Weapons are supported on two sticks, often painted and delicately carved, which terminate inward in a hook and are inserted in the float; weapons are kept also in latticework crates on the opposite side of the platform. The platform of some canoes is ornamented with variously colored artistic carvings and plastic representations of fishes and birds. The masthead is often decorated with a tuft of cassowary feathers. The quadrangular sail is usually made of plaited pandanus leaf matting. Large canoes carry eight to ten men. Van der Sande (1907, p. 201) says that there are only two carved sticks which project from the platform to hold the rolled-up sail. Preuss (1899, pl. 5, fig. 18) illustrates the carving of a fish at the end of one of them.

There is no doubt, says Friederici (1912, p. 260), that the Wanimo man with his Papuan language has to travel in a Melanesian-Polynesian outrigger canoe, and the Sissano, Arop, or Malol man travels in a dugout like that of east Queensland, though the Queensland canoe is fitted with an outrigger.

**NETHERLANDS NEW GUINEA**

**HUMBOLDT BAY DISTRICT**

The Humboldt Bay district may be taken to extend from Oinâke and the Tami River to Tanah-Merah Bay inclusive. Some of the numerous villages at Humboldt Bay are Jotefa (Jotafa), Tobadi, and Kajo. West of the bay is the large lake of Sentani.

The following account of the canoes is based on Van der Sande (1907), who gives good references to earlier writers and is the latest Dutch author I have been able to consult, Van de Goes (1852), Friederici (1912), and Hornell (1923), though other authors have been consulted. I refer to the most-quoted authors by their initials. Published and unpublished photographs have also been inspected.

At the mouth of Sechstroh River (apparently the Tami), just within the Netherlands boundary, Finsch (1888-a, pp. 343-344) found the natives had no canoes but saw them paddling about on root-stumps of trees; to each side of the stump a stout bamboo was bound. However, Preuss (1899, pl. 5, figs. 9, 14; pl. 6, fig. 28) gives illustrations of canoe carvings which show that outrigger canoes of the Humboldt Bay type either belong or visit there.

In Humboldt Bay there are two kinds of craft: 1, the men's boats and 2, the women's boats, which are simple dugouts without outrigger; Van der Sande (1907, p. 205) says: "They correspond pretty well with those of Lake Sentani, and like these generally have no ornament whatever."

The boat for men (wache, ware, s; waka, wage, waga, F) is about 16 to 30 feet long (G). Each side of the dugout is raised by means of a washstrate (brebare, s; percebare, parepare, etc., F) which is sewn on. The space between the strakes is so narrow that the legs of the men can not be placed side by side, but the width within the dugout is large enough. There is little difference between the ends of the dugout, both are curved, though the stern is sometimes more vertical. The sides of the dugout are remarkably and uniformly thin (1.7 to 2.4 cm); in order to prevent them from bending in or out, two small transverse planks are inserted at the middle of the canoe. At Jotefa there are transverse struts, and below these two sticks that cross each other; the sticks are supported below on a thickening of the dugout which was left in its manufacture (F). Good joints are made by sharpening the edges of the dugout and making a corresponding groove on the lower border of the washstrates; these are fastened at several places by strong lashings of a reddish-brown liana (nâ, nâre, nâche, S; naye nok, etc., F), a material which is much tougher than strips of rattan. The ends of the strakes, fore and aft, are usually connected by a handsome plaitwork of nache. For calking seam and holes "a kind of elderberry material, seu, is used." The wood of which these craft are made is light, easily worked, but not very durable, so that after a couple of years the boat becomes untrustworthy and is cut into planks.
The decoration of the hull is effected by painted carving; not by burning as Van der Goes states. The intaglio carvings are painted red and black and represent "birds called ma-rau, which are often joined, or meet in threes and fours, with the heads at an ornament shaped as an angle, called sircab, but otherwise unintelligible to me. The wings are called pau, the triangles behind the eyes, gaijar. Sometimes the entire surface of the hull is carved in this manner, but this, according to my experience, is not seen in Netherlands territory outside Humboldt Bay" (S, p. 199). De Clerq and Schmelz (1893, p. 94, pl. 24, fig. 6) regard the designs on a toy canoe as fishes. Friederici admits that the point is disputed, but he is convinced they are fishing fish.

Apparently end-pieces are not usual on Humboldt Bay canoes, and when they are present they seem to be derived or copied from those of the Arimoa Islands. Hornell (1923, pp. 71, 72, figs. 10, 11) writes of the canoes of a village on the west side of Humboldt Bay:

"The stern has no carved end; it terminates quite plainly. As for the fore end, the decoration is of two kinds; in the larger canoes it consists of an added piece tied on, carved to represent a curiously mixed group of fishes surmounted by a seated parrot; in the smaller ones the bird disappears being replaced by an object that may be a bird's head. . . . Apart from this added prow ornament, the hull of the dugouts and the surface of the wash-strake are decorated with incised fish devices rendered in unmistakable Melanesian style, the fins elongated and elaborated to represent the pectorals of flying fishes. No two hulls are ornamented alike [1923, fig. 12]. . . . The red and black pigments used to outline the incised lines of the design are most effective upon the greyish-yellow background of the naked hull."

Characteristic of the Humboldt Bay canoes are the elaborately carved and painted fore added-pieces, or figureheads (wache meti) (fig. 177).

Van der Sande (1907, pp. 209-211, pl. 23, figs. 3, 4) describes several and figures two, and says that De Clerq and Schmelz (1893, p. 93) are wrong in stating that the carving is placed in the stern; he did not see "a loose ornament tied onto both stern and stern, as illustrated by Finsch (1888-a, p. 358, though not on p. 352) of Humboldt Bay. . . . He [Finsch] may have seen this a little more eastward, in Berlin Harbour, although the object is here much less important and simply consists of knee-shaped, colored pieces of wood (Erdweg, 1902, p. 364, fig. 249)." Erdweg does not allude to ornaments tied on at either end, but Friederici (1912, fig. 58) illustrates a plain fore "Stevensfigur" from Wanimo of the same form as a wache meti, which he says resembles in its outline and spring the similar piece of the outrigger canoes of the western Carolines. Van der Sande (1907, p. 210, pl. 22, fig. 6) describes and figures a fore added-piece (sori) from Tanah-Merah; "it is uncoloured and carelessly finished, the proof that here the western limit of this style of prow is approached; nevertheless all the representations of animals can still be traced on it." An added-piece is shown on the bow of a small canoe at Humboldt Bay in Meyer and Parkinson (1900, pl. 3), another is unshipped and lies on the platform (pl. 4). The object is S-shaped (fig. 177), at the top is a cormorant's head, usually with a dog on its beak (Van der Sande discusses this animal), below on both back and front are two fishes joined by their tails, and there are other fish designs. Similar carvings with slight variations or omissions are figured by De Clerq and Schmelz (1893, pl. 25, figs. 2, 11, Humboldt Bay), who call it sjori; Preuss (1899, pl. 5, fig. 8, Humboldt Bay, fig. 9, Sechstroh River, fig. 11, Walckenaer Bay, fig. 12, Attack Harbor); Finsch (1888-c, pl. 22, fig. 4, Attack Harbor); Hornell (1923, figs. 10, 11, Humboldt Bay); Lorentz (1905, p. 50, Tobadi); Chauvet (1930, pl. 107, figs. 407, 408, Terfa-Demta, Matterer Bay, fig. 409, Attack Harbor); Fuhrmann (1922, pls. 30, 32).

The outrigger is always to starboard. The two booms (owerai, S; wacheare, wagear, etc., F; toya at Jenbi, F) are about 5 to 7 meters long and are fastened amidships to the dugout and strakes with ndêche. "The booms are curved slightly at both ends in Polynesian fashion" (F). In a canoe 5.5 meters long the booms were 3.3 meters long (F). The float (tsam, S; saam, sama, F) is always considerably shorter than the canoe, the ends point upward. There are two divergent pairs of undercrossed attachment sticks (azoze, atot, atote, etc., F) for each boom. In some attachments one member of a pair appears to be nearly vertical and the other decidedly oblique (S, fig. 133; M and P, 1900, pls. 2, 4, 5); but Friederici mentions only "two thin sticks".
The platform (wakob, S; kobe, twakobe, kop, wakop, etc., F) rests on the booms, over which it does not project, and extends beyond each side of the hull 2 or 3 feet (fig. 178, b). Longitudinal saplings rest on the booms, upon these are transverse saplings (samrari), and the flooring consists of longitudinal palm laths. On the off side of the platform is a rail ing which rests on the longitudinal saplings; the upper edge is composed of two thin longitudinal poles, between which are fastened, at each end, a pair of undercrossed sticks which support the thwart pole (fig. 178, b). In the center is a widely extended pair of crossed sticks (ania) and a few vertical sticks. From the outer pairs of crossed sticks, respectively, a fore and an aft thwart pole (samrari) slopes down to starboard to be firmly fastened between two stringers lashed on the booms well beyond the hull. There is a second pair of stringers 1.5 feet farther out on the booms. These two pairs of stringers clamp three horizontal transverse spars which project toward the float, the free ends of which are carved to represent some animal (pig, cassowary, hornbill, snake, etc.); they serve to support weapons and sometimes also the mast and sail (S, figs. 130, 133; P, pl. 5, fig. 18; M and P, 1900, pls. 2, 3, 4). A fireplace is usually carried on the platform; it generally consists of a wooden box with a layer of ashes; in one canoe a small carapace was so employed (S). The bract of a palm serves as a bailer (gai, S). The paddles (tchau) have no crutch.

Figure 177.—Fore added-pieces or figureheads (tveache meti) of Humboldt Bay canoes: a, a dog (gonje) standing on the beak (euge) of a cormorant (swandi), the crop (foretuge, "bag") is below the head, below this is a sarebache fish whose tail (chase) joins that of a shark (oi); the projections are fins (poutuge). On the convex border connected with the dog’s tail are wings and tail of a small black bird (waime) and below this the tail and body of a sawfish (? with a square head (these are not intelligible in the side view). Above the base (no) are a sarebache and an oi; "sides with carved ornament (ane senobune) consisting of three eye ornaments and a fish figure" (after Van der Sande, 1907, pp. 209, 211, pl. 23, fig. 4). b, fore added-piece, horizontal length 13 inches, from a small canoe (Cambridge Museum, presented by James Hornell).

The mast (abiai) is approximately 15 feet high; or it may be 8 to 10 feet high (G, p. 174). It is made of a sapling, the top of which is bifurcated for reeving the halyard, and is usually ornamented with cassowary feathers which serve evidently as distinctive signs; the people of Ingras and Ingran may carry only one plume, whereas those of Tobadi may carry two, three, or four plumes. There are two steps (abe genu, abiai genu) for the mast near the fore edge of the platform, one to starboard and the other to port. "They are formed upon
two athwartship spars (samarari) which actually bear the foot of the mast, but to prevent
the slipping of the mast athwartships, at each step, by means of strong rattan, a pair of fore-and-aft
spars is lashed, fitting between the laths of the platform" (S, p. 204).

The rectangular sail, which is much higher than it is broad, is made of pandanus leaves
sewn together horizontally and is fastened to a horizontal yard and boom. A single halyard
is bent to not quite the middle of the yard and is rove over the fork at the top of the mast
and a sheet is fastened to the boom near the clew of the sail. When not in use, the sail is
always rolled up from the bottom to the top and laid on the carved spars. The mast is stepped
in the ake genu which is on the windward side and leans forward against the fore thwart pole
(samarari); it is maintained in this position by a fore stay passing from the masthead to the
bow. A second stay or shroud in many canoes passes around the outside end of a boom and from
there runs back to the foot of the mast, which it encircles together with the samarari. To take
this rope outside, one of the sailors has to jump overboard. All ropes are made of bark
fiber (S). When the sail is unfurled the halyard is generally belayed at a point toward the
stern. If there is a steady breeze and a fixed course the sheet is also belayed. In the event
of a sudden gust of wind threatening to capsize the craft, the crew is always prepared to act as
ballast by posting themselves on the platform or, if necessary, to scramble on to the outrigger.

A great speed is attained by these narrow boats when running before the wind.
In sailing along the coast the land and sea breezes are abeam. Close-hauled the
craft are of little use, for they cannot beat to windward. In quiet harbors, when
not in use, these canoes are beached or more generally tied to the platforms of
the houses. When the sea is rough they are kept on top of the platforms (S, 1907,
fig. 96) or on the large platform in front of a "temple" (karevrai). (See Lorentz,
1905, p. 135.) Occasionally the hull is supported well out of the water on a small
stage, the float being supported by two forked posts (S, 1907, fig. 180). A canoe
sailing stern first is illustrated by Lorentz (1905, p. 36) but the details are not
clear.

In the Basel Museum is a wache from Humboldt Bay:

The hull is 5.8 meters long, the opening 15 cm wide. A pair of internal crossed struts
support each boom; they are inserted into protrusions from the hull and are elaborately lashed
together and to the boom. The stern of the hull ends in a pointed knob. A washstrake 12 cm
high runs along the whole length of the hull. At the bow between the strakes is the usual
figurehead; on the front of the neck of the cormorant is a carving of two dogs copulating, and
on the back is a man holding a stick. Fishes are painted in red and black on the strakes. The
platform lies between the booms; on the port side it is composed of slats resting on six spars.
On the port and starboard sides of the platform is a rude double railing, composed of vertical
sticks clamped by three tiers of horizontal rails; on the starboard side it is wider, as the mast
goes between the horizontal rails. Between the two upper pairs of horizontal rails, at the
ends and in the center, there project to starboard three squared sticks carved at the end into a
shark's tail; these can be compared with the spear-holders of the Liki canoes. There are two
long booms with attachments consisting of two pairs of widely divergent undercrosse sticks.
The float is flattened above and is 4 meters long. The mast is 4.18 meters high with cassowary
feathers at its head. The bluntly pointed foot is placed aft of the fore boom on the starboard
side and between the horizontal elements of the starboard railing. Two stays are fastened to
the aft boom from the top of the mast. An oblong pandanus mat sail, which is 2.72 meters
long and 1.25 meters broad, has six transverse spars which have tufts of cassowary feathers
at their ends. The halyard is rove through a sling which is suspended on the prong lashed to
the head of the mast.

Hornell informs me that in 1918 he saw several large sailing canoes (fig.
178, a):

A large platform extended for some distance on the off side of the hull as a counterpoise.
On the outer (off) side of the platform were two low parallel rails set about a foot apart,
they were strengthened by a pole at each end which ran downward diagonally across the cavity
of the hull, its lower end fitted beneath a cleat on the inner side of the hull. A small dugout
canoe was sometimes cradled in the space between the rails. The outrigger attachment con-
sisted of two pairs of sticks converging over each boom. Across the stringers were spear rests, which were sometimes carved to represent a lizard or a crocodile with the head directed toward the hull. The mast was stepped in the middle of the fore part of the outrigger platform. A side stay ran from the masthead to the outer end of the fore boom; a second stay, or the halyard (?), ran to the aft edge of the outrigger platform. The sail was a tall narrow rectangle of matting, bounded top and bottom by a bamboo spar. A yard projected about a foot beyond the margin of the sail and was ornamented with a tuft of cassowary feathers. In some canoes another tuft was attached to the margin of the sail a little way below.

Figure 178.—Canoes of Humboldt Bay, Netherlands New Guinea: a, section of a sailing canoe (after a sketch by James Hornell); b, wache with detail of the railing of a platform (after Van der Sande, 1907, figs. 129, 130, 133).

On Lake Sentani are elegant dugouts (isja) without any additions. A wache of the Humboldt Bay type, at the islet of Ase in the lake, is shown by Van der Sande (1907, fig. 131), but no mention is made of it in the text.
DISTRICT WEST OF HUMBOLDT BAY

The area between Humboldt Bay and Cape D’Urville may be regarded as one ethnographical district. The main geographical features are: Tanah-Merah Bay (140° 20’ E.); Matterer Bay (140° 5’); Walckenaer Bay (140° 5’ to 139° 40’); the Bonggo coast (139° 35’ to 139° 15’), with the Podena Islands; the Takar coast (139° 15’ to 138° 50’), with the Arimoa or Kumamba Islands of which the following are referred to: Jamma (139° 12’); Masi-Masi, Wakde (139°); Moar and Liki (138° 42’); the eastern islands are off the Takar coast and Liki is off the Saar coast (138° 50’). The mainland peoples of this area speak Papuan languages and it is interesting to note that the removable figureheads of the canoes of the opposite islands are wanting in the craft of the Takar coast, which is inhabited by non-seafaring Papuans. Friederici (1912, p. 256) says that the small vocabulary he collected in Jamma confirms the impression made on him by the physique of the islanders that there is a considerably stronger “Polynesian” element present than among the Geelvink Bay people or even than among the Melanesian inhabitants of Humboldt Bay.

I have not been able to find any information about the canoes in the region between Humboldt Bay and the Arimoa Islands, but at Tarfa Island in the Dempta district, Matterer Bay, 40 to 50 miles west of Humboldt Bay, canoes have the characteristic bow figurehead of Humboldt Bay, as has already been noted.

ARIMOA ISLANDS

The earliest illustration of a canoe of “Moa, Gamma, and other neighbouring islands,” is that drawn in 1643 and given in Tasman’s Journal. Valentijn (1724, p. 57, pl. no. 27. XX) based his drawing on this, but he made various omissions, additions, and modifications, as was his wont. Forrest (1779, pl. 16 and reproduced in the French edition) copied Valentijn’s drawing with fair accuracy. In the 1919 edition of Tasman the island of Moa is called Wakde. Tasman (1919, p. 123) shows a small canoe paddled by one man:

The ends have a decided rake and are pointed; the edges rise up slightly fore and aft. At bow and stern is a vertical squared stick which expands into a carving that inclines inboard. The erections differ from each other and both are unlike anything subsequently recorded. The two booms are widely spaced and lie over the gunwales. The rather short float is pointed and raked. Each attachment consists of two pairs of short sticks that lean against the boom. A stringer is tied under the booms at about one third of their length, and five false booms, or spear-holders, are inserted into the side of the hull and fastened below the stringer; their free ends are carved apparently to represent heads of animals. A spear, fish spear, bow and arrows are laid across the booms. The paddle has a simple grip.

At Jamna (Yamna) Island, according to Friederici (1912, p. 255), who saw some very large boats, the craft (vaga) are well made and look seaworthy. The bow has a blunt appearance, as the figurehead is commonly curved slightly backward. “The favorite painted pattern is a fish.” The struts (hunibuni) in the hull are like those of Jotefa, Humboldt Bay. There are two booms (kaída); the attachment sticks (feto) of the float (samo) to the booms are longer and thinner than those at Jotefa, but are fundamentally of the same form and arrangement. Only a few small craft are without a platform. If there is a railing it is higher than that of the Humboldt Bay canoes. There are one or two stringers on the booms; three spear-holders (kaiyanya) project from the platform over the stringers. When there is no platform the spear-holders lie over two or three stringers, one of which is at the middle of the booms while the other two are close together.
about 40 cm from the edge of the canoe. The outrigger is to starboard; in this Van der Sande concurs (1907, p. 200), though De Clerq and Schmelz (1893, p. 92) state that at Jamna, Masi-Masi, and other islands east of Point D'Urville the outrigger is on the left side as it is on the Tumleo canoes.

Hornell sent me a plan of a Wakde canoe which shows that it is similar to the usual type of Humboldt Bay. The three stringers support three spear-holders which end externally in a shark's tail. The attachment consists of two divergent pairs of undercrossed sticks. A platform extends some distance on the off side; the railing at the end is supported fore and aft by a very short diagonal brace. Hornell says (1923, p. 70) that all the canoes of Wakde Island have a dugout hull and a washrake. The end-pieces differ in the large and small canoes (fig. 179, a, c). He adds:

![Diagram of canoes](image)

**Figure 179.—Details of canoes of Netherlands New Guinea.** a, side view of a small canoe with outrigger omitted, Wakde, Arimoa Islands (from Hornell, 1923, fig. 1). b, sections of hulls with babbagabba weather-screens, Geelvink Bay: 1, Ansus (from Friederici, 1912, fig. 37); 2, Manokwari (from Hornell, 1920, fig. 6). c, fore end of a large canoe, Wakde, Arimoa Islands (from Hornell, 1923, fig. 4).

"In the latter [small canoes] the prow is carved into the form of a human head much conventionalized and quite small. Immediately behind this and at a higher level is tied one of the ornaments [mani]. The stern piece differs peculiarly from that at the fore end, for in addition to a terminal point carved into a very rude convention of a human head or at least into a projection showing nose and eyes, there is immediately inwards an upwardly projecting parrot's head, stumpy and conventional. Between these is tied a quadrangular arrangement of four human heads with the tip of the nose extravagantly elongated [fig. 180, c]."

"In the larger canoes, the fixed stem-piece is greatly elaborated, and instead of the bird ornament being separate, it is here incorporated with the human figurehead at the bow. The bird surmounts the head and is made in one piece with it [fig. 179, c]. . . Upon the hulls of these larger boats, incised and low relief decoration is usually profuse (1923, figs. 4-7). . . A fish-tail motive runs through and dominates all these designs. Even human and bird figures are so treated. [Hornell draws attention to analogous designs of sea-ghosts from the Solomons, Saa, and San Cristoval; compare with Codrington, 1891, pp. 197, 259.] Not infrequently a pair of what appear to be evil-eye figures, male and female, are incised amidships on the outside of the hull."

Analogous end-pieces which fit on the ends of the strakes have been described by Van der Sande (1907, p. 212, pl. 22, figs. 9, 10), and were obtained at Liki. The head of the bow-piece (1907, fig. 9) was said to be that of the black cockatoo (kokar, Microglossus) and that on the stern-piece (muri tabor) to be the head of the black bird-of-paradise (piakore); Van der Sande reverses these attributions (p. 210) but the first identification is more likely correct; they are said to
have come from Liki. There is no carving of a whole bird on the head of this bow-piece as in figure 179, c. Identification of the heads as being human is apparently an assumed interpretation by various authors and not a native designation. An aft end-piece in the Cambridge Museum (fig. 180, b) is without a provenance, but doubtless comes from the Arimoa Islands. The heads certainly look human; except for the animal-like figure below the central head, it closely resembles the photograph given by Fuhrmann (1922, pl. 24), which likewise has no provenance; tied onto it, immediately behind the chin of the terminal head, is an aft added-piece (fefore) which is not unlike that given by Uhle (1886, pl. 1, fig. 6) from Podina. This specimen differs in many respects from that figured by Van der Sande (pl. 22, fig. 10).

**Figure 180.**—Decorated end- and added-pieces, Netherlands New Guinea: a, fore added-piece (mani) 19 inches high, Walckenaer Bay; b, aft end-piece 19 1/2 inches long, probably from Arimoa Islands; c, aft added-piece (fefore) 9 1/4 inches high, Wakde (Cambridge Museum).

The detachable fore added-piece (mani) of the Jamna canoes is more symmetrical than the Humboldt Bay type. In the more typical ones there is a bird on the top supported in front and behind on the beak of a bird, or by a fish (fig. 180, a), which is unusual, and in the center by pierced carving which possibly may represent a human or animal body with limbs. This carving stands erect on a crossbar, one end of which is carved to represent a (human?) head, commonly with a prominent nose and protruding tongue; above the head is a bird’s head, the beak of which supports the bird on the top. The other end of the bar is carved to form the body of the lateral bird whose beak supports the bird on the top, or very occasionally there is a head at this end. The stem of the figurehead
usually has a hole through its lower hooklike end. I shall refer to this fore added-piece as the *mani*. It is to be found, with slight variation, in many museums and has been illustrated and described in the following: De Clerq and Schmelz (1893, pl. 25, figs. 1, 7, Jamma; fig. 10, Masi-Masi; fig. 12, Tarfia village at Matterer Bay where it is called *waumata*); Uhle (1886, pl. 1, fig. 4, Jamma); Seligman (1917, pl. C, no. 14664); Hornell (1923, fig. 2, Wakde); Fuhrmann (1922, pls. 25, 28); Chauvet (1930, pl. 107, fig. 403, Podena, and fig. 405, Duperrrey). A variant of the *mani* type is figured by Uhle (1886, pl. 1, fig. 5) from Podena Island. Three of the figureheads illustrated by Seligman (1917, pl. C) are also given by Fuhrmann (1922, pls. 26, 27); they belong to the same type as that from “Merat (Jamma),” illustrated by Chauvet (1930, pl. 107, fig. 404) who also figures an aberrant type from the same island (fig. 406).

![Figure 181.—Single outrigger canoe (*va*), Ansus, Netherlands New Guinea (after Guilmard, 1889, p. 404, and the original photograph).](image)

The aft added-piece from Wakde referred to by Hornell and figured by him (1923, fig. 3) consists of two horizontal bars, each terminating in a face; between the bars is a simple pierced carvings and the stem is perforated (fig. 180, c). A similar added-piece from Podena is given by Uhle (1886, pl. 1, fig. 6), and another by De Clerq and Schmelz (1893, pl. 25, fig. 3) from Masi-Masi is called *fafore* (a term which I propose to adopt), and is said by them (1893, p. 97) to be placed in the stern to attract fishes; (see also Fuhrmann, 1922, pls. 24, 29, 31).

The paddles (*faso*) of Jamma are without a crutch and resemble those of Jotafa, Humboldt Bay, but the small nose at the end of the blade is absent (Friederici, 1912, p. 255).

On Liki Island the canoe appears (Van der Sande, 1907, fig. 136) similar to that of Jamma and has similar ornamentation. The outrigger is on the starboard side; the two boom, which are amidships, do not project over the port side. The float has upturned pointed ends and appears to be nearly as long as the hull. The attachment consists of two divergent pairs of undercrossed sticks. There is no true platform. Lashed evidently to stringers are the usual three spear-holders, their ends with “curved points, not unlike the heterocercal caudal fin of a shark” (Van der Sande, p. 201). A washstrake is present.

**GEELVINK BAY**

The Geelvink Bay district may be taken to extend from Cape D’Urville or Amberno in the east (137° 50') to Cape Saweba or Veakke in the west (about 130°). The only mainland places to be mentioned are Kwatisore in the fundus of the bay (135°), Wandamen coast on the east side of Wandamen Bay, and Manokwari (Dore', Dorey, etc.) in the northwest. In the mouth of the bay the islands which here concern us are: the Schouten (Misore) Islands, including
Supiori (Suk) and Wiak (Biak). The village of Wari is on the north coast of Wiak, that of Mokmer on its south coast, and that of Bosnik at its east end. The village of Korido is on the south coast of Supiori; probably this is the Kordo of Uhle. In the middle of the bay is Japen (Jobi), on the north coast of which are Pom and Sirewen and on the south coast Serui, Wooi Bay, and the small island of Ansus. Numfur (Nufoor, Mafur) lies between Wiak and Manukwari. Guillemand (1889, p. 406) writes of the Ansus canoe (fig. 181):

"Such a thing as a built boat is unknown, and all are 'dugouts,' made by burning out the trunks of trees with charcoal. . . . After the finishing touches have been put to the craft, they are filled with water and kept sunk for a time, in order to counteract the tendency to split. They are outrigged almost without exception on one side only, and though the outriggers are but clumsily constructed as compared with those of the Dorei Bay people, the Ansus men are much more given to adorning their boats than their western neighbours. Bits of red and white rag, coloured leaves or flowers, and various shells are constantly used for this purpose, and the bows of the craft are sometimes ornamented with fretwork figure-heads. . . . no two of them appear to be alike."

Friederici (1912, pp. 252, 254) refers to Ovulum shells as ornaments on the outriggers of many canoes at Ansus, and on the bow-terminal and on the projections of the fore washboards of many canoes at Pom and Sirewen. Hornell (1920, p. 51; 1923, p. 74) refers to the adornment of these projections with such shells at Wooi Bay (fig. 182, a) and at other of the villages in the islands; he once saw the tops of the connectives ornamented with an Ovulum shell and a bunch of leaves.

The outrigger canoes (twa) of Geelvink Bay have a single or a double outrigger with numerous booms and a special method of attachment. Friederici (1912, pp. 249-251) calls attention to the fact that Forrest, D'Urville, and Raffray mention only double outriggers at Manokwari. De Clerq (De Clerq and Schmeltz, 1893, p. 92) says the large canoes have two outriggers and the small ones a single outrigger, on the starboard side, but Friederici did not see one of the small canoes with a single outrigger; Hornell saw several in the harbor only. There is a similar overlap, but with a predominance of the single outrigger, at the Schouten Islands, on Japen, and farther within the bay along the mainland and, according to De Clerq, on the Wandamen Coast. The easternmost double-outrigger canoe known to Friederici is that noted by D'Urville near the mouth of the Mamberamo, but it is doubtful to what locality this craft really belonged. No double outrigger is indigenous east of Cape D'Urville; Geelvink Bay is thus a mixed area. The double outrigger of Indonesia is found along the north coast of New Guinea up to the eastern entrance of Geelvink Bay and predominates in the western part of the bay, whereas the Oceanic single outrigger extends throughout the bay as far west as Cape D'Urville and predominates in its eastern part.

The following account is based on Van der Sande (1907, pp. 206-213), Friederici (1912, pp. 249-255), Hornell (1920, 1923, MS.), and supplemented from De Clerq and Schmeltz (1893), Guillemand (1889) and several others; the most quoted authors are designated by their initials:

The hull is an ordinary slab-sided, double-ended dugout (H, 1920, p. 47); it is wider than the hulls of craft farther east and this necessitates the use of transverse planks as seats. The greatest breadth is between the gunwales (S, p. 206).

At Mokmer, Friederici (p. 251) measured canoes (twa, wai) up to 12 to 15 meters long and 4 to 5 meters in outrigger breadth. In the hulls of these canoes are straight struts which extend from side to side and above these is a pair of knees, the horizontal limbs of which overlap and are tied together (fig. 179, b, 1). There are perforated longitudinal ridges (jafor; patnati, F) within the upper edge of the dugout and along the length of its bottom. As in the Solomon mon, lashings of rattan, liana, or arenga pass upward from the holes to make fast
the struts and booms. A section of a Manokwari canoe (fig. 179, b, 2) shows a strut below a broad longitudinal ridge on each side of the hull; the boom is lashed to the strut. Friederici (1912, p. 249) refers to longitudinal poles between the upper transverse struts (pampumbe) and the booms. In Ansus (fig. 179, b, 1), however, they do not run along the whole length of the hull, but they are absent in the middle and again farther aft in a section between two booms (P, p. 254). The longitudinal poles within the hull recall those in the mon and in the orembai.

Figure 182.—Ends of Geelvink Bay canoes, Netherlands New Guinea. a, fore end of a large double-outrigger canoe, Wooi Bay, Japen, showing gabbagabba weather-screen and gunwale pole, fore washboards, median piece, spur, and bow-terminal; the washboards are drawn too horizontally (modified from Hornell, 1920, fig. 10; 1923, fig. 14). b, fore end of a small canoe with end-piece and weather-screen, Manokwari (from Hornell, 1920, fig. 7). c, aft end-pieces: 1, Manokwari, same canoe as b (from Hornell, 1920, fig. 8); 2, 3, Pom (from Friederici, 1912, figs. 41, 44). d, fore end of a large double-outrigger canoe, Manokwari, showing projection end-piece and prow-affix (from Hornell, 1920, fig. 9; 1923, fig. 13).

Paris (1841-43, pl. 104, fig. 16) gives a section of a double-outrigger sailing canoe with four booms. A horizontal strut crosses the hold and rests on a cleat at each side, and there is another below it; these struts are lashed together in the middle. A thwart passes over the gunwales and a longitudinal pole lies over each end above the gunwales; on these poles the booms are laid and two strong lashings connect the boom with the thwart and the two struts. The height of the sides of the dugout is generally increased by the addition of a weather-screen composed of several superimposed leaf-stems of the sago palm (ampe') for which Friederici adopts the term gabbagabba, the Moluccan name for the leaf-stems, derived perhaps from the Ternate language. The gabbagabba are fastened horizontally with the concave side downward and are usually three or four in number, but Friederici saw, at Pom and Sirewen on north Japen, two, or at most three. He says (1912, p. 253) that there is sometimes a gunwale lath above them. A section of a Manokwari canoe shows four rows of gabbagabba topped by a square bar of soft wood to form a gunwale, the whole secured in position by vertical pegging (fig. 179, b, 2). There is usually no addition to the sides of the smaller canoes; though there may be a gunwale pole (figs. 181, 184). An illustration of a model of a wapai canoe from Wosimi, Wandamen Bay (C and S, pl. 24, fig. 7), and another of a double-outrigger canoe of Wakobi (S, fig. 138), show a washstrate on each side, upon the edges of which thwarts are fixed; upon the thwarts immediately above each gunwale is laid a long thin pole which thus forms a low rail. The wapai has sara end-pieces, but the other canoe has no aft end-piece.
The bow of the dugout is variously finished off: 1. In the smaller craft it is generally produced into a simple or carved horizontal projection with or without a slight upward curve (fig. 184) (S, fig. 137, Kwatisore). In the original photograph of an Anus canoe it has a scalloped upper edge and a perforation (fig. 181). This "heavy projection...is useful in beaching and for the better lifting of the bow in the surf" (S, p. 266). 2. The bow in the larger canoes may have a stepped upper edge upon which a carved bow-terminal is fastened; its lower border is stepped to fit the bow (fig. 188) (F, figs. 45, 46, ar'ek, Pom). The bow-terminal carries on the line of the upward sweep of the bow; it is, in many canoes, ornamented richly with painted scroll fretwork and carving (fig. 182, a) (F, p. 252, Pom, Sirewen; S, fig. 140, Numfor; H, 1920, fig. 10; pl. 3, fig. 4, Manokwari, Woii Bay).

Figure 183.—Adjuncts to outrigger canoes, Geelvink Bay: a, prow-affix (after Mantegazza, 1877, pl. 13); b, fore end-piece, Mafur (after Mantegazza, pl. 13); c, oera, Tandia, Wandamen Coast (after De Clerq and Schmeltz, 1893, pl. 24, fig. 3); d, median-piece (after Mantegazza, pl. 16).

The bow-terminal is undoubtedly derived from Indonesia, where are seen analogous long, thin, carved and painted terminals which curve upward and are similarly stepped on the bow of the hull (Müller, 1912, fig. 17, Nicobars with fretwork, fig. 31, Sangir). Many canoes have a solid V-shaped fore end-piece. The central portion may extend for a short distance along the top of the bow of the hull, and the ends of the wings abut against the fore ends of the gabbagabba when this weather-screen is present (fig. 182, b). The apex of the fore end-piece in some canoes is produced into a vertical knob or more commonly into a well-carved human head with additional carving and fretwork (fig. 183, b). The hair is represented by cassowary feathers or the stiff fibers of the leaf stalks of the palm, Arenga saccharifera (Mantegazza, 1877, pl. 13, no. 893, from Mafur; Uhle, 1886, pl. 1, fig. 2, Kordo; C and S, p. 95, pl. 25, fig. 6, bok, from Korido, on Supiori). The end-piece, instead of being placed well behind the bow, may be fixed far forward so that its fore edge continues the upward curvature of the hull (fig. 182, b) or slightly projects beyond it. The upper end or apex is usually cut square (C and S, pl. 24, fig. 7; model of a wapoi from Wosimi, Wandamen Bay; S, fig. 141; F, fig. 33; H, 1920, fig. 7—all from Manokwari). Friederic (1912, p. 249) terms this the sara form, in the larger canoes it is ornamented by a carved snake in the act of swallowing a human head. Hornell describes a decorated fore end-piece cut from the solid and fitted upon the fore end of the hull by means of pegs and by a lashing on each side passed through holes cut in projecting cleats left when shaping these parts (fig. 182, d).
In the largest canoes, all of which have a double outrigger, as in those at Manokwari, there is fitted into a slot in the upper surface of the apex of the end-piece a tall, narrow pointed board which I here term the “prow-affix”. I consider that the prow-affix is a different structure from the bow-terminal. It may be variously carved in fretwork and painted (fig. 182, d) (F, fig. 34, Woor Bay; H, 1920, p. 48, fig. 9, pl. 2, fig. 3; 1923, p. 73, fig. 13). Immediately below the point is a pumpkin-shaped, oblong knob which is usually hexagonally grooved. A fretwork board with a ribbed ball at the top and below a carved animal (dog ?) whose tail is prolonged into long leafy scrolls, figured by Mantegazza and described by him as of Ternate style, is evidently a prow-affix (fig. 183, a). A photograph of a large canoe of Geelvink Bay (S, fig. 139) shows a plain prow-affix; beyond the ball at the top there is a long flagstaff carrying a large flag.

A variant of the end-piece drawn by Paris (1843, pl. 104, fig. 13) and copied by Müller (1912, fig. 46) of a large sailing double-outrigger canoe with a tripod mast, at Manokwari, shows a squared vertical end-piece projection, and a forward-reaching, nearly horizontal projection with a squared end. The latter carries on the line of the bow of the hull and corresponds in general appearance with the bow-terminal of other canoes, but in the drawing it looks as if it were a prolongation of the end-piece.

The V-shaped fore-end-piece is in many canoes replaced by two parallel or slightly converging boards (washboards), and by a breakwater between them (fig. 184) (S, fig. 137, Kwatisore; H, 1923, pl. 3, fig. 4, Manokwari). These may be plain or painted, but typically they are pierced by a delicate and intricate fretwork. Hornell (1920, p. 50, fig. 16) says that he saw this structure on canoes furnished with a bow-terminal at Manokwari but more numerous at Woor Bay, Serui, Bosnik, and Pom, all settlements in Japan, and on the adjacent islands; he states (1923, p. 73) that it is more prevalent than the end-piece as it is used in medium-sized canoes which are more numerous than the very large ones. The upper fore angle of each lateral board is produced into a horizontal or in some canoes into a slightly turned-up spur or a slender point (fig. 188). (See Friederici, figs. 40, 43, 45, 46, which are all from Pom.) Hornell (1920, p. 59; 1923, p. 73, figs. 14, 15) describes and illustrates fore washboards decorated with fret-scrolls on a canoe at Woor Bay, Japan, and he has given me additional information (fig. 185). On the top of the solid part of the fore-end of the dugout and immediately in front of the hollowed-out portion is a transverse ridge, the ends of which project beyond the narrowed end of the dugout and are continued down each side as a kind of bracket in high relief; there is a slot in the center of the ridge. The fore side of the breakwater abuts against the ridge, and in a hole near its lower end is inserted a median spur, the base of which fits into the slot in the ridge; the purpose of the spur is to lock the breakwater in position. The basal portion of each fore washboard abuts against the gabbagabha weather-screen; it also rests on the edge of the dugout and abuts in front against the transverse ridge.

A beautiful fretwork board, the median-piece, is furnished on its aft edge with a pintle peg to fit over the top edge of the breakwater (figs. 183, d, 185, b). The head of the pintle is carved to represent a human head, and another smaller head is often carved at the upper fore corner of the median piece; the lower end rests on the spur. de Clercq and Schmelz (pl. 24, fig. 4) illustrate a bob from Korido, Hornell (1923, figs. 16, 17) gives two examples from Manokwari, and Fuhrmann (1922, pl. 23) illustrates another.

Hornell (1920, p. 54) saw a bow structure at Pom: "Instead of a pierced median plank at the fore side of the bow bulkhead [breakwater], the owner had placed a rounded or head-shaped ornament covered with tufts of black fibres let into holes punched over the whole sur-
face to give the appearance of a human head . . . its employment is to obtain protection for the canoe against evil spirits." He says (p. 51), "In the recess in the bows provided by this ornamental structure [the washboards] is stowed the shallow basket holding the turtle harpoon line."

A carving, which is usually bipartite below so as to be more securely attached, represents a squatting human figure with fretwork arms and legs (fig. 183, c) (Mantegazza, pl. 15, no. 896; C and S, p. 95, oera or hoera, Tandia, Wandamen coast; S, p. 212, manga nune, Wari, used on small craft). It may be a fretwork board with a squatting figure on top (Uhle, 1886, pl. 2, fig. 5; Ansus, fig. 6, Dore; C and S, p. 94, pl. 24, fig. 9; oera or hoera, Wasior, Wandamen coast; Guillemard, 1898, p. 408; S, p. 212, pl. 22, fig. 8, horie, Kwatisore; Fuhrmann, 1922, pl. 30). Or it may be a small block of wood painted with scrolls, doubtless to indicate a squatting figure, and a human head with arenga or cassowary feathers as hair (Uhle, pl. 2, fig. 8, Kordo, and a simplified specimen from Dore, fig. 1; C and S, p. 96, pl. 24, fig. 8, mangga moemen, Wardo, southwestern Wiaik). Hornell's "head-shaped ornament" evidently belongs to this series. The carved face is in such relation to the slot at the base that for the face to look forward, as it must do, the carving would have to fit on to a longitudinal board. It is clear that it can not be placed on the breakwater, but it would fit on the median spur, which so far as I know has been noted only by Hornell.

![Figure 185](image-url)

**Figure 185.**-Details of the fore end of a double-outrigger canoe, Woody Bay, Japen: a, side view showing dugout with the transverse ridge and its lateral "bracket", gabbayabba weather-screen and gunwale lath, fore washboard, and spur; b, section along median line showing breakwater, spur, and median-piece; c, plan showing the slot in the transverse ridge, immediately behind it is the shaded breakwater (after sketches by James Hornell, and 1920, p. 50; 1923, p. 73, figs. 14, 15).

There is no information as to the position in a canoe of the following: hornbill (Uhle, pl. 1, fig. 1, Kordo); hornbill and dog (?) (Uhle, fig. 3, Manokwari); conventionalized hornbill and dog (?) (C and S, p. 96, pl. 24, fig. 2, bok, Korido); hornbill (C and S, pl. 25, fig. 8, Korido). The carving of a dog (C and S, p. 96, pl. 24, fig. 1, mansoroe orem, Saokorem, Little Geelvink Bay) was placed at the stern. A photograph of a Geelvink Bay canoe, erroneously stated to be from Humboldt Bay (Chauvet, 1930, pl. 35, fig. 90), shows a high affix to the bow and to the stern end-piece; each has a bold volute. Thus any of the foregoing may be either a prow-affix or a stern-affix. In the Cambridge Museum are two prow- or stern-affixes with two volutes (fig. 186, a); one, which is probably a prow-affix (fig. 186, b), represents what I take to be the black cockatoo; all are from Manokwari. I have seen various other "canoe ornaments" in museums but have not been able to find out where they should be attached.
The stern end of the dugout in the small canoe usually ends in a more or less blunt point or it may slope gently upward and be cut off squarely (fig. 181). In a model of a tababeri from Amsus (fig. 188) there is a small triangular boardlike projection or bracket from the end and under surface of the stern. Friederici says there is no stern end-piece in the smaller canoes at Mokmer. He refers (1912, pp. 251, 252) to the steersman's seat in the stern of large canoes at Mokmer and on the north coast of Japan which is supported by a bracket at Pom (fig. 182, c, 2, 3); his sketches indicate that the seat is cut out of the solid end of the hull, but in a model of a upai canoe from Wosimi (C and S, pl. 24, fig. 7) the seat is an integral part of the stern end-piece. Hornell shows clearly (fig. 182, c, 1) the solid stern end-piece with a broad flat surface on its upper aft end in a Manokwari canoe. A V-shaped stern end-piece, often with a slight upward curve, is shown in various photographs; Van der Sande (1907, pp. 206-207, fig. 140; and see Lorentz, 1905, p. 212) refers to it as if it were common. It occurs in what he calls "the real Numfor type" of canoe which is very like the upai just mentioned. The stern end-piece is absent in the smaller canoes of Mokmer, though a fore end-piece is present (F, p. 251). A carving (mansoroe orem) from the stern of a canoe at Saokorem, Little Geelvink Bay, is illustrated by De Clerq and Schmelz (pl. 24, fig. 1). 

Figure 186.—Prow-axxes, Manokwari, Geelvink Bay: a, volute, 11.25 inches high; b, probably represents the black cockatoo, 10.5 inches high (Cambridge Museum, presented by James Hornell).

When there is a double outrigger, as there is in all large canoes and in most of the small ones of Manokwari (H, 1920, p. 44), the booms stretch right across the hull, but when there is a single outrigger the booms do not extend beyond the off side. There are usually four to ten booms, but Hornell (1920, p. 44) saw an exceptionally large canoe at Serui with 11 booms and Friederici saw one with 12 at Wooi Bay. Hornell says the booms at Manokwari are squared poles of light wood.

The float is of an especially soft wood and is generally nearly as long as the hull, or at all events as long as its water line. The fore end is pointed, slightly turned up, and may be carved a little (H, 1920, fig. 5); the aft end is blunt. Friederici (p. 254) saw in Wooi Bay a large double outrigger canoe with 12 booms and with two floats close together on each side (fig. 187, c), and Hornell says that in the larger canoes at Manokwari two floats are employed on each side of the canoe; one boat of this kind with seven booms was 28 feet long, 25 inches beam, and 26 inches deep (fig. 187, a, b).

The attachment for each boom, whether with a single or double float, consists of a single vertical nail-like wooden spike or connective which passes from above through the end of the boom and is driven vertically into the float; sometimes it is lashed to the side of the boom (Hornell MS.). A piece of a bough is usually selected that has a natural thin branch projecting from it more or less at right angles; this branch is laid over the boom and lashed firmly to it (F, pp. 249, 253-254). Connectives either with or without the branch appear to be used indiscriminately and separately (figs. 181, 184, 187, b, c). The branch is absent at Mokmer (F, p. 253). When there are two floats each is provided with a connective for every boom. Hornell (1920, fig. 4) shows a rattan lashing between the two connectives of a boom on a canoe with two floats.
Friederici (p. 251) says he has not seen a single example of what he terms the Moluccan [withy] or Halmaheran [elbow] attachment in Geelvink Bay; the spike connective prevails throughout. This attachment is more easily taken to pieces than the former connectives and the natives hang up the hulls of the canoes from the roof of the long corridor of the turtle-roofed houses.

![Diagram of a double-outrigger canoe with double floats.](image)

**Figure 187.**—Large double-outrigger canoe with double floats, Manokwari, Geelvink Bay: a, plan; b, spike connectives of same canoe; c, spike connectives, Wolo Bay (a, b after Hornell, 1920, figs. 3, 2; c after Friederici, 1912, fig. 51).

Guillemard (1889, p. 401) gives an illustration of a small double outrigger canoe at Anusus Harbor. There are two booms on each side which are rather close together amidships. The attachment consists of a short stick inserted into the very short float; apparently a long branch from the stick slopes up to the end of the boom to which it is lashed. The upper ends of the vertical sticks of each side are connected by a short longitudinal stick. This arrangement, of which I have not seen any other example, gives the outrigger apparatus a superficial resemblance to the canoes of Waigiu, which have an elbow connective. Another illustration by Guillemard (1889, p. 402) of a single-outrigger canoe shows normal connectives; there is an anomalous flat breakwater which is rather obscure. An unbranched spike connective is found at Nukutavake, Tuamotus (Alexander, 1902, pp. 766, 767). The spike passes through the boom to be inserted into the float. A short withy is lashed to the upper surface of the end of the boom and its lower end is lashed to the outside edge of the float. The spike is steadied by a brace of sennit twisted round it above the boom and fastened fore and aft to the float. Judging from a model, a simple spike connective may pass through the boom in Wuvulu canoes.

A model from Anusus (fig. 188) of a double-outrigger canoe (*tababeris*) with 11 booms has a direct tied attachment. In the Amsterdam Museum there is a model of a double-outrigger canoe which was collected by Max Weber; it has two curved booms with a similar attachment. Forrest (1779, pl. 11) gives two illustrations of Papuans hunting wild pigs swimming in the sea, one of which is reproduced by Earl (1853, p. 72). Forrest (1779, p. 97) describes this method of hunting at "Dory Harbour," but he does not describe the canoes, which are small dugouts with a double outrigger of two booms and a direct tied attachment. It is impossible to say to what extent the draughtsman, Vivares, was correct in his delineation of the canoe. We may, however, accept this as corroborative evidence for the existence in recent times of this form of attachment; it was used in Rawak Island, north of Waigiu, about 1820. I have not found any information as to whether this attachment is still used on actual canoes. A direct tied attachment is spread widely, though sparsely, throughout Indonesia and is very preva-
lent in the Sulu Islands and in the southern and central Philippines. Its occurrence in Nissan and North Queensland has already been noted.

At Manokwari a stringer (*aisuye, asuye*) may be lashed over the booms close to the attachment spikes and upon their branches; it is connected with the float by rattan or liana loops between the connectives. The stringer is absent in Japen and southern Wiak (Friederici, 1912, p. 249). At Mokmer, Friederici (1912, p. 251) saw stringers across the booms between the hull and a float on which paddlers sat in fine weather. A bamboo stringer is seen halfway between the cabin and the connectives on a large double-outrigger canoe in figure 187, a. Friederici saw on many canoes at Ansus three *Ovulum* shells tied on to the booms over the branches of the spikes, and in a very few of the better craft the ends of the booms, projecting out beyond the spikes, were slightly carved.

![Figure 188](image_url)

**Figure 188.**—Model of a *tababarã*, double-outrigger canoe with direct lashed attachment. Ansus, Geelvink Bay (after De Clerq and Schmelz, 1893, pl. 24, fig. 5).

A platform appears to be usually absent but Van der Sande (1907, p. 207, fig. 138) says the Wakobi canoe “has a platform of longitudinal laths fixed on the middle of the two cross poles [booms] and curved upwards, both to the left and to the right, to form a vertical railing, about 50 cm in height.”

On the larger canoes a small roof is built (Van der Sande, 1907, p. 207, figs. 139, 140, Numfor). This *atap* awning was not observed by Friederici at Pom and Sirewen on the north coast of Japen, but it is seen over the whole middle portion of the larger canoes of Mokmer on the south coast of Wiak, and at Wooi Bay and Manokwari; he says (p. 252) it belongs to the Indonesian culture and is unknown in Melanesia. Hornell (1920, p. 45) says that a cabin 10 feet long by about 7 feet wide is generally built over the platform of the larger Manokwari fishing canoes, the greater part supported outboard upon four of the transverse booms (fig. 187, a).

Wooden baulers have the Oceanic form (Friederici, 1912, figs. 38, 48). At Mokmer a large shell is used (1912, p. 251) and doubtless elsewhere. Krieger (1899, p. 386) says that no canoe lacks one or more coconut shells to serve as baulers; he also states (p. 386) that the anchor is a large block of wood or a heavy stone with a liana for a cable. Rattan or closely twisted bark fiber serves as cordage.

Van der Sande (1907, p. 207) says: “The paddles used here have often, at the end of the handle and cut out of the same piece, a short cross piece, sometimes also a large wooden ring”; but according to Friederici (1912, p. 253) the crutch may occasionally be an added piece. The blade is broad with parallel sides, the end is flat, rounded, or angled.

Hornell (1920, pp. 51-53) states that in all the sailing canoes in this district which adhere to the original style of rig, a tripod mast and oblong sail are carried.
This mast which is more or less prevalent throughout the eastern section of Indonesia, particularly in the Moluccas and Celebes,

"... is here [at Manokwari] composed of three bamboos, connected at the apex by rattan or rope lashing. The smaller New Guinea canoes have usually a Y-shaped crutch peg fitting into the top end of one of the paired legs; upon this is hitched a loop attached to the yard of the sail at a point a little way forward of the centre. In larger canoes where the increased size of the sail renders it impossible for the crew to lift it high enough to hitch the loop over the mast-head peg, a hole is cut in the projecting end of one of the paired mast legs which is cut longer at the top than the other; through this hole a rope is rove and by this means the sail is hoisted. The sail is oblong with a bamboo yard along the upper edge, and a similar pole [the boom] along the lower." (See Hornell's description (1920, p. 60, fig. 21) of a tripod mast of a Galela, Halmahera, boat.) The sail is hoisted when rolled up and as soon as the yard is supported on the mast it is unrolled from above; Friederici says this maneuver is done very simply and quickly.

![Diagram](image)

Figure 189.—Tripod masts, Geelvink Bay: a, Woii Bay; b, Manokwari; c, Pom; d, Ansus (from Friederici, 1912, figs. 32, 39).

The tripod mast is a temporary erection; it is usually made of bamboo, but Friederici (1912, p. 254) found it made of wood at Woii Bay. It does not require the support of either shrouds or stays (fig. 189, c). At Manokwari Friederici saw the mast tied inboard to the front of the second boom from the front, but at Ansus it was directly behind that boom. At Manokwari (fig. 189, b) a string loop passes through a perforation in the lower end of each leg which is passed over a spike, which presumably is fastened to a thwart. At Ansus he saw (fig. 189, d) the two legs supported on a stick which passes through the lower end of both of them and this rests on the gabbagabba sides. A similar arrangement at Ake Selaka, Halmahera is shown by Friederici’s figure 19. At Woii Bay the longest spar of the tripod has a notch at the end to support the loop of the yard (fig. 189, a). Friederici speaks of a rectangular mat sail at Mokmer for the tripod mast. A canoe with a tripod mast, seen at Dorey Harbor, is described and illustrated by Paris (1841-43, p. 92, pl. 104, figs. 13-16). The sail is a narrow oblong set obliquely; there is a vang at each end of the yard and a sheet at the center of the boom. Concerning the canoes of “Port Dory”, Earl (1853, p. 78) says:

“They carry a sail of matting which is suspended from a mast, forming a tripod, with two feet fixed to the side with pins, on which they work like hinges, and the third is slipped over a hook, fastened near the stem. The third foot, which also acts as a stay, is not a fixture, and is unhooked when it is required to strike the mast, which then lies over the thwarts of the prahu, and can be raised again in an instant.”
Krieger (1899, p. 386) says that the Geelvink Bay people can travel in their large sailing canoes at a rate of 5 to 7 knots in a good breeze, and can go for 100 miles without sighting land. The people of Manokwari go to or beyond Ternate. The great trading voyages start as a rule in the northwest monsoon and return with the southeast trade. He adds that war canoes are larger and stronger than the foregoing; they are dugouts and are paddled rhythmically with a sort of scooping action. Sometimes four or more canoes are fastened together to form a raft.

Several times Friederici heard boat songs on the north coast of Japan as in Indonesia and the Philippines and in Polynesia but rarely in Melanesia.

The “great corocore of the village of Koi-Kui, Port Dorey” seen by Paris and elaborately illustrated by him is certainly not a Papuan craft. He states (1841-43, p. 91) that this corocore had presumably been brought over by the Malays who were established near the little village of Koiboui, and that it was very similar to the large corocore seen at Manado, northern Celebes. Paris shows the connectives as being L-shaped; the bar is lashed to the float and the stem lies to one side of the boom to which its branch is lashed. This latter detail looks like a local borrowing. Müller (1912, p. 244, footnote) seems to regard the canoe just described as a Geelvink Bay vessel. He states that at Sangir, islands north of Manado, the fore and aft booms of the double outrigger canoes have a direct attachment to the double floats which occur on each side of the canoe, whereas the central booms have a L-shaped connective, the bar of which is tied to the double floats. Apparently the L-connective is confined to Sangir; he refers to its use at the Gazelle Peninsula at north New Ireland, and at St. Matthias.

Friederici gives the following canoe terms:

<table>
<thead>
<tr>
<th></th>
<th>Manokwari</th>
<th>Mokmer</th>
<th>Pom and Sirewen</th>
<th>Ansus</th>
<th>Woot Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outrigger canoe</td>
<td>wa (wai)</td>
<td>wa (wai)</td>
<td>wa</td>
<td>wa</td>
<td>wa</td>
</tr>
<tr>
<td>Very large canoe</td>
<td>tababeri</td>
<td>............</td>
<td>................</td>
<td>............</td>
<td>............</td>
</tr>
<tr>
<td>Large canoe</td>
<td>wai beba</td>
<td>............</td>
<td>................</td>
<td>............</td>
<td>............</td>
</tr>
<tr>
<td>Small canoe</td>
<td>wai kapirare</td>
<td>............</td>
<td>................</td>
<td>............</td>
<td>............</td>
</tr>
<tr>
<td>Boom</td>
<td>yas, yaas</td>
<td>yas iyas</td>
<td>diahi</td>
<td>yende</td>
<td>hende</td>
</tr>
<tr>
<td>Float</td>
<td>adi</td>
<td>adi</td>
<td>homan</td>
<td>woma</td>
<td>homa, hama</td>
</tr>
<tr>
<td>Connective</td>
<td>fakok</td>
<td>fakok</td>
<td>hende</td>
<td>yedere</td>
<td>henderedere</td>
</tr>
<tr>
<td>End-piece</td>
<td>sara</td>
<td>sara</td>
<td>............</td>
<td>............</td>
<td>............</td>
</tr>
<tr>
<td>Breakwater</td>
<td>............</td>
<td>............</td>
<td>ayahe</td>
<td>ai</td>
<td>............</td>
</tr>
<tr>
<td>Tripod mast</td>
<td>padaren</td>
<td>omar (mast)</td>
<td>padaran</td>
<td>............</td>
<td>padar</td>
</tr>
<tr>
<td>Mat sail</td>
<td>saruer, saurer</td>
<td>ayun</td>
<td>harauwi</td>
<td>arowui</td>
<td>harauwi</td>
</tr>
<tr>
<td>Paddle</td>
<td>bores</td>
<td>kabores</td>
<td>bo</td>
<td>bo</td>
<td>bo</td>
</tr>
<tr>
<td>Bailer: coconut</td>
<td>obek</td>
<td>sobek</td>
<td>............</td>
<td>............</td>
<td>............</td>
</tr>
<tr>
<td>Polynesian form</td>
<td>............</td>
<td>anarim</td>
<td>anarem, zaru</td>
<td>raru</td>
<td>............</td>
</tr>
</tbody>
</table>

NORTHWEST NEW GUINEA

On Waigiu (Waigeoe Waigeu) and Saonek, an islet near the south coast of Waigiu, there are dugouts with or without strakes and with a double outrigger. The same type is found among the Sorong (Soron) people on the island of Dom whence they removed in 1865 from Sorong; a village on the mainland near Cape Spencer (Kaap Noi). The following information is derived mainly from Friederici’s account of the canoes (wai) of Saonek and Sorong, and from photographs by Guillaume taken in 1883.
The hull (moref) rises up to a slightly raised point. In the interior of the hull are transverse struts and knees (jama) and longitudinal poles (aserpar, aderpar) like those seen farther east at Manokwari and Ansus. The strakes are of wood and not of gabagabba like those to the east. There are four, rarely three or five, straight booms (yae) that rest on the gunwales and are made fast within the hull to the struts and longitudinal poles; the struts are kept in position by pressing against the ridges (faser) along the inside of the hull, as at Halmaheira and farther east at Manokwari and Japen. A stringer (apiane) crosses the booms near their ends (fig. 190). For each boom there is an obliquely-lying connector (sabake); the elbow passes over the stringer and is tied to the boom on each side of the stringer (fig. 191, b); the long end is tied to the float (adi). Sometimes the elbow is lacking (Hornell, 1920, p. 55) so that the connector consists of a nearly straight rod (fig. 191, c).

Friederici (1912, fgs. 17, 22, 23, 27) illustrates several Indonesian varieties of the elbow attachment of the float to the booms, which he terms the “Halmaheira-Verbindung”. I adopted this (1920, pp. 90, 129) as the “Halmahearan attachment”, but we now term it the “elbow connector”.

**Figure 190.**—Double-outrigger canoe with elbow connectives, Chabrol Bay, Waigiu (after Guillemand, 1889, pl. p. 373).

The apiakote is necessarily always present, and it may be the only stringer. However, Friederici saw at Saonek a stringer nearer the end of the booms which rested on the connectives and, being lashed to them and to the booms, served to render the connectives more secure. Nearer the hull was another stringer (fig. 191, a). Supports, of a crescentic or other shape, are usually attached to the booms on both sides of the hull to hold on one side the unshipped mast and on the other the rolled-up sail.

The float may be of bamboo or of wood. Friederici describes the float at Sorong as being like a sledge-runner; in Tahiti fashion, it extends a long way in front of the first connective but ends shortly behind the fourth (1912, fig. 28). At Saonek he saw a float consisting of a large and a small bamboo (fig. 191, a).

The larger canoes have a platform with side rails and an atap awning (atam) (Friederici, 1912, p. 248; Guillemand, 1889, pl. p. 373). Hornell (1920, p. 56) says: “The double outrigger frame permits of a fairly large structure as the booms enable it to be built outboard on each side to a distance of a couple of feet. Part of the outboard cabin space is utilized for a sand-box fireplace.” He adds: “Tripod masts [padaren] and mat sails [sarure] are the usual rig, but cotton sails are gradually becoming more frequent.” Paddles are called kaboros. Hornell describes two decorated ones (fig. 191, d, e).

Freyinet (1825, pl. 45) gives illustrations of canoes in Rawak, an island north of Waigiu:

One canoe has a high peak at the bow, which is evidently a prow-affix with the usual ball as at Manokwari; the stern ends simply. The double outrigger has four booms, each with a single stick attachment; it looks as if the connective is inserted into the float; it is tied to the side of a boom and to a stringer. The platform stretches more than halfway across the booms and an atap shelter is raised over the platform and hull. Another canoe with four booms and a similar attachment has end-pieces of which that at the bow is somewhat higher and more elaborate than that at the stern. On Freycinet’s plate 48 is shown a small canoe which looks something like a mon. It has high peaks and there are two stout curved booms with a direct tied attachment. Another canoe has somewhat the appearance of the ora of San Cristoval, but it has three straight booms with a tied attachment; a palm leaf is shown erect amidships
to serve as a temporary sail. A third canoe, shown end-on, carries a true sail and has a
double outrigger, as no doubt have all the others, but being drawn in a side view the other
outrigger is not visible.

So far as I can gather, but one type of outrigger canoe extends westward
from an area not far removed from Manokwari to Waigiu and thence southward
to Skröe. The majority of the canoes of the island of Waigiu and neighboring
islands off the northwest point of New Guinea, and doubtless those of the ad-
ijacent mainland, are entirely Indonesian in character and can be perfectly matched
in a type from Weda Bay in Halmahera (Haddon, 1920-a, fig. 6).

![Figure 191: Elbow connectives and paddles, northwest New Guinea: a, Saonek; b, c, Waigiu; d, e, Waigiu paddles (a after Friederici, 1912, fig. 30; b-e after Hornell, 1920, figs. 15-18).]

**McCLUER GULF**

According to Strauch (1877, p. 30) two kinds of canoes are seen in McCluer
Gulf, a large and a small; the small canoes are much more common and are used
for ordinary communication, the large ones perhaps only for long voyages.

The small type of canoe (*rai*) consists of a “keel-piece” or dugout and two rows of planks,
and there may be a fore or aft end-piece. The dugout which has a rounded bottom without a
keel is called *tauwau*, but this may be only the name for the wood. The sides are strengthened
by crossbars or stretchers of which there are usually four. Small quadrangular blocks are
fastened by wooden nails (*ruaf*) to the inside of the sides of the dugout opposite one another;
a “swallow-tail” mortise is cut out of the upper portion of each block and the ends of the
stretchers are cut into tenons so as to fit into the mortises where they are made fast by wooden
nails. End-pieces of lighter and softer wood than the dugout are added to the fore and aft of
the dugout in most canoes and may project well above the topstrakes. Their ends are dec-
orated with notches, but often one or both of the end-pieces reach only to the topstrakes. In
some canoes they are entirely lacking and the dugout is then higher fore and aft. There are
two strakes (*sarok*) on each side; the lower strakes only are strengthened in precisely the
same manner as the dugout, the added blocks of the strakes lie vertically over those of the
dugout.

There is a double outrigger of which the booms (*tumamar*) are laid on the topstrakes in
the smaller and weaker canoes; in the larger canoes the four booms, which are usually rec-
tangular in cross section, pass through the topstrakes and project over the sides to a distance
of 1.67 to 2.33 meters; they lie exactly over the stretchers of the lower strake and of the hull,
to which they are lashed. There is a stringer (*bara bara*) over the booms near their ends.
Each boom is attached to the float (samar) by means of a typical elbow connective (yaman), the short end of which is lashed to the boom over the stringer and the long end to the float. Strauch is not certain whether samar is the term for float or whether it is the name of the wood. There is a tree called samar, the bast (kuf) of which is used for calcng [but samar may be merely one form of the common Austronesian term for float].

Fore and aft of the canoe is a thwart (jafan) which serves as a seat for paddlers. There is in many canoes a plaited reed matting on the booms near the hull which serves as a platform. Punting poles, fish spears, and other gear are laid on the booms through the triangles formed by the yaman, and on the booms beside the hull.

On many of the somewhat larger canoes an awning (sanok) is erected, and in these there is usually on each side a false boom fore of the front boom and aft of the last one; to the ends of these a stringer is lashed which is also tied to the booms and serves to strengthen the outrigger apparatus and to support the erection for the awning. The erection is a good hut open only fore and aft. When the roofing is not required it can be rolled up and laid on the booms and the framework is more or less unshipped.

Canoes of the larger type, about 6 to 8 meters long, 1.5 meters broad, and 1 meter high, are well built and stronger than the ordinary canoes. All the strakes are strengthened by stretchers in the same manner as in the smaller canoes. The canoes are propelled by short paddles (baessa or pesa) but poles are used in smooth shallow water. Many boats carry a simple mat sail (rar) which seems to be used only in a favorable wind. A side view of a hull, a cross section of a canoe, and other details are illustrated by Strauch (1877, pl. 1).

According to Pflüger's photographs (1904, pp. 174, 175) a similar type of outrigger to that of Skröe is found at Sekar (Segaar) on the south shore of Telok Berow (Berou) or McCluer Gulf, on the north side of Onin Peninsula. Krieger (1899, p. 385) says the inhabitants of the island of Sekar have very high boats furnished with outriggers. At Skröe, a port founded by the Dutch in 1899 on the north shore of Telok Kampauer, the two canoes shown in Pflüger's small and rather indistinct photograph (1904, p. 171) are roomy, built-up vessels covered with an atap awning. The double outrigger has four booms; in one canoe the two fore and the two aft of these booms are nearer together than are the two central ones. There is an elbow connective of the Waigiu type.

Krieger (1899, p. 385) says that at Speelmann's Bay, Telok Bitajaroe, on the west coast (135° 50' to 134° E.) canoes to hold 12 or more persons, with a platform, mast, and quadrangular sail are bought from the Kei Islanders; these have no outriggers.

So far as I am aware, no outrigger canoes are found farther south and east of Skröe until the Torres Straits area is reached.