

## THE OUTRIGGER CANOES OF THE TONGAN ARCHIPELAGO.

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THE following notes are the outcome of a visit paid to Vavau, Haapai and Tongatabu in 1925 for the express purpose of studying the structure of the surviving sea-craft of indigenous origin in the Tongan Islands. At the present day these comprise numerous dugouts called *bopao* and *tuingutu* and a very few plank-built sea-going canoes, *tafa-'anga*, used in the bonito-fishery. All are provided with single outriggers, characterized by indirect attachment.

THE *bopao* of to-day is a small paddling-canoë, the counterpart of the Samoan *paopao* (Figs. 7 and 8). It has a dugout hull, the bottom rounded, the sides tumble-home, and often so roughly hewn as to be little more shapely and adapted to be a canoe than one of the village drums, were these to have the ends pointed. As observed during my visit, the hulls range in size from 10 to 15 ft. in length, with an outside beam at the gunwale of 8 to 9 ins., increasing at the bilge to 12 to 16 ins.; the depth, 12 to 15 ins. There are indications of a definite head and stern, the one being sharp or bluntly wedge-shaped, the other, the stern, roughly pointed, characteristics also of Samoan hulls. The ends are solid for a distance of several inches.

The outrigger consists of two straight booms projecting 5 to 7 ft. outboard, which connect with the float normally by U-shaped withies. The float is cylindrical; in the smallest canoes it is pointed at both ends, in the larger only at the forward one, the other being truncate. As in Samoa, the fore, free part extends well forward, though not quite to a level with the head; the other end, behind its attachment to the stern boom, is short.

In the U-type of connective characterizing the *bopao*, this consists of a pair of tough, flexible withies to each boom, each withy bent into a deep bow or U-shape, the limbs spread from 8 to 10 ins. apart in the *bopao*, and about 12 ins. or more in the *tuingutu*. The bent or convex base - 300 ☉ of each rests upon the upper side of the float, secured thereto by lashing passed around two short, stout pegs driven abreast into the float. One of the pair of U-withies is attached to the float some inches forward of its boom, the other at an equal distance on the after side (fig. 1). The pegs

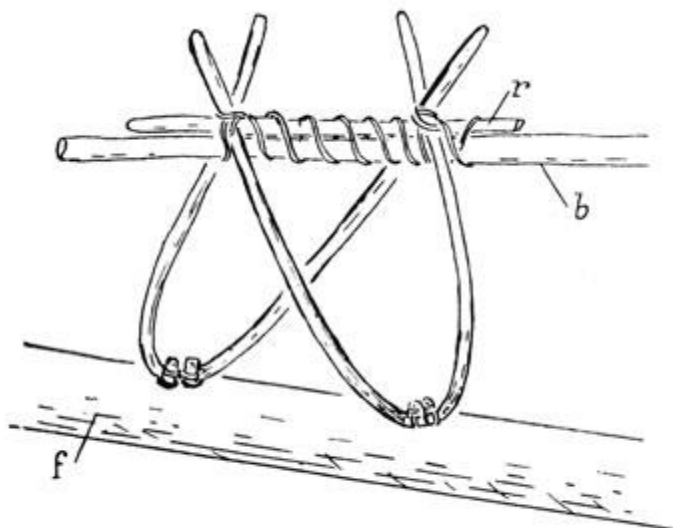


FIG. 1.

Attachment by U-shaped connectives.

FIG. 1.

to which the withies are lashed project about 2 ins; the heads are slightly swollen. The limbs of each U-connective are turned obliquely upwards, inclining toward those of their *vis-à-vis* in the opposite pair, with the result that the upper ends of the two U's cross one another. To keep them in position, a short rod of the local ironwood (*Casuarina*) is inserted horizontally as a brace immediately beneath their decussation and lashed thereto in this position. To make connection with the booms, each of these is slipped under the bracing rod of its appropriate U-set and made fast with sennit lashing. This device is of service when the outrigger frame has to be partially dismantled; there is then no need to unlash the bowed withies and thereby set each free and separate; by unlashng the brace from the boom, the float and these withies, still connected in the correct position, may be removed easily and without disturbance. Re-assembly may then be done in a fraction of the time that otherwise would be necessary.

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Exceptional forms of float-attachment are occasionally found. In Lifuka a very small and roughly-made canoe was seen where the connection was by means of paired straight stanchions or sticks of the type characteristic of the Tonga-tabu *tuingutu* described below. Another in the same island had a mixed attachment, the after boom having the paired U-connection, the forward one the paired stanchion form.

A third is also found on the great shallow backwater lagoon in Tongatabu, where a few rude dugouts are in use, of such shallow draft that direct attachment is possible with straight or nearly straight booms—the outer ends of two light bamboo poles being lashed directly to the float; such craft are readily improvised when occasion requires.

THE *tuingutu* has also a dug-out hull; being a larger and more valuable craft and usually adapted for sailing as well as paddling, greater attention is paid to the finish. The two ends are more carefully shaped and approximate more closely to the equivalent Samoan type, the *soatau*, the sharp fore-end with a distinct though slight concavity in the cutwater as seen in side view, whilst the stern runs to a point, and, in a few, ends in a downturned subtriangular knob, useful when tying the canoe up, and of exactly similar shape to that seen in the better-finished Samoan canoes. There is the same rounded bottom and tumble-home sides as in the *bopao*, but here a

narrow washstrake, 5 to 6 ins. in width, is sewn on with sennit, each pair of holes separately sewn together and all the holes plugged with wooden pins (fig. 9). A strip of split bamboo is inserted on the outside along the joint under the stitches.

Each end of the dugout-base for a length of about 12 ins. is solid. The intervening space at each end between this solid region and the nearby boom is usually decked over with transverse planking, the innermost board of each with a mast-hole in the centre, an arrangement which permits the canoe to be sailed either end forward; this is associated with a boom sharp at each end (fig. 2). The sail-rig used is derived from a European type; no canoe is now rigged in the manner current at the time of the discovery of the group. In one instance a wide triangular platform, nearly equilateral, covered each end of the hull, the lateral angles projecting outboard a little distance; this platform was to give footing to the fisherman when engaged in spearing fish.

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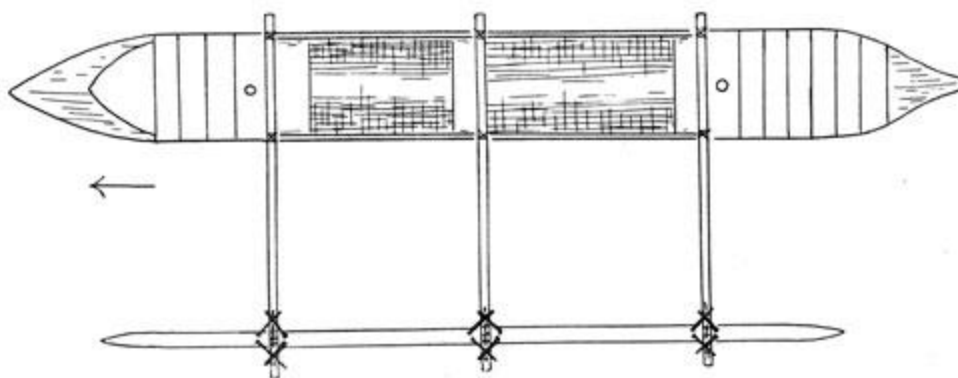


FIG. 2.  
A Tongan tuingutu seen in plan.

FIG. 2.

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In small canoes the central space or well between the booms is sometimes surrounded by a box-like structure consisting of two long side boards, forming rude washstrakes, connected at the fore- and after-ends by a transverse board or breakwater. In the larger ones with three booms, the washstrakes are more typical and extend nearly the whole length of the hull; they are generally closed in at each end by a low breakwater.

Two or three thwarts rest loose upon the edges of the dugout-base at its junction with the washstrake.

*The Outrigger.* The smaller canoes, 16 to 18 ft. long, are generally provided with two straight booms, fitted horizontally; the larger, ranging from about 20 to 30ft. in length, with three. They may be either *casuarina* poles or somewhat stouter bamboos. They rest upon the edges of the washstrakes, to which they are lashed by sennit or cord passing through, usually, one hole a little below the gunwale.

The float varies considerably in shape and relative length; in the smaller or paddling-canoes, it is cylindrical, the fore end conical, the after one truncate; in the larger, which are frequently used under sail, it is usually roughly canoe-shaped, flat above, rounded below, and with the ends sliced away on each side and from below to form a point.

The float-attachment is either of the U-type or by means of paired stanchions. The former type is the same as described for the *bopao*; the latter, seen in the neighbourhood of Nukualofa, in Tongatabu, is comparable with the Samoan and Fijian types. Two varieties of the second method

exist, the double and the treble. The double, except in one detail, is similar to the Fijian, two pairs of stanchions crossing above the boom (fig. 10). The detail in which it differs is the use of an intermediate horizontal brace stick, about 2 ft. long, to which the stanchions are directly lashed prior to the brace being lashed in turn to the end of the outrigger-boom (figs. 3 and 4); this is the same device we have already seen employed in conjunction with the attachment of the U-connectives in the case of the *bopao*. In the treble variety an additional pair of stanchions is present; these two extra stanchions, which are inserted close together into the float, immediately under one side of the boom, diverge upward from this point in the plane of the long axis of the boom, to which they are lashed respectively at the

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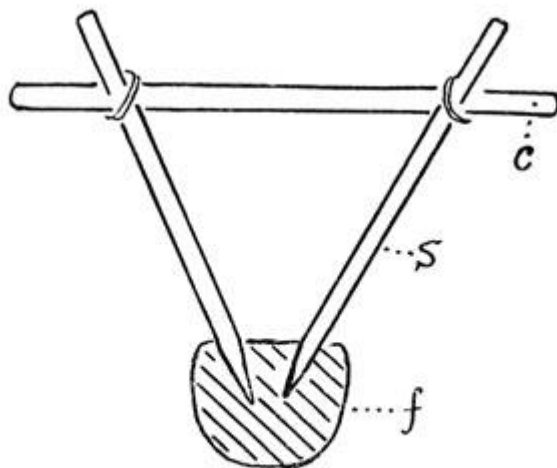


FIG. 3.

Bracing-rod holding outrigger-connectives in position.

FIG. 3.

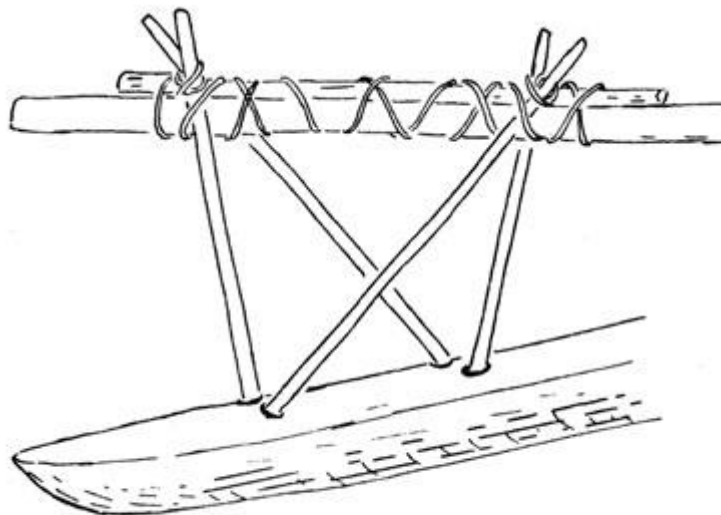


FIG. 4.

Attachment by two pairs of straight divergent stanchions.

FIG. 4.

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same points as are the two other pairs (figs. 5, 6 and 11). In this type a connecting brace-rod is not always employed,

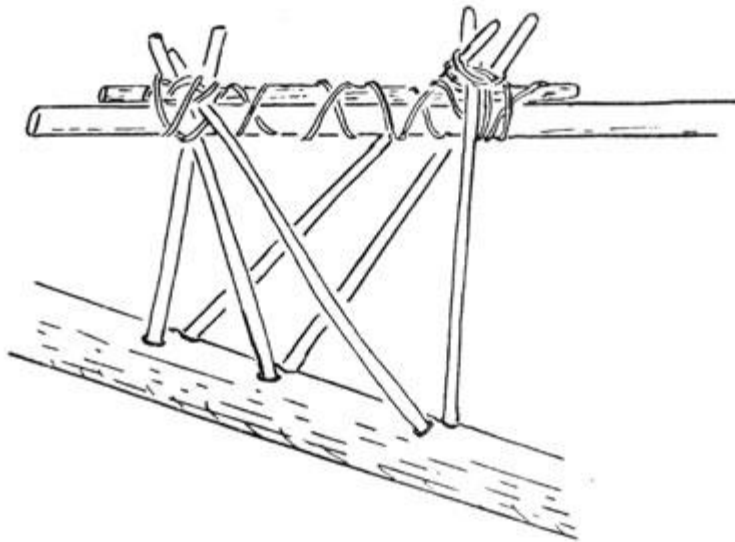


FIG. 5.

Attachment by three pairs of divergent stanchions.

FIG. 5.

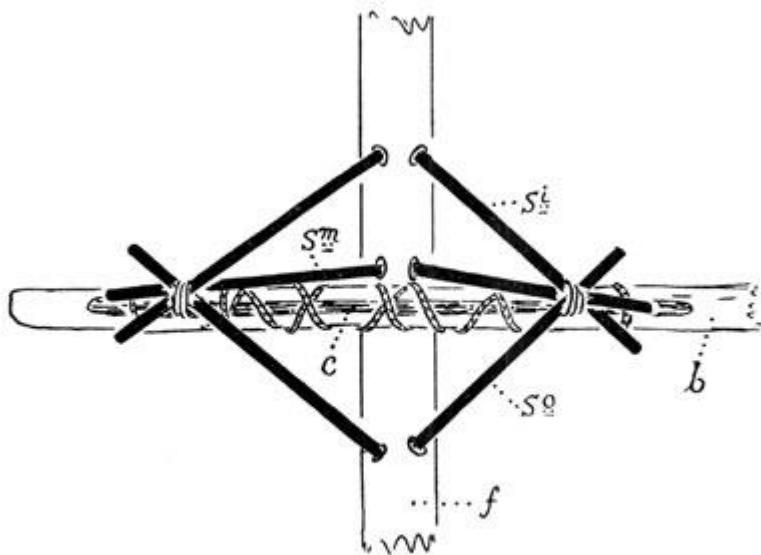



FIG. 6.

Three-paired stanchion-attachment seen from above.

FIG. 6.

in which case the upper ends of all the stanchions are lashed directly to the boom. Figs. 11 and 6 explain the ordinary arrangement better than words can.

*Local Distribution of the Attachment Types.* Of the three groups of islands in the archipelago, the U-type prevails in Vavau and Haapai to the virtual exclusion of the - 306 stanchion-type (figs. 7 and 8); in metropolitan Tongatabu it is found in the outlying villages on the south and east coasts. Only in the neighbourhood of the capital, Nukualofa, are the positions reversed, the stanchion-type alone being in use there. Thus we see that in the country districts where it is natural for old customs to survive the longer, the U-type is predominant, whereas near the capital, where Fijian influence and contact were great through the constant intercourse of the royal houses of Fiji and Tonga during the long reign of King George Tubou I, we have a type

directly referable to the Fijian, modified in some instances by the adoption of a local invention—the horizontal brace.

By this reasoning we might infer that the U-type is the older and the only truly indigenous method of attachment belonging to Tonga. Against this has to be placed the fact that both in the canoe-types surviving in Tonga and in those that have disappeared, there is the closest possible affinity with those of Samoa except in respect of the U-attachment, which the Samoans have certainly never employed since European contact.

*Dimensions.* The largest *tuingutu* seen (at Vavau) was 30½ ft. long; the beam outside the gunwale, 13 ins., at the bilge, 20 ins.; depth of dugout base, 15½ ins., depth of washstrake, 5½ ins., a total depth of 21 ins. Length of float, 16 ft. 9 ins., distance from gunwale, 6 ft; booms three, attached 14½ ins. above the float. Arms of the U-connectives, 12 ins. apart where lashed to the boom. Booms 4 ft. 6 ins. apart; fore-boom, 69 ins. aft of the prow; after-boom, 75 ins. forward of the stern. The fore end of the float projected 31 ins. in front of the foremost boom, the after end 18 ins. behind the third boom (fig. 9).

The hulls are neither painted nor decorated in any way.

THE *tafa'anga*. A few of this, one of the most elegant of Pacific outriggers, have survived on the surf side (*liku*) of Tongatabu; in 1925 the writer saw and photographed an outrigger of one at a village near the Ha'amonga trilithon, so the probability is that the type is not yet actually extinct. A very fine model of one, now in the Cambridge Anthropological Museum, is of great historical as well as ethnological value, for Sir Basil Thomson, who presented it, states in letters that it was made in 1891 by King George Tubou I when he was over 90, partly with his own hands and partly



FIG. 7.  
A *bopao* of Vavau.

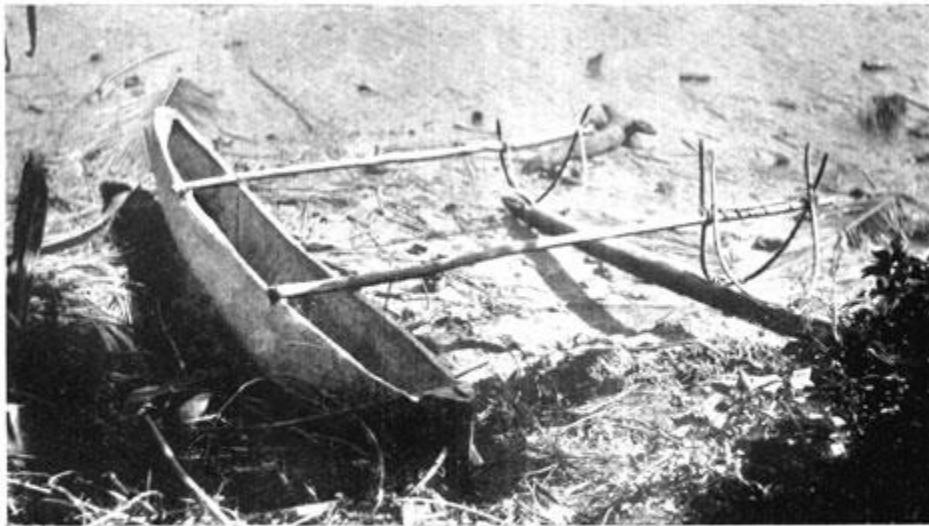


FIG. 8.  
A *bopao* of Vavau, Tongan Islands.

Photos J. Hornell.

FIG. 7., FIG. 8.

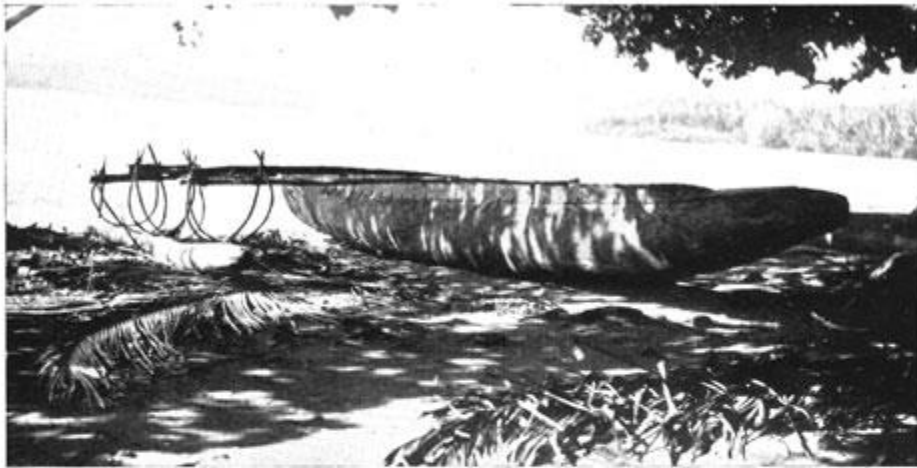


FIG. 9.

A Tongan outrigger canoe (a *tuigutu* of Vavau).

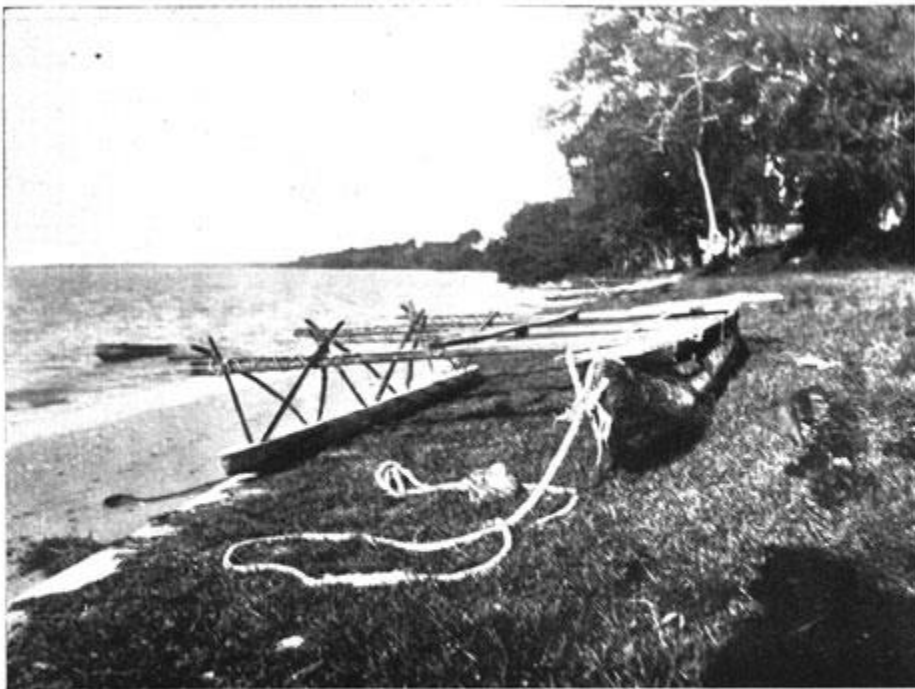


FIG. 10.

A three-boom canoe of Nukualofa, Tonga.

Photos J. Hornell.

FIG. 9., FIG.

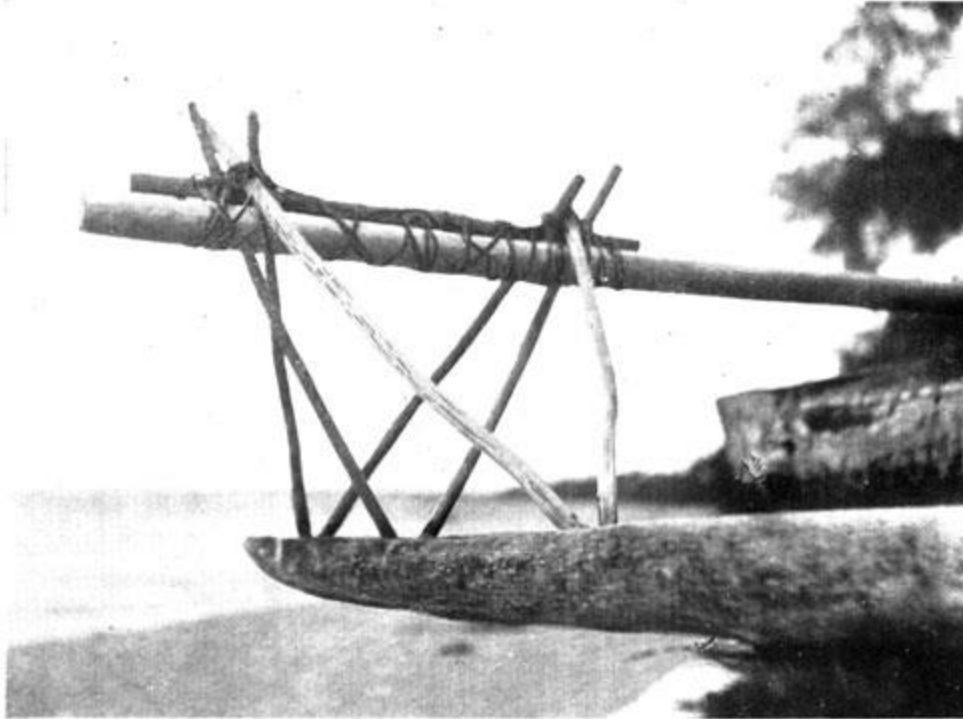


FIG. 11.  
Details of attachment by three pairs of stanchions.


Photo J. Hornell. FIG. 11.

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under his direct supervision. The king, he adds, was a great canoe-man in his youth and “none could handle a *tafa'anga* laden with fish in a seaway as he” (1894, 343). He informs us that all the old men who saw the model declared it to be accurate in every detail. Naturally these old men would not care or possibly dare to criticise adversely their king's handiwork. Nevertheless an error has crept in, the arms of the U-connectives being shown as crossing *under* the boom, an arrangement seen in none of the numerous canoes examined in 1925; in these, the arms invariably crossed above the boom. It is probable that the error took place in the re-assembling of the parts in the Museum, as models usually have the outrigger detached when packed for transport.

As illustrated by this model, we see that the *tafa'anga* is identical in all respects, save the float attachment, with the Samoan *va'a alo* or bonito-canoe. There is the same long narrow hull, the same long decking at each end, ornamented with a median row of knobs to which the snowy white shells of *Ovum ovum* were tied as a decoration; the arrangement and number of the booms (two) are identical, as are also the fitting for the great bonito-fishing rod behind the aftmost thwart. But in respect of the float-attachment, the paired U-type described already as characteristic of small Tongan outriggers as seen in Vavau and Haapai, takes the place of the Samoan inserted stanchion-type. It appears, however, that the Samoan type may have been sometimes employed, for in the figures of “a *tafa'anga* of Tongataboe” given by Admiral Paris in his “Atlas,” not only are the details of the hull precisely those of the Samoan *va'a alo*, but in every particular the float attachment is also identical, consisting of two pairs of obliquely-running

inserted stanchions and a *vertical cord brace*. From this it is possible that here, as with the dugout-outriggers, two methods of attachment may have existed side by side. The evidence furnished by Paris' figure, if correct, suggests that the Tongans may have borrowed the *tafa'anga* from Samoa, in the same way that they borrowed the *kalia* type of double canoe from Fiji; if so, the float-attachment has become modified in those seen by Sir Basil Thomson and myself to the U-type distinctive of these islands. My own opinion, however, is that Paris' figure is wrongly ascribed to Tonga, - 308  and that it represents in reality a Samoan *va'a alo*; the presence of the vertical cord brace is essentially a Samoan character and has never been shown as present in any other drawing or model of a Tongan canoe, and no trace of it was seen in any canoe which I examined in all three groups of the archipelago. Admiral Paris has made numerous errors in regard to his figures of canoes belonging to other islands and his evidence, when not corroborated, must be received with reserve.

It was probably a *tafa'anga* which Tasman, in 1643, saw put off from the land with three men in it. He describes it as a small prow, "very narrow, covered in for a good distance in front and abaft ... and with the outrigger trimmed with shells and conches" (1898, p. 26).

Cook had great praise for the Tongan canoe-builders. Of his first visit in 1773, he writes: "Nothing can be a more demonstrative evidence of their ingenuity than the construction and make of their canoes, which in point of neatness and workmanship, surpasses everything of this kind in this sea. They are built of several pieces sewed together with bandage [sennit], in so neat a manner, that on the outside it is difficult to see the joints. All the fastenings are on the inside, and pass through kants or ridges, which are wrought on the edges and ends of the several boards which compose the vessel, for that purpose. They are of two kinds, viz., double and single; ... The single ones [i.e. the *tafa'-anga*] are from 20 to 30 ft. long and about 20 or 22 ins. broad in the middle; the stern terminates in a point and the head something like the point of a wedge. At each end is a kind of deck, for about one-third of the whole length, and open in the middle. In some the middle of the deck is decorated with a row of white shells, stuck on little pegs wrought out of the same piece which composes it. These single canoes have all outriggers, and are sometimes navigated with sails, but more generally with paddles, the blades of which are short and broadest in the middle."

This account is lucid and accurate, as Cook's observations invariably are, so far as they go. Unfortunately differences in the details of outrigger-attachment must have seemed too trivial a matter to be worth recording, for in this respect his descriptions give no information.

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It is unnecessary to describe here the construction of the hull, for this is exactly similar to that of the Samoan bonito-canoe, the *va'a alo*, and is indeed accurately given by Cook in its essential features in the passage above quoted.

## EXPLANATION OF ILLUSTRATIONS.

FIG. 1—The normal Tongan outrigger attachment, by two U-connectives, each to a pair of short pegs driven into the float (*f*). The U-connectives are not lashed directly to the boom (*b*) but through the intermediary of a brace rod (*r*).

FIG. 2—A Tongan *tuingutu* in plan. The two extremities are solid for a short distance; between each solid end and the nearest boom, the hull is covered in with transverse boards. Toward each end is a mast thwart, so the canoe can be sailed either end forward. Each of the three booms is attached to the float by two pairs of straight stanchions as in fig. 10.

FIG. 3—Diagram to show how the connectives (*s*) are attached permanently to a bracing-rod (*c*) at their upper ends, their lower ones being sharpened and driven deeply into holes bored in the upper surface of the float (*f*). One pair of stanchions only is shown; normally there are either two or three pairs.

FIG. 4—Diagram to explain the method of attachment when there are two pairs of stanchion-connectives; sennit lashing secures the brace-rod and stanchions to the boom.

FIG. 5—Shows the arrangement when there are three pairs of stanchion-connectives.

FIG. 6—A view from above of the arrangement seen in lateral view in fig. 5. The stanchions are shown in solid black: *Si*, the inner pair; *Sm*, the median pair and *So*, the outer pair; *f*, the float; *b*, the boom.

FIG. 7—A *bopao* of Vavau. The dugout-hull has no washstrake.

FIG. 8—Another Vavau *bopao* of the same type; both have U-shaped connectives.

FIG. 9—The largest *tuingutu* seen (at Vavau). It possesses a washstrake and a covering-batten is sewn over the seam. It has three booms, each attached by two pairs of U-connectives to the float. Brace-rods are present.

FIG. 10—A three-boom canoe of Nukualofa, Tongatabu. Each boom is attached by two pairs of diverging stanchions to the float. A broad plank platform covers each end to give footing when spearing fish.

FIG. 11—This photograph shows the details of attachment by means of three pairs of divergent stanchion-connectives and an intermediate bracing-rod (shown lying upon the boom and roughly lashed thereto by turns of sennit) Nukualofa, Tongatabu.

Figs. 7 to 11 photographed by J. Hornell.