the hackle on each side of the middle turns would bend the sides of the hackle backward in V-form, which was wrong.

The snood, which in other forms of hook was short for tying to the fishing line, was a continuous line about 27 feet long and was folded in lengths of about 5 inches which were kept together by a couple of half-hitches. In use, the line was unfolded and tied to the end of the fishing rod. Thus each hook had its own line, and the various colored shanks could be speedily changed to suit light conditions.

The factors which distinguish Hawaiian hooks from other Polynesian hooks are the bone point with one hole and a slight projection of the base over the tail end of the shank, the transverse straight hackle of pig bristles tied under the projecting chin of the point base, the close seizing of the inner end of the snood, and the short upward direction of the snood above the shank head to form the *pou*.

HYBRID BONITO HOOKS

When some Marshall Islanders were brought to the Hawaiian Islands years ago to work on sugar-cane plantations, they naturally made their own type of bonito hook. These differed materially from the Hawaiian hooks in that there was no extension of the snood from the head hole to the point hole to prevent the point from being pulled over the tail end of the shank. The Marshallese method of preventing this was to cut notches and leave protuberances on the side edges of the shank so that the point lashing could not slip. Other differences were the use of large shell points instead of bone and fiber for the hackle, which trailed behind in line with the long axis of the shaft.

A number of hooks in the Museum collection show that, while the Marshallese retained their more massive pearl-shell shanks with knobs and notches and the large shell points, they adopted the Hawaiian technique of extending the inner end of the snood to the point hole and also the use of pig bristles for the hackle.

BONITO FISHING

I went bonito fishing with Maunupau off the Kona coast in a motor-driven sampan, which has replaced the more arduous paddled canoe. Maunupau knew the likely places for bonito, but his selection was determined by a flock of seabirds darting down on a shoal of small fish which, in turn, was followed by a school of bonito. We joined the seabirds, and the sampan ran with the fish. When Maunupau and a Japanese fisherman stood on either side of the stern

and cast their hooks into the wake behind, the fish bit immediately. Maunupau lifted his catch out of the water with the bamboo rod and swung it toward himself, breast high. He dexterously caught the fish under his left arm, extracted the hook quickly with his right hand, and swung the hook back into the sea. It was astonishing how quickly the bonito took the lure. The size of catch depended on how rapidly the hook was dropped back, hence the barb, which prevents easy extraction, has no place on the points of bonito hooks. The fish came in rapidly for as long as we could keep up with the school. When suddenly the school disappeared, the spasm of excitement was over. We cruised around and picked up other schools until prospects faded, then returned to shore with a good catch. The fishermen were satisfied with what they had caught, and I was satisfied with what I had seen.

Shark Hooks

Hawaiian shark hooks (*makau mano*) are the largest of the local fishhooks. Those examined in the Museum collection were five composite hooks of wood with bone points and two simple hooks of bone with inner barbs on the points. The five wooden hooks are of a dark wood with a reddish polish. According to Kamakau, shark hooks were made of hard wood such as *uhiuhi, walahe'e, koai'e,* and *'aweoweo.* The wood is well shaped with two limbs connected by a U-shaped bend. The hooks range in length from 7 to 11 inches, in greatest width from 3 to 5.5 inches. The smallest hook of the series, which is the best made, is shown in figure 234, *a.*

BONE POINTS

The bone points of shark hooks are shaped to an upper true point, triangular in section, and a lower tang which fits into a deep groove cut into the outer side of the upper end of the point limb. The point of a Museum specimen (6925) which is 10.5 inches long is illustrated. A side view shows that the left concave edge of the point faces inward toward the opposite shank limb and a marked shoulder divides the point from the tang (fig. 231, *a,* 1, 2). The length of the point is 42 mm. and the length of the tang 45 mm., making a total length of 87 mm. The width of the point at the tang junction is 17 mm. The inner view shows the median edge of the point and of the tang and the shoulder between them. The width of the point at the junction is 17 mm. and of the tang, 12 mm. The outer view is smoothed throughout with the shoulder showing on the side edges. (See figure 231, *b, c.*) The upper end of the point limb corresponds to the point surface above it, and the wood below the upper rim has been trimmed down slightly to form a bed for the point lashing (fig. 231, *d-f,* 3). In the detached point, the shoulder appears to form a barb; but when fitted into its groove, the shoulder fits over the wood and there is no barb. This is shown in the lashed point (fig. 231, *g*), which has a raised transverse flange

on the outer side of the tang below the lashing which prevents the tang from slipping up under the lashing. With this exception, all the bone points follow the pattern shown in figure 231, *a-c*.

SNOOD LASHING

The snood lashing was complicated and was peculiar to shark hooks. The outer shank knob so characteristic of all other hooks, except the bonito hook, was not used. Though one of the Museum hooks (B.6882) has no snood, the bare upper end of the shank limb is notched with a number of transverse grooves,

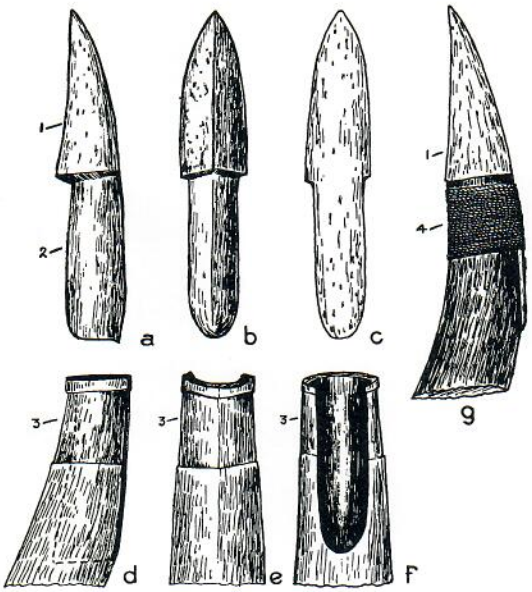

FIGURE 231.—Shark hook point, point limb, and lashing: **a-c**, side, inner, and outer views of point (1 point, 2 tang); **d-f**, three views of point limb, showing bed (3) for lashing; **g**, side view of lashed point, showing point (1) with tang fitted into groove and lashed into position with transverse rounds of fine cord (4).

making obvious the general principle for fixing the snood fibers to the shank. Details of the lashing in the complete hooks of the collection are covered by an outer sheath of close weaving, so I was forced to unravel the sheath of one of the hooks (6925) in order to solve the problem of a hitherto undescribed technique. The quite unexpected results, which are shown in figure 232, are described below.

With the sheath and two layers of *olona* strips carefully removed, the bare shank end (*a*) is exposed, showing three rather wide and deep grooves (1-3) cut transversely across it. The first stage of lashing (*b*) is started by laying long strips of *olona* bast over the grooves with the middle of the strips resting on the lowest groove (3). As each strip is applied, a

narrow strip of *olona* used as a binding thread fastens it down tightly into the groove below. The next strip of *olona* is laid beside the first and the binding thread passes over it to tie it down into the groove. Successive strips are added and bound down in turn until the entire grooved shank is covered. Binding threads are then used over the parts resting over the other two grooves (2, 1), and finally the strips are bound firmly together around the top and above the shank limb, as illustrated.

In the second-stage commencement (*c*), the lower halves of the *olona* strips are doubled up over the lowest binding (3). Three strips are raised on the left while the others on the right are still down. When all are raised the first layer is completely covered. In *d* the second layer is also bound tightly and the hollows, apparent after the binding of the first layer (*b*), are now filled with more numerous turns of the bindings. The upper ends of the strips are also bound tightly with those of the first layer, and the ends of the two layers provide the fiber for the plies of the snood line.

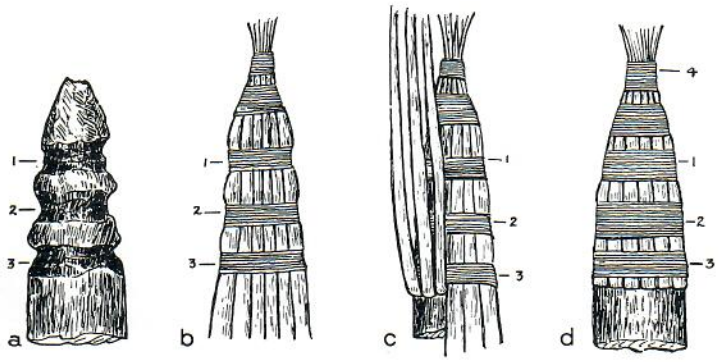

FIGURE 232.—Snood lashing: **a,** bare shank with deep grooves (1-3); **b,** first stage of lashing, showing binding threads (1-3); **c,** second stage; **d,** finished lashing.

The material for the snood was thus fixed by the grooved method and fixed so securely that it was impossible for any shark to pull the snood off the shank. For all practical purposes, the work could have ended here; but for purely aesthetic reasons, the craftsman invented the textile cover to hide the coarse appearance of the lashings and add finish to an original piece of work.

Textile Cover

The textile cover was formed of longitudinal warps and a weft of a two-ply coarse thread. All the warps required for the cover were first attached near one end of the weft. They were lengths of single-ply twisted *olona* fiber which were doubled in the middle, the loop passed over the weft, and the two ends drawn through to form pairs (fig. 233, *a*). The loop was drawn taut and the pair twisted into a loose two-ply to form single warps, and the warps were attached closely, there being 26 warps to the inch (fig. 233, *b*, *c*). A length of 3.2 inches was required to encircle the shank below the lower ends of the fixed *olona* strips (fig. 233, *d*). By drawing the ends of the weft taut, the two ends of the warp

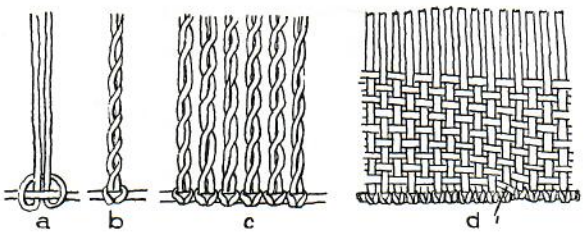

FIGURE 233.—Textile snood cover: **a,** lengths of *olona* fiber for warps; **b, c,** warps; **d,** wefts, showing (1) short weft end interwoven with warps.

attachments met with the warps extending upward to cover the fixed *olona* strips. The short weft end was interwoven with the warps on the right to dispose of it, and the long end was worked from right to left (fig. 233, *d,* 1) in close spiral turns of a check weave. When the weft grew short, another length was laid over it; and the two continued as a double weft until the old one petered

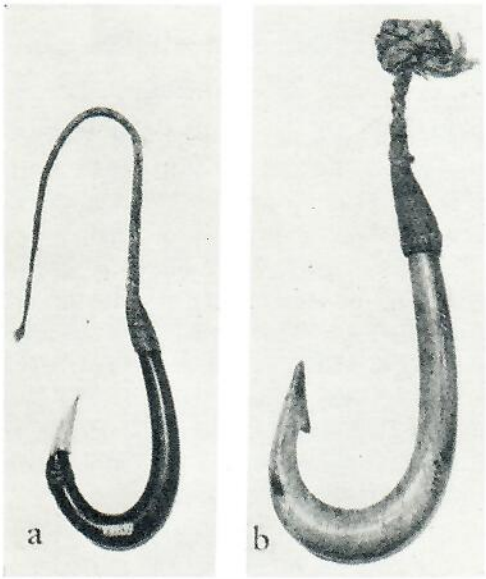

FIGURE 234.—Shark hooks, showing textile snood cover: **a,** of wood; **b,** of bone.

out. As the weaving proceeded upward and grew narrower, some warps were dropped out of the weaving and were covered by the others. At the top end, the weft was carried around in close turns over the warps and tied to end the weaving. The free ends of the warps were included with the *olona* strips, which were divided into plies and braided into three-ply or eight-ply to form the snood shown in the completed covers in figure 234, *a, b.*

The well-made wooden shark hooks of the Cook Islands (Buck, 1944a, pp. 239-241) resemble the Hawaiian hooks in the form of shank and point limbs and the U-bend, but they are one-piece hooks with an inturned point and a shank knob for the snood attachment. Hawaiian shark hooks in other museums follow the pattern described and are illustrated by figure 234, *a*. The grooved snood attachment with its textile cover is peculiar to Hawaii and forms an infallible means of identifying the Hawaiian composite shark hooks.

Simple Bone Shark Hooks

Bishop Museum has two large bone hooks with inner barbed points. The larger hook (fig. 234, *b*) is 11 inches long and 5 inches wide. The bend is 37 mm. deep and 23 mm. thick. A smaller hook (6923) is 8 inches long and 3.9 inches wide. Both hooks have the grooved snood attachment with the textile covers exactly the same as in the wooden composite hooks, and these features confirm their identification as shark hooks.

FISHING ACCESSORIES

STONE SINKERS

Stone sinkers were used with nets, fishing lines, squid lures, and ground bait; but the introduction of lead speedily led to their abandonment. However, large numbers have been picked up by collectors and the Bishop Museum collection, omitting the specialized squid sinkers, contains more than 200 specimens of various shapes and sizes. Apart from shape, a distinguishing feature of classification is the method of securing the line to the sinker. The common, widely spread methods were by grooves and perforations. However, two specialized forms were made in addition, and these have been termed in Museum parlance, bread-loaf sinkers and plummet sinkers. The bread-loaf sinker is a special form of grooved sinker, and the plummet is original in having a terminal knob with a constricted neck for the line. Thus Hawaiian sinkers fall into four groups: grooved, perforated, bread-loaf, and plummet.

Grooved Sinkers

The grooved sinkers examined number 109 and, though a large number consist of rough pieces of unshaped stone, a good many have been chipped into some definite form. The commonest are elliptical with fairly rounded ends, and those with longitudinal grooves are about equal in number (16) to those with transverse grooves (17). It is probable that those with transverse grooves were used with nets and that the others were sinkers for fishing lines. Many of the longitudinally grooved sinkers are slightly wider and thicker at one end, which was probably the lower end in fishing line sinkers. A well-shaped basalt sinker

in Bishop Museum (1200) is from Molokai. It is 2.4 inches long, 1.7 inches wide in the middle, and 1.6 inches thick; the groove is 0.5 inch wide, and the weight is 6 ounces. In five additional sinkers of elliptical shape the groove is made around the periphery, producing a resemblance to pulley blocks. Two are circular balls, two have the transverse groove so deeply cut that they resemble dumbbells, and four have a transverse groove around a small end forming a knob. Three are converted *'ulumaika* (throwing disks), with a median groove on each surface and over the rim; and five are converted squid-lure sinkers, with a continuous groove over the flat under surface. (See figure 235, *a*.)

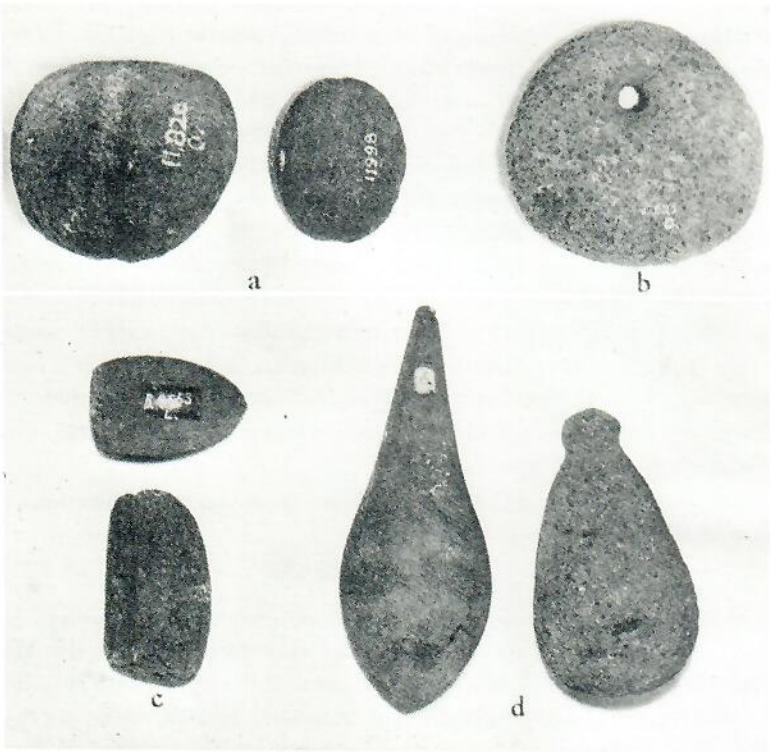

FIGURE 235.—Sinkers: **a,** grooved; **b,** perforated; **c,** bread loaf; **d,** plummet.

Most of the sinkers in the Museum collection are made of vesicular basalt, which is easier to shape and to groove than is the denser basalt. The weights vary considerably, the smaller ones for light lines or nets ranging from 1 to 6 ounces and the heavier ones for deep sea fishing ranging from 1 pound to 4.5 pounds.

Twenty percent of the grooved sinkers are made of reef rock and, owing to the softer material, are well shaped, mostly in the elliptical form with either

kind of groove. Four are of the pulley form, with peripheral grooves; and one is a converted squid-lure sinker. With the exception of one larger sinker, they range in height from 0.7 to 2.8 inches and in greatest width from 0.5 to 2.4 inches. With the exception of two sinkers which weigh more than a pound, the series is remarkably light, with weights ranging from 0.5 to 6 ounces. According to the Museum catalog, the light sinkers were used with nets.

All of the sinkers in Bishop Museum except the one from Molokai and one from Kauai are from the island of Hawaii.

Perforated Sinkers

The Museum's cataloged series of 26 perforated sinkers (fig. 235, *b*) is somewhat disappointing, for no fewer than 14 are flat circular disks with central holes. Of these, eight are made of vesicular basalt and six are of reef rock. With the exception of one large disk, they range in diameter from 1.8 to 3.0 inches and in thickness from 0.6 to 1.25 inches. The weight ranges from 1 to 6 ounces. It is most unlikely that such well-made disks were designed for sinkers. Rather, it is probable that they were the balance disks for teetotums or drills. Nor are the remaining 12 very convincing. Most of them are more or less globular with a hole drilled through the smaller end. One perfect specimen (B.238) is identical in shape with the northern type of New Zealand sinker, and probably came from there. Two are cylindrical sections, one is a throwing disk, and one is a converted food pounder. All but three made of reef rock are of vesicular basalt. They range in weight from 4 ounces to 2 pounds 4 ounces; but one of large, irregular shape weighs 6 pounds 14 ounces.

It is evident that the Hawaiians preferred grooves to perforations in the making of sinkers.

Bread-loaf Sinkers

Bread-loaf sinkers are a specialized form peculiar to the Hawaiian Islands, and their established use is indicated by the collection of 73 in the Museum. They have been likened to a loaf of bread because the upper part resembles the top of a loaf in shape and the lower part is shorter and narrower, as in a loaf of bread. The upper part of the sinker is convex lengthwise, and in the series it ranges from 1.7 to 4 inches. It is also curved from side to side; and the maximum width, which is toward one end, ranges from 0.9 to 2.4 inches. A continuous groove on both sides and around the ends separates the upper and lower parts. In a few sinkers, the broader end has been cut down vertically, eliminating the groove at that end. The length of the lower part is usually 0.3 inch shorter than the upper part, and its width is 0.4 to 0.7 inch narrower than the upper part. The under surface of the lower part is straight and flat, with a median groove extending along its full length. The weights range from 3 to 18 ounces. Of the series, 11 are made of reef rock; the rest, of basalt. (See figure 235, *c*.)

According to the Museum catalog, a number of the sinkers were for the dip nets used for catching *uhu* (*'upena uhu*), and it is evident from their shape that the bottom, grooved surface was fitted against the lower ends of the rod spreaders of the nets. Furthermore, it is probable that they were used on other forms of the dip net. A cord was tied to the rod at one end of the sinker, made longitudinal turns along the lateral grooves, and crossed obliquely around the rod at each end. The grooved under surface of the bread-loaf sinkers could well be fitted to the bottom rope of some nets, but I have no evidence that they were so used.

One of the squid lures in the Museum collection has a bread-loaf sinker fitted and lashed to the wooden stem of the lure; but as the squid lures had their own specialized form of sinker, it is likely that the bread-loaf sinker was used as a makeshift. One-third of the sinkers was collected on Lanai. All the other islands are represented, except Kauai.

Plummet Sinkers

Plummet sinkers (*pohakialoa*), another specialized Hawaiian type of sinker, were made to carry lines down to the bottom of deep fishing grounds. Kamakau describes them as being made like poi pounders but with the upper ends narrowed and surmounted by a small knob for the attachment of the line. In addition, the bottom end is globular instead of flat (fig. 235, *d*), resembling a large plumb reversed, the small end uppermost.

In the Museum series of 35 plummet sinkers, the weights range from 1 pound 14 ounces to 5 pounds 9 ounces, with the exception of one unfinished specimen which weighs 7.5 pounds. The average weight is 3.5 pounds. The length, including the top knob, ranges from 4.1 to 9.8 inches, with an average of 6.5 inches. Some of the sinkers are almost circular in section; but usually the maximum cross diameters differ slightly, a fair average being 3.5 inches. Two sinkers are converted poi pounders. A unique sinker (4788), 6.75 inches long, has two gill-like projections toward the lower end; and this may have been a fish-god symbol to ensure good luck. The terminal knobs in the well-finished sinkers are remarkably small. In one of the larger specimens (7452), 9.2 inches long and 3 pounds 1 ounce in weight, the knob has a diameter of 0.5 inch and a length of only 0.2 inch. Many of the knobs have pieces broken off; but in 23 of 29 measurable knobs, the lengths range from 0.2 to 0.9 inch. In the remaining six they range from 1 to 1.5 inches. The diameters, however, vary greatly, ranging from 0.5 to 2.7 inches. All have constricted necks for tying the line. Most have rounded ends, but a few are flat. A few of the wider knobs have a vertical groove, and one has two crossed grooves. Except for one sinker of reef rock, all are made of basalt.

In addition to the large plummets, the collection contains five smaller ones which weigh from 1 to 14 ounces. Though they follow the shape of the larger

sinkers, they were evidently made for fishing in shallower waters. Of these, three are made of reef rock; two, of basalt.

The large plummets were for use in the deepest fishing grounds, 400 fathoms or so, and particularly, for lines carrying 10 or more fishhooks. These deep grounds are termed *pohakialoa* by Kamakau, and it is probable that they were so named after the plummet sinkers because the term, meaning long stone, is descriptive of the specialized sinkers.

HOOK-AND-LINE CONTAINERS

In the rest of Polynesia, including New Zealand, fishermen usually kept their hooks and lines in plaited baskets; but in Hawaii, plaited baskets were displaced by the general use of gourds as containers. Small gourds were used for hooks and large gourds for fishing lines, but some of the intermediate sizes were used for both hooks and lines. Of 50 containers in the Museum collection, 23 are for hooks and 27 for fishing lines. All these containers are fitted with covers, attached by various methods.

Hook Containers

Hook containers (*ipu le'i*) are of two types, one with both container and cover made out of gourds and the other with a wooden bowl and a gourd cover. In six containers of the first type, the heights of the gourd bowls range from 4 to 7.75 inches and the greatest diameters range from 4.25 to 6 inches. The heights of the covers range from 1.75 to 2.75 inches; and the maximum diameter, from 3.5 to 5.5 inches. The rim diameters of the bowls are less than their maximum diameters, and the rim diameters of the covers are 0.5 to 1 inch greater than those of the bowls they cover. Thus the covers slip easily over the bowl rims. The covers are fastened with a short net surrounding the gourd and fixed to holes in the gourd or to the upper band of an *'aha hawele* support (fig. 236, *a*).

Of the second type of hook container, the Museum has 17 specimens, each with a wooden bowl mostly of *kou*, and a gourd cover. The bowls are well made, and most of them are fairly small. Their heights range from 4.1 to 8.25 inches; their greatest diameters, from 4.5 to 6.75 inches. However, one exceptional bowl has a diameter of 9 inches. The gourd covers vary a good deal in size. Many are low, like the covers of type 1, with a height range of 2 to 4 inches; but others range from 4.1 to 8.25 inches. The maximum diameters of the whole series range from 4.75 to 9.25 inches.

The covers of the second type are fixed in five different ways. One is fastened with a single string, another is carried in a bag, and three have *koko* nets similar to those used for carrying food bowls. The remaining 12 covers are fixed with a short net attached to the bowl in two different ways.

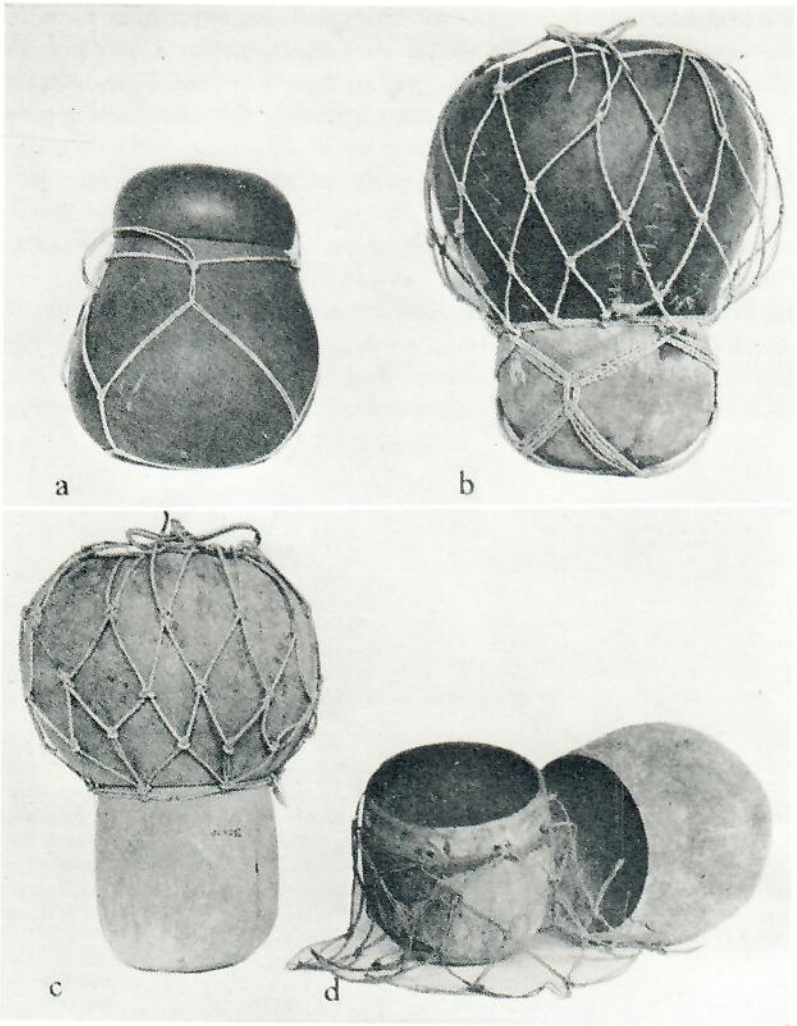

FIGURE 236.—**a-d,** types of hook containers.

In eight containers of the 12, the bowl is enclosed in the *'aha hawele* support used on water bottles (figs. 34, 35), but most of the hook-container supports are made of *olona* cord instead of coir cord. A cord, single or double, is simply passed over and under the top band of the *'aha hawele* support to form a series of loops for starting the net (fig. 237, *a*). Another method is to tie an overhand knot around the vertical loops of the *'aha hawele* and intermediate overhand knots around the top band of the support (fig. 237, *b*). Another cord or an extension of the loop cord is used to engage the loops in a series of meshes for two or more circumferential rows, depending upon the height of the cover.

Either a reef knot or a fisherman's knot was used for the netting knot. As the net was of insufficient height to entirely enclose the cover, a cord was passed through the upper marginal meshes, drawn taut, and tied to securely fasten the cover to the bowl. In some of the containers, the gourd cover is much larger than the wooden bowl, as shown in figure 236, *b-d*.

The remaining four bowls of this type are without *'aha hawele* supports, and an upper band for the loops has been provided for by paired holes bored in a horizontal line from 1 to 2.25 inches below the bowl rim, the holes in each pair being 0.25 inch apart. The pairs are evenly spaced around the bowl circumference, there being four pairs in two bowls and five in another. In these bowls, the holes pass through the wood and a cord, single or double, passes through the first hole of a pair and out again through the other hole (fig. 236, *c*). The cord makes the round through the pairs and is tied, thus providing the

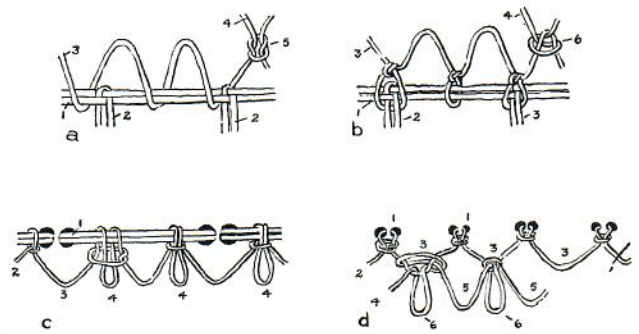

FIGURE 237.—*'Aha hawele* support for hook container: **a,** over and under loop for commencement, showing (1) top band, (2) vertical loop, (3) loop cord, (4) net cord, (5) reef knot; **b,** overhand knot commencement, showing fisherman's knot (6); **c,** overhand knots on cord, through paired holes, showing (1) top double cord, (2) loop cord, (3) ordinary loops, (4) extra loops; **d,** overhand knots to paired holes, showing (1) paired holes, (2) loop cord, (3) ordinary loops, (4) net cord, (5) normal mesh, (6) extra mesh.

horizontal cord to support the loops for the net commencement. The loop cord is fastened to the horizontal cord in a series of loops with extra loops, as shown in figure 237, *c*. A mesh cord forms meshes with the loops by means of the fisherman's knot, and two or three rows are made as required. The marginal tying cord is the same as in the eight containers described above.

In one container (3857), the paired holes are bored obliquely to meet without passing through to the interior (fig. 236, *d*). Eight pairs of holes are evenly spaced and a loop cord is used directly to make single loops between each pair of holes. The cord, after passing through a paired hole, is tied with an overhand knot around its standing part before passing to the next pair (fig. 237, *d*). A round of single loops having been provided, a mesh cord makes the first round of meshes but an extra mesh is added to each loop, as illustrated.

The fixation of the net fasteners for the covers has been described in some detail, because it appears to be a technical development peculiar to Hawaii.

Line Containers

The line containers (*poho aho*) consist of three types, or perhaps three variations of one type, which differ in the shape of the gourd containers. All have covers cut from smaller gourds or coconut shells to fit over the rims of the gourds. The covers are fastened to the gourds with one or two cords. As the variations are common to all three types of gourd, they are illustrated jointly.

A single cord attachment (fig. 238, *a*) is formed by the boring of a hole below the rim of the gourd and another through the cover. One end of the cord, knotted with an overhand knot on the outside, passes through the gourd hole. The other end of the cord passes through the cover hole from the inside and is knotted on the outside. The cord has enough slack to allow the lid to be lifted clear of the gourd.

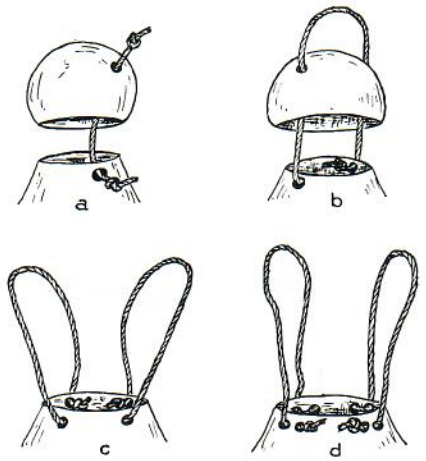

Figure 238.—Attachment of covers to line containers: **a,** single cord; **b,** single loop; **c,** double loop; **d,** double loop through paired holes.

The single loop attachment is made by the boring of two opposite holes through the gourd rim and two through the top of the cover (fig. 238, *b*). A cord with one end knotted passes through a gourd hole from the inside, passes up through the inner side of a cover hole, forms a convenient loop, passes back through the other cover hole from the outside, passes through the other gourd hole from the outside, and is knotted on the inside. The loop gives enough play for the cover to be drawn up on the loop to clear the gourd rim opening.

The double loop attachment (fig. 238, *c*) is formed by means of boring four holes through the gourd rim and making two loops like the single loop. However they do not pass through the cover, which has no holes. The ends of the two loops are tied over the cover when it is fastened down.

A variation occurs in a double loop attachment in which, instead of four single holes in the gourd rim, four pairs are bored (fig. 238, *d*). A cord with the end knotted passes through one hole from the outside and then back again through the second hole from the inside. A loop is formed and the cord passes through one hole of the opposing pair from the outside, turns back through the second hole from the inside and is knotted on the outside. The paired hole technique is also used in one of the single-loop attachments.

In the first type of line container are seven gourds of the globular form used for food bowls but cut off higher on the neck (fig. 239, *a*). Their rim diameters range from 2.75 to 6 inches; the heights of the gourds from 8 to 15.25 inches; and the maximum diameters, from 5.5 to 11.25 inches. The covers range in height from 1.75 to 4 inches and their greatest diameters, from 3 to 7.5 inches. Of the five covers retained, four are of gourd and one of coconut shell. With two exceptions, the cover attachments are single loop. One has a double loop and another has a single cord.

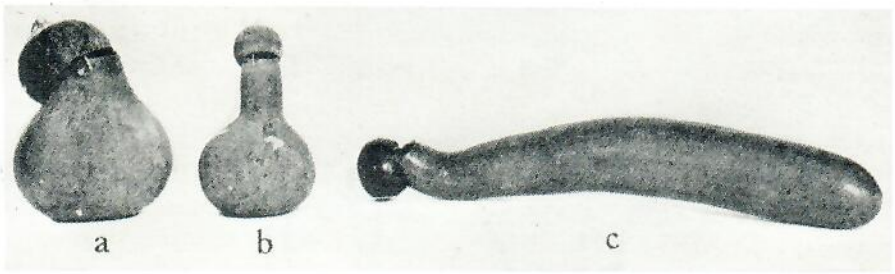

FIGURE 239.—Line containers: **a**, globular form; **b**, water-bottle form; **c**, elongated form.

The second type comprises four specimens made from the water-bottle type of gourd, with long tubular necks which were cut before they narrowed at the stem end (fig. 239, *b*). The rim diameters range from 1.25 to 3.5 inches; the maximum diameters, from 5.5 to 9.5 inches; and the heights, from 9.5 to 16.5 inches. The covers range in height from 2.25 to 4 inches and the maximum diameters, from 3 to 5 inches. Of the three covers remaining, two are of gourd and one is of coconut shell. Three of the covers are attached by the single-cord method, one by the single-loop method.

Of the third type, termed *hokeo* or *poho 'aho*, the Museum has 16. These are gourds of the elongated form used as fishermen's water gourds with the stem ends cut off (fig. 239, *c*), leaving rim diameters ranging from 1.25 to 3 inches.

The lengths of the gourds range from 13.5 to 36.5 inches; the maximum diameters, from 3 to 11 inches. The heights of the covers range from 2.25 to 8.25 inches; their maximum diameters, from 3.8 to 9.5 inches. Of the 12 covers that remain, nine are of gourd and three of coconut shell. Even when covers are missing, the number of holes in the gourd rim shows the form of cover attachment used, one hole indicating the single string and two holes, the single loop. Eight of these gourds have the single loop attachment; six, the single string attachment. One gourd has no holes, another has 11 holes, indicating that a net attachment was used.

Though the series of 50 gourds is listed as hook and line containers, it is probable that some of them were used for other purposes. For instance, one of the smaller containers holds a number of shark's teeth and another holds small stones used in the checker game of *konane*.

Kamakau, in one of his flights of fancy, says that when the fisherman rested at night, he heard a creaking sound from his hook and line containers and that "It was thus that the fishing gourds called to the fisherman to go fishing."

BAIT

Through generations of practical experience, the Hawaiians developed a profound knowledge of the appropriate bait to use for different kinds of fish and various forms of fishing. Thus the procuring of the appropriate bait was an important preliminary to any fishing operation. The usual term for bait was *maunu*, which is also the general Polynesian name. However two forms of bait—namely ground bait, or chum and bait prepared from squid ink—have received the distinguishing term of *palu*. Besides its use on fishhooks, bait was freely scattered to attract fish to the vicinity of baited hooks, nets, and traps. It may be described conveniently under four headings: hook bait, live bait, ground bait, and squid-ink bait.

HOOK BAIT

The bait for hook-and-line fishing was usually any of the small fishes which frequented the shallow waters between shore and reef and usually caught in nets beforehand. Of these, the principal ones were the *'i'iao* and *nehu*. Young mullet could also be had by netting in the stocked fish ponds. Shrimps and crabs were used for smaller fish. When rains and muddy water from mountain streams discolored the shallow waters, the recourse was to catch octopus with the squid lure outside the reef before proceeding farther out for deep sea fishing.

Some fishermen attached the bait just over the point of the hook and others pushed it down more securely over the point limb. Many hooks were provided with a bait string, or fine thread, attached at one end to the shank lashing to be wound around the bait to prevent it from being removed too easily.

Live Bait

The use of live bait in connection with one form of bonito fishing is well described by Kamakau, on whose description the following information is based. A small canoe termed a *malau*, two to three *anana* (fathoms) in length and with holes through the sides and protected holes on the bottom, was used to contain live bait in sea water. The bait fish, *nehu* or *ʻiʻiao*, were netted the day before and kept overnight in the *malau*, where changes in sea water were regulated through the holes in the canoe. At the bonito grounds, the *malau* was placed between the hulls of a double canoe and lashed to the booms. When a bonito school was indicated by the presence of *noio* (sea birds), the double canoe was paddled to the spot and its stern turned toward the school. On the command of the head fisherman, two men dropped down into the *malau*. One man threw the live bait toward the bonito school, and the other supplied the fishermen with bait for their fishing rods. Each fisherman passed the point of the hook through the mouth of the fish and through the back of the head thus leaving the tail to drag. More live bait was thrown out and the bonito swarmed around the stern of the double canoe which would accommodate six or seven rods. The bonito took the baited hooks as fast as they were thrown out. The canoe remained stationary as long as the school stayed in the one spot to feed on the live bait. If the bonito suddenly sounded, the canoe sought out another school, and so the feeding and catching continued until the live bait was exhausted, when the *malau* was turned over and lifted onto the platform of the double canoe. The phrase "the *malau* has turned over" became a saying to indicate that any operation was ended.

A small outrigger canoe termed a *panipani* was also used, with the live bait kept in water in the bottom of the canoe. This canoe was manned by three to five men, but only two rods could be used.

Kamakau's description of the use of live bait to attract and hold bonito could apply to any school of fish.

Ground Bait

Ground bait, or chum, consisted of bait fish cut up into pieces or pounded until soft (*palu*). The bait and sheets of coconut-leaf stipule (*aʻa*), or the cloth-like material which sheathes the base of coconut leaves, were taken out to the fishing ground in the canoes. A quantity of bait was placed on a sheet of the cloth, with a baited hook at the end of a line. The cloth was folded over the bait and hook, a stone placed on the package, and some turns of the line made around the package and the stone. A slip loop was made with the last turn of the line. The weighted package was carefully lowered over the side and sunk to the fishing ground on the bottom. It was then lifted a short distance and the line jerked to free the package and the stone. The crushed bait diffused through the

water with the baited hook in the middle. Fish were attracted and greedily swallowed the ground bait, until one of them swallowed the baited hook. In some methods, the ground-bait package was lowered with a stone sinker of the plummet type attached to a separate line. After the bait was freed the sinker was drawn up and baited hooks were lowered among the fish attracted to the spot. The feeding and catching went on until the supply of ground bait was finished.

An interesting account of the use of ground bait in netting *'opelu*, by a fisherman named John Kaelemakule, was published in the *Hoku o Hawaii* weekly of March 5 and 12, 1929. According to this account, two men were sufficient for *'opelu* fishing at recognized fishing grounds. The expert fisherman was in the bow of the canoe with the red shrimps and other bait before him, while the assistant was at the back with a supply of coconut sheaths (leaf stipules), a stone weight tied to a line, and a container of plain earth. When signs of fish were seen, the canoe was stopped. The fisherman handed back some ground bait, and the assistant placed it on the sheath wrapper, added a handful of earth, folded the sheath, laid the stone sinker on the package, and wound two turns of the line around the bundle. The package was lowered to a depth of two or three fathoms, the line jerked to free the bait, and the sinker drawn back into the canoe. The spot where the bait was released became dark with the earth and helped the fisherman to watch the *'opelu* as they rose to feed on the bait. More ground bait was lowered until the expert fisherman was satisfied with the number of fish which had collected. He then ordered the assistant to let down the *'opelu* net termed *'a'ei* and assisted him in the proper setting of the net, which was evidently a bag net with side sticks (*kuku*). More bait was freed near the net which drew the fish toward it. Finally, bait was freed over the net; and when all the *'opelu* had gone into the net and were milling gently as they fed, the net was drawn up. The movement caused the *'opelu* to dive downward where they were caught in the belly, or bag (*'eke*, or *mele*), of the net and lifted into the canoe.

SQUID-INK BAIT

A unique form of bait, which is included in the term *palu*, is made with a base of octopus or squid (cuttlefish) ink, or sepia. The ink sac, termed *'ala'ala he'e*, was removed from the squid, wrapped in ti leaves, and roasted on the coals. First, some ingredient which was supposed to attract fish was triturated in a stone or coconut-shell mortar with a wooden pestle and the fibrous material thrown away, leaving only a few drops of juice in the mortar. The cooked ink sac was then added and thoroughly worked out into a paste with the pestle, a little salt being added. According to Emerson's catalog (p. 106), great care was taken in compounding the mixture and every fisherman had his own favorite recipe. Emerson collected from fishermen on the island of Hawaii 22 different recipes, in which the second ingredient was obtained from the leaves,

roots, flowers, seeds, or fruit of 15 local plants. A certain amount of magic entered into some of the recipes, such as one which was made from exactly five *'ilima* flowers. One more or one less flower was held to render the preparation useless. Foreign ingredients introduced in later times figured in six preparations —red pepper, cinnamon, painkiller, kerosene, tobacco juice, and last but probably not least, a few drops of brandy or other available alcohol. In one recipe, salt was added to the ink sac before it was cooked.

This bait was applied to the tip of the hook and was held to be very attractive to fish. Emerson lists 16 kinds of fish which were caught with the ink bait and states that they were all small fish found near the shore. Thus the hooks used were small hooks requiring small portions of bait and the paste made from one ink sac was sufficient for the day's fishing. The small quantity of bait needed also accounts for the small size of the mortars used in its preparation.

Stone Bait Mortars

The small stone mortars (*poho*) used for pounding (*ku'i*) or mixing the squid-ink bait and some other ingredient were descriptively termed *poho ku'i palu*. The Museum collection contains 72 such mortars, of which some are not quite finished. With regard to material, 75.4 percent are made of vesicular basalt; 14.5 percent, of reef rock; and 10.1 percent, of close-grained basalt. The specimens made of close-grained basalt are *'ulumaika* (throwing disks) which have a shallow circular cup formed on one surface. Those made of

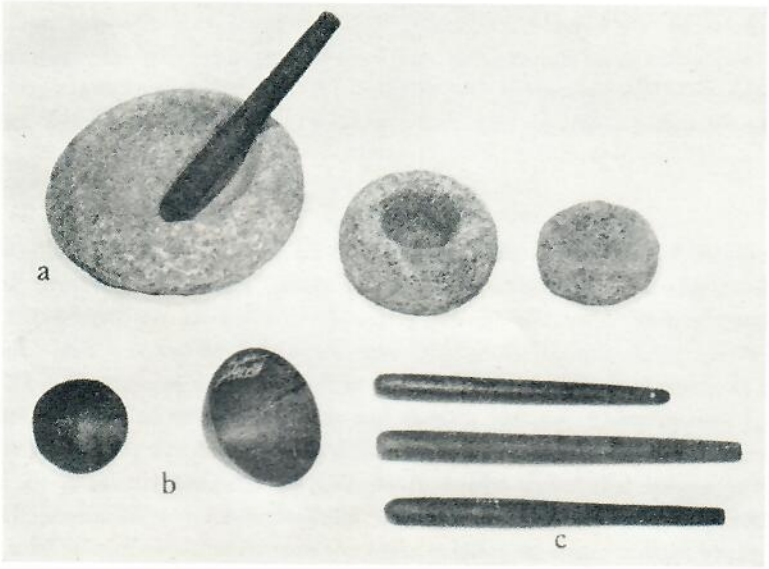

Figure 240.—**a,** stone bait mortars; **b,** coconut-shell mortars; **c,** wooden bait pestles.

vesicular basalt and reef rock are circular in shape with rounded rims and the bottom sufficiently flattened to enable them to rest upright.

An analysis of their measurements shows that they were comparatively small and shallow. The heights range from 0.5 to 2.5 inches with the great majority between 1 and 1.9 inches. Being mostly circular, their cross diameters are the same, except for the few that are slightly elliptical in shape. The greater diameters range from 1.7 to 3.6 inches with the majority around 2.5 inches. The depth of the shallow circular cavities is evenly distributed between 0.1 to 0.9 inch, with only five specimens between 1.0 and 1.3 inches. Their weights range from 2 to 18 ounces, the majority ranging between 5 and 6 ounces. Two, however, weigh 20 and 24 ounces respectively. From their light weight, it is evident that the mortar could be held in the left hand while the pestle was worked with the right hand.

A cavity on each surface was found in 16 mortars, of which 11 were from Lanai. Examples are shown in figure 240, *a*.

Coconut-shell Bait Mortars

An alternative form of bait mortar was made by cutting off the distal, or pointed, end of small coconut shells. They were easily produced, with a ready-made cavity. In the Museum collection of 15, the heights range from 1.1 to 2.7 inches, averaging 1.7 inches. The rim diameters range from 2 to 3 inches, with an average of 2.6 inches (fig. 240, *b*). The short points which project from the natural shell have been cut off to form evenly rounded bottoms. Many of the specimens have been polished and are dark in color.

Wooden Bait Pestles

Small wooden pestles (*laʻau kuʻi palu*) were used with both the stone and coconut-shell mortars. In 17 specimens, the lengths range from 4.9 to 7.4 inches, with an average of 6.3 inches. They are round in section, and the diameters in the middle range from 0.5 to 1.0 inch, with an average of 0.7 inch. Most are much the same thickness throughout their length, but a few are enlarged toward the rounded end used in mixing the bait (fig. 240, *c*). One abnormal, double-ended pestle is 8.9 inches long.

BAIT STICKS

Bait sticks (*laʻau melomelo*) were made of hard, heavy wood that would sink, such as *kauila, koaiʻe, ʻaʻaliʻi,* or *pua*. They were usually cut from a section of the natural branch with the bark removed, many retaining the natural grooves and hollows. One end of the section was rounded and the other end was trimmed down to a point which was finished off with a small rounded knob, to the constricted neck of which the lowering line was attached. In shape they resembled

the plummet type of stone sinker termed *pohakialoa*. Some had two rectangular holes toward the butt end which were connected below the surfaces so that the end of the line could be tied to it. The line was then carried forward and tied around the neck of the end knob. (See figure 241.)

In the Bishop Museum series of 32 bait sticks five are short with an average length of 15.5 inches. The other 27 range in length from 21 to 32 inches. The greatest diameters range from 2 to 3.4 inches. The end knob is surprisingly small, in most sticks under 1 inch in diameter, with the neck 0.2 inch less than the knob. The smaller bait sticks weigh more than 2 pounds, and the larger ones range between 4 and 6.5 pounds. The exceptionally large specimen (B.3310) shown in figure 241 is neatly trimmed on all sides, is 31 inches long, is 3.4 inches in greatest diameter, and weighs 7 pounds 11 ounces.

FIGURE 241.—Bait sticks.

After completion, the bait stick was charred over the fire and, before it was used, was rubbed with *kukui*-nut oil or coconut oil. Baked *kukui* nut and coconut were also pounded and wrapped in the fibrous material from the base of coconut leaves which was tied to the stick. The stick was lowered in 4 or 5 fathoms of water and suspended a few feet from the sea bottom. When fish were attracted to the stick, it was drawn toward a dip net or bag net. Bait sticks made from wood growing at sacred places were said to be lucky, and incantations were recited over them to promote luck in fishing.

SQUID FISHING

Squids were caught by three methods, depending upon the depth of the water. These were spearing, the *kilo* method, and the use of a cowrie-shell lure.

SPEARING

Squids were speared in the shallows and about rocky ledges, where, according to Kamakau, they were countless in number and "the air was foul with them." These squid habitats were protected by a closed season, or tapu, which lasted four to six months after a *hau* branch was set up some time in January or February. During this closed season, it was prohibited for women to go to the beach or to fish with nets. Only the *konohiki* (overseer) and the watchmen were allowed on the beaches.

When the closed season neared its end, the watchmen made preliminary observations to determine whether it was time for fishing. Kamakau writes that at high tide the squid moved along the edge of the sea in files, marching as in procession, the tentacles arched and the holes in the head stretched out and used like gills, the blow tubes sucking and blowing like pumps as they swam along like real fish. At low tide, the whole sea floor was furrowed with burrows scattered in all directions and the squids lay spread out flat (*palaha*) "like lumps of dark earth" but moving their heads about slightly. Kamakau adds that when they saw a man, they squirted salt water at him; and if a canoe came too close, they held it fast.

If the report of the watchers was favorable, proclamation was made that the season was open. Men and women went down to the sea in canoes or on foot with light spears 1 or 2 fathoms long made from hard woods such as *walahe'e*, *'ulei*, *'a'ali'i*, and *uhiuhi*. The men speared squids that lay with the tentacles sprawled out; and when speared, a squid twined its tentacles about the spear and came out of its hole. The fisherman killed it by biting it between the eyes or by stabbing it between the teeth with his spear. He strung his catch on a cord and laid the full cord on the floor of the sea while he gathered others, as many as four or five strings in all. When the tide came in, all the fishermen collected their catch and assembled at one place ashore, where the whole catch was then distributed, as many as 50 or 100 to each man. Kamakau says that a greedy person might hide his catch in the sea and go back for it secretly when the distribution was over.

LURES

Kilo Method

The *kilo* method was carried out in shallow seas, from 6 to 10 fathoms deep, for the fisherman had to be able to see (*kilo*) the bottom. To become skillful, according to Kamakau, the fisherman had to learn all the ways of the squid. The squid that squatted outside its hole or lay there curled up in a ring was easy enough to detect, but says Kamakau, he had to learn about the squid that hid its burrow and built a mound of pebbles; that closed up its burrow leaving only a long tentacle outside; that mimicked the head of an eel; that turned

upside down exposing its teeth; that resembled a sea urchin; that moved in procession; or that hid in large crevices.

The fisherman paddled out in his canoe to a quiet place. He chewed some *kukui* nut and spat it onto the surface of the water, and the oil cleared the water and enabled him to see to the bottom. His implement consisted of a stick with a hook, a stone, and a tuft of ti leaves very like the squid lure but lacking a cowrie shell. The stone was any rough stone of suitable size.

When a burrow was located, the fisherman lowered the implement on a line to about a yard away from the burrow. When the squid saw the strange stone, its tentacles crept toward it, the body came out, and it drew toward the stone until it was directly upon it. Then the fisherman jerked the line and hooked the squid. The fisherman moved about in his canoe, observing the sea bottom with the aid of *kukui* nuts, of which he chewed a fresh lot for each change in position.

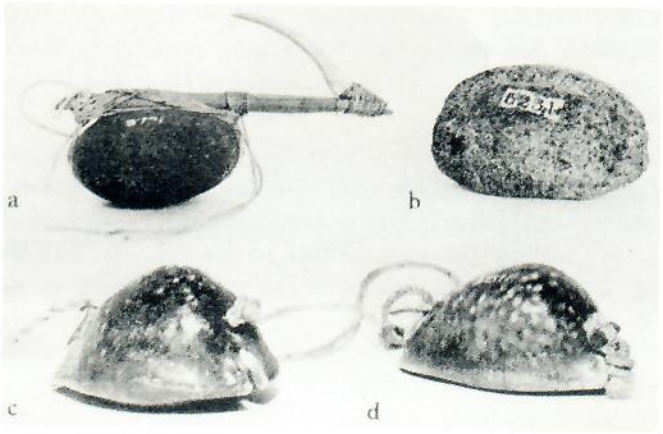

FIGURE 242.—**a,** *kilo* squid lure; **b,** stone squid lure sinker; **c,** lure with knot attachment; **d,** lure with crossbar attachment.

If the wind blew too strongly, ruffling the water, he ceased operations and paddled ashore.

As the squid was lured from its hole by the stone, the *kilo* implement may be conveniently termed the stone lure to distinguish it from the more complex and better-known lure made with the cowrie shell.

A specimen in the Museum collection (3791) has a wooden stem, a stone sinker, a bone hook, and no cowrie shell. It complies with Kamakau's description of the stone lure except that it has no tail of ti leaves (fig. 242, *a*). The stem is 5.3 inches long and 0.3 inch thick. The sinker is a circular, flat, waterworn stone, 2.4 and 2.9 inches in cross diameters and 1.3 inches thick. One flat surface of the stone is laid against the stem toward the front end and tied to it with an

olona thread. The thread is tied to the front end of the stem, passes back over the stone in the middle line, and passes around the stem at the back edge of the stone. The longitudinal turns backward and forward over the stone run diagonally to opposite sides of the stem. After a number of turns, the lashing is tightened by two longitudinal turns, which are made on the under surface of the stone to pass around the front and back ends of the lashing as they pass between the stone and the stem.

The hook is an attached bone point, unperforated, but with a backward extension of the base to the stem near its far end, the lashing thread passing around the base extension and the stem. A cord is tied to the front end of the stem. When in use, the cord was tied to a line. It would have been easy enough to tie some strips of ti leaves to the far end of the stem with the hook lashing, as was done in the cowrie lures.

Cowrie Squid Lure

The cowrie shell (*leho*) gave its name to the lure, which was called *leho he'e*. The process of fishing by shaking (*lu*) it up and down was termed *lu he'e*. The cowrie lure was made primarily for fishing in water 80 to 120 fathoms deep, much too deep for the *kilo* method. However, Kamakau says that squid fishing with the lure was an aristocratic sport in which the cowrie lure was commonly used when the squids came in close to shore.

The cowrie lure was a refinement of the stone lure, having one or two cowrie shells on the side opposite the stone sinker. In the Museum collection of 35 cowrie lures examined there is a good deal of variation. Furthermore, modern influence is apparent in the lead sinkers and metal wire hooks used; but despite foreign material, the methods of tying the sinkers and hooks to the stem follow those used in the older lures. The cowrie lure is composed of five parts: a wooden stem, a stone sinker, a cowrie shell, a hook, and a hackle (or tail) of ti leaves.

The stem is a wooden rod 6 to 9 inches long and about 0.5 inch in diameter. It is usually squared, and the lifting cord is toward its front end, with the hook at the back end.

Apparently, the sinker was any kind of stone. Kamakau gives the following nine names as being used for squid sinkers: *komano, pu'ukuna, maili, polipoli, pupukea, kalapaiki, 'iole, kauaula,* and *'o'io* and states that there were many others. Malo (1951, p. 19), in a list of 24 names, gives some of the above and adds others. The large number of names indicates the attention which the craftsmen paid to varieties of stone as they saw them.

The sinkers are elliptical in shape, with an inner flat surface and an outer rounded surface with a longitudinal groove in the medial line of the longest diameter. A typical sinker is 3.8 inches long, 2.9 inches wide in the middle,

and 2.3 inches high in the middle (fig. 242, *b*). The flat surface is laid against the stem at its front end and is bound to it by an *olona* thread which makes several turns backward and forward in the sinker groove and around the stem in front and behind the sinker. Next, a couple of turns are made around the front and back ends of the lashing between the sinker and the stem. The last turns tighten the lashing. The method is the same as for the stone lures used in the *kilo* method of fishing.

The cowries were selected with great care. Kamakau lists the following four varieties as good ones: *ahi*, *'olupalaha*, *pauhu*, and *kupa*. He says that the *ahi*, which had well-shaped lips and was of a deep red color, was called the fire cowrie (*ahi*) because it was reddened in the fire. The *kupa* was a dark red which Kamakau likens to that of "a mountain apple ripened in the shade." He waxes eloquent about the cowrie when he states, "A well formed cowrie had the power of attracting squid just as a beautiful woman arouses desire in a man." The different varieties of cowrie were used at different periods of the day: the *ahi* in the morning before sunrise, the *'olupalaha* and *pauhu* after the sun rose, and the *kupa* toward noon.

The complete cowrie shell is used, and it has front and back holes drilled through the shell in the middle line about 0.8 inch above the natural indentations in the lip. The long sloping end of the shell functions as the front end. The lifting cord, about 0.1 inch thick, is attached to the shell by means of two holes. The fixation at the back hole is made in one of two ways. In the simplest and most general method, the end of the cord is pushed through from the inside of the shell and knotted on the outside with an overhand knot. The knot is larger than the hole and so fixes the cord at the back (fig. 242, *c*).

The second method is to lay a short crossbar of bone, *'ekaha* (sea plant), or *kukui*-nut shell against the outer side of the shell just below the hole. Some vertical rounds with a thread are made over the stick and through the shell indentation below and the hole above; then a couple of circular turns are made below the crossbar and tied. The lashing fixes the crossbar to the shell, and the circular turns raise it slightly above the surface of the shell. The end of the lifting cord is looped around the crossbar and tied to its standing part with a double overhand knot (fig. 242, *d*).

In the knot method, the cord passes directly forward from the back hole to the front hole. In the crossbar fixation, the cord passes through the back indentation and on to the front hole. In both methods, the course of the cord is inside the shell. At the inner side of the front hole, a short loop of the cord is pushed through the front hole. The cord then descends on the inside of the shell, passes outside through the front indentation, and turns upward to pass through the short loop on the outer side of the front hole. The slack is drawn taut, and the lifting cord is fixed to the shell with its long end extending upward from the front hole of the shell.

The Museum has three choice cowries from the Queen Emma collection and each has the lifting cord attached to it, with the knot fixation in two and the crossbar fixation in one. It is evident that a fisherman carried a number of shells with the lifting cord attached so that he could change them on the lure to suit the different periods of the day.

The long narrow opening of the shell is laid against the front end of the stem opposite the sinker. It is tied in front by a thread which makes vertical turns around the stem below and the junction of the lifting cord to the hole above. At the back, it is tied in a similar way with vertical turns around the stem below and the knot of the lifting cord or the crossbar above. The lashings are simple and allow for a quick change of shells. (See figure 243, *a*.)

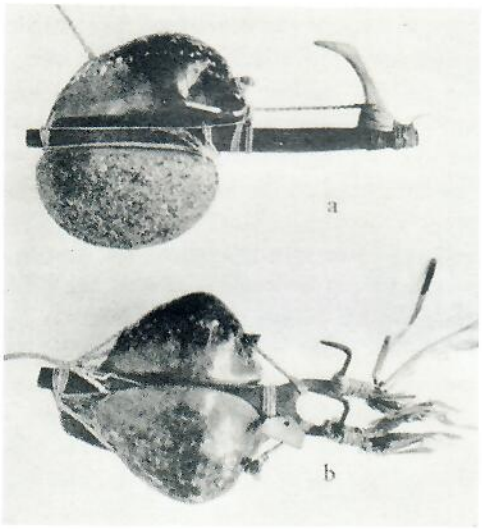

FIGURE 243.—**a**, single-shell lure; **b**, double-shell lure.

The hook is a curved point made from dog or human bone. It is attached near the back end of the stem on the same side as the cowrie shell, with the curve pointing forward. In two good lures, the bone points have an evenly expanded base with one perforation, like the bone points of bonito hooks. They are attached by a thread which makes several turns through the perforation and around the stem which serves as a shank to complete the hook. Some turns of the thread are carried forward from the perforation around the back lashing of the cowrie shell and finish off with some spiral turns around the longitudinal lashing. This lashing anchors the point and prevents it from slipping back over the stem end. The form of the point and the two lashings are so similar to the bonito hook technique that there is little doubt that the lure hook was copied from the bonito hook.

Another form of bone point has a backward extension of the base similar to that of the points in two-piece hooks. The back extension takes the place of the perforation, and the lashing turns pass around it and the stem.

The hackle is a cluster of narrow strips of ti leaf which are doubled around the front of the bone point below the perforation, brought back on the short end of the stem, and lashed to it with several turns of a thread passing around the strips above and the stem below. On the points with a back extension, the ti leaf strips are included in the lashing of the back extension to the stem and farther back with a second lashing. The ends of the ti leaf strips bunch out for 6 inches or so.

The double cowrie lure is represented in the Museum collection by 11 specimens, of which, nine have metal points and two have recently made wooden points. They both have sinkers of the bread-loaf type which properly belong to nets. The double cowrie lure evidently belongs to the later period, a period of over-elaboration. The sinker, whether bread-loaf shaped or elliptical, is tied to the stem like that in the single cowrie lure; but a short vertical rod is fixed to the back end of the sinker by the crossing turns of the sinker lashing. The two shells have short crossbars fixed to the back holes. The shells are fitted against each side of the stem and the sinker. The front ends are fixed by cords doubled through the front holes and tied together below the stem in front of the sinker. The back ends are fixed by cords doubled around the back crossbars and the vertical peg at the back of the sinker. The metal points have back extensions which are lashed to the stem in the manner of the bone points with similar back extensions. The ti leaf tail is attached as in the single cowrie lures. The lifting cord is tied to the front of the stem about 0.5 inch from its end. One of the double cowrie lures (3800) is unique in that the stem is forked behind the back of the sinker and the shells. The front ends of the shells are tied in the way already described, but the back ends are fixed by cords passing through the back holes and around the nearest limb of the fork. Each fork limb supports a single metal point and the usual ti leaf tail (fig. 243, *b*.)

The modern lead sinkers are more circular and flatter than the elliptical stone sinkers, but the back is grooved in the middle line for tying to the stem in the same way as the stone sinkers.

The metal points are made of wire or nails with a back extension before the point curves upward at an angle. In some single points the extension end is beaten out flat to form an end enlargement to keep the lashing from slipping back. The double metal points are made by doubling a piece of wire in the middle to make a double back extension, then bending each piece upward and outward from each other to form two separate points. The double back extension is lashed to the stem as in single points.

Kamakau writes that the days of Ku and Ole were the days when the squid were attracted by the merry dancing of the cowrie and the sinker, the cowrie

being the wife and the stone sinker, the husband. The fisherman tied the lifting cord of the lure to a line and let down two lures, one held by the toes and the other by the right hand. With the left hand, he used the paddle to keep the prow to windward. He jerked the two lines up and down to attract the squid; and when a squid pounced on the cowrie, the fisherman knew by the weight on the line and gave the line a jerk to impale the squid on the hook. If the squid was caught on the toe line he transferred lines; and as he drew up the squid line, he held it away from the canoe to avoid tangling with the other line. He lifted in the squid, pierced it with a light spear, threw it to the front of the canoe, and lowered the line again. By this time a squid had seized the other line, and so he went on using the two lines. In this way large catches were made. He sometimes stopped for fear of spoiling the brightness of his cowrie by too long immersion in salt water.

A fisherman bent on deep sea fishing but unable to obtain bait in the shallow muddy waters after a rain was forced to get his bait out at sea. One stand-by bait was the squid. The fisherman took a lure, dropped it in deep water and, when the lure touched bottom, drew up the line in a couple of overhand pulls. He jerked the line up and down and soon caught two or three squids which were enough bait for fishing farther out for deep-sea fish.

Some lures were named after ancestors or relatives, and many are famous in song and story. Kamakau says that some were so attractive that if they were merely shown over the side of the canoe, "squids came climbing in."

NOTE: The following "Literature Cited" refers to the entire book, as originally published in one volume.

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