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CANOES OF THE PACIFIC ISLANDS

by

Ronald Powell
Fisheries Officer
Government of the Cook Islands

It is safe to assume that primitive men made dug-out canoes as early as the first pieces of hunting and fishing gear were crudely fashioned from the most readily available material. Which means that today the hundreds of different types of canoes in daily use have evolved over a very long period indeed. Canoes, like boats, have evolved in each locality where the most generally satisfactory type of compromise has been chosen. This is only obvious if one works with any group of Pacific fishermen. Where lagoons are shallow and coral studded, a canoe is generally a roughly hollowed log used to carry a load of people and fishing gear from the shore to an outlying reef and return with the catch of fish. The requirements are readily met by axing and adzing a tree trunk until it is sharp at both ends. How much is dug-out of the centre will then be a compromise between 'what the fisherman regards as essentially thick enough to withstand dragging repeatedly over rough coral', and what in a finished canoe is light enough to be lifted a short way above high water mark.

One can see many types of rough thick heavy "dug-outs" of this type which do all that their owner builders need. When the reef or fishing ground is further away and the fishermen have to pole or paddle long distances against a strong trade wind, or a rough open lagoon it is not long before men begin to take more notice of the advantages of finer lines and a thinner lighter shell. The thinner lighter shell is more time consuming to make and of course it will not withstand dragging over coral too often before the bottom is pierced. Dug-out canoes are generally difficult to repair satisfactorily without a deal of careful fitting and skill that few fishermen possess. Adding sails, of course, complicates the shape and adds immeasurably to the amount of labour required to make a satisfactory sailing vessel.

Naturally, no man likes to feel that he has built a sluggish sailing canoe when his neighbour has one which is much faster. And so the evolution of sailing canoes has resulted in an interesting variety in the Pacific, many of which are as rough and primitive as the first rude forefathers of the village built with crude clam shell and basalt tools. Others are types in which the evolution of the Aerofoil section of an aircraft wing was predated in the shape of a sailing canoe hull long before the Wright Brothers clambered the wings of their flying machine in the hope of making it lift. The Pacific is indeed an interesting place today where thousands of years of man's evolution can be seen often within the space of one village.

The dug-out canoe still has its place, and is likely to have its place for many generations to come, where speed is of very little importance. But it is not to be supposed that all dug-out canoes are necessarily slow or even heavy. Where the tradition of dug-out canoe building is still strong and a good model type has evolved that is satisfactory for a type of fishing, one can find some very fine examples of thin walled dug-outs. These are often as light as a planked canoe would be of similar dimensions. The actual timber wasted in their construction is of course far more than the same log would yield had it been sawn into thin planking in the first place. Niue fishing canoes are a good example of thin walled dug-outs. The method of building whereby the keel and the shaped bottom of a canoe is hewn from a log, and the topsides are then planked up is found all over the world. No doubt it has a long history as a method of building which has advantages over the straight out dug-out. Where large trees suitable for canoes were unavailable and also of course where men possessed skill with an "adze" in shaping a log but may well have hesitated to steam, twist and fasten a thin plank in place as a garboard. There are many excellent working canoes in places as far apart as French Polynesia and the Philippines which combine these two methods of construction and canoes both serviceable, fast, and good in line are common enough.

In the Gilbert Islands good timber suitable for light strong canoe planking must have been a problem from early times. When better timber became available from overseas it is interesting to see that the imported Redwood and Kauri timber is still cut into thin planks as one might expect, but Western ideas of boat building have still not changed the time honoured methods of stitching all canoes together with coconut sennit fibre.

This is indeed rather strange. Copper boat nails must have been available at least as early as imported timber but as yet they are still not in general use.

The evolution of the sail is nearly as old as the dug-out canoe. Many different materials have been superseded as better ones became more readily available. Sails from hand-woven matting can still be seen in places. It is probable the outboard motor will soon replace sails before cotton canvas or synthetic sail cloth will be introduced as has been the sequence in most of the world.

The "shape" of canoes like the shape of every vessel ever built is a compromise. The parameters are similar in the native Pacific canoe and the ocean-going liner. Cost, materials, skilled labour, load carrying capacity, measured against speed all add up to a general fitness for purpose. The decision is as real for native fishermen as it is for the president of a corporation. Each probably feels that in his own world he has made as big decision when the final craft takes the water.

The shape of the canoes is as varied as their larger sisters in the passenger trade across oceans. Even in the world's most expensive vessels, the final lines are still defined by "art" rather than computers in the final plan. Just as the Grand Banks fishermen prefer the straight frame members that give the Dory its time honoured shape while the old Dutch shipwrights hated anything that approached a dead straight line, so Pacific canoes have varied and each locality sticks rigidly to shapes which have not changed much since "grandfather's day".

When Captain Cook first sailed through the Pacific with Sir Joseph Banks, the artist aboard made records of much that he saw. The fishing canoes of the Society Islands were apparently traditionally made with straight line midship sections much as the dory of today. The larger craft were round bottomed and one still sees these same basic shapes nearly two centuries later.

Perhaps the most interesting shapes to survive into this century and to still be in daily use are the sailing canoes of the Gilbert Islands. These finely built craft are double ended with an out-rigger which is always carried on the windward side. Their very fine ends and graceful sheer make them distinctive among Pacific sailing canoes.

That they are made without any metal in their construction is interesting to anyone who speculates how Pacific Islanders could have made large sailing craft before the Western world brought metal into a stone, wood and sennit culture. But their assymetrical hulls are even more striking. It is not correct to say that all the hulls are deliberately built assymetrically. One can see many examples of canoes where a definite symetry is achieved. However, the assymetrical hull which no doubt evolved long before Europeans began experimenting with aircraft wings makes one realize that the Western world does not have a monopoly on the type of genius who have changed our society so drastically at times.

A boat will of course always carry a greater load on a given water-line length than can be achieved by what is commonly called a canoe. Boats are universally used in the Western world by fishermen and freight carriers. There are forward looking designers and men "dedicated to the cause of introducing better craft into the backward territories" who feel strongly that the boat with inboard or outboard power is the type which will ultimately replace all native canoes.

There are good reasons to support such an argument. But one has only to work in places where canoes which have evolved in an area are still used "to do the same type of fishing" to realize that until the fishing method or technique is changed, the canoe has even yet a long and varied future where new types will replace older ones driven by power certainly, but still canoes.

Raiatea and Tahaa are two high islands enclosed by one large surrounding reef. There is a deep water lagoon between the two islands and the trade wind is constant during much of the year. No wonder that in such an area canoes would have been an important piece of property from an early era of settlement.

Today the outboard motor has almost entirely replaced sails in the French Polynesian Islands and if perhaps there were no tourists who find pleasure in sailing, they might have vanished entirely.

These islands famous for their sailing canoe buildings have been just as inspired with the challenge of the outboard motor.

The craft, it is true, seldom venture outside the lagoon except in fine weather. Just as the automobile has become a status symbol in the Western world, so canoes are often a status symbol in the islands. The small outboard which runs on a modest consumption of imported expensive gasoline has already given way to the big shiny fast American outboard. One can see the change right across the Pacific of the bigger outboards becoming what people consider necessary in the replacement motor.

Higher horse power outboard motors are being built each year and apparently the end is still not in sight. Originally the outboard motor was light and portable. When one had finished with the motor it was possible to slip it off the transom with a couple of handscrews and store it ashore where it was out of the weather until required again. This is certainly a great advantage over the inboard motor which has to sit out at a mooring and chance being flooded with either rainwater or sea water creeping up over the sump during a night.

However, such advantages are now lost in the big outboard motors which one sees all over the Pacific which are so heavy as to be no longer portable by one person. Once bolted firmly to the transom of a boat they protrude out beyond the craft where they are so easily damaged.

The advantage of portability has been long since lost and a fragile often very temperamental motor projecting out over the transom in a busy harbour or yacht moorings is common from Australia through most of the Pacific Islands to the American mainland.

Of the canoe types which one can see in daily use which have been copied into a small permanent fleet there seems to be three main types.

There are the traditional double ended canoes built up either from a dug-out keel and garboard strake with plywood topsides. These types are perhaps best seen in Manila Bay. Here the outboard motor has given way to a power plant of a unique kind. The cast iron inboard stationary engine has been adapted to make a very satisfactory inboard power plant. The arguments in its favour are generally good. For the first cost of an industrial inboard engine between 4 and 10 horse power is less than half the cost of the similar range of aluminium outboard. Being fore stroke they run much more economically than the two cycle outboard. The price of a gallon of gasoline often makes the difference between profit and loss on many islanders fishing. The cast iron engine withstands corrosion generally better than the aluminium outboard. In Manila one is constantly finding examples of the adaptability and good craftsmanship of the Philippines. These shapely canoes are driven by a long shaft through a locally made stuffing box and the stainless steel shaft has a small two bladed propeller which again is locally fabricated from stainless plate. I did not see any canoes there with gear boxes or reverse gears but it is possible they do exist as the canoe type is probably common over much of the Philippine Group Archipelago.

The Gilbert Island canoes will certain be outboard powered in time although it is unlikely that the sennit lashing construction would stand up too successfully to the vibration of an outboard motor. When motors become general the out-rigger canoe will probably have to be fastened with copper rivets and there is no doubt that it will become a serviceable craft.

In the French Polynesian Islands and on the Kona Coast of Hawaii outboard powered canoes all work in relatively calm water. The heavy powerful motors are carried right aft on a "sawn off" transom stern. This is satisfactory in smooth water. The wider bearing of the stern saves the normally fine end of a canoe from squatting under power. It is interesting to see that the many plywood canoes in Raiatea have been made with a hollow section forward and with the bottom of the canoe entirely without rocker. Experience has shown that the straight flat floor in this case is definitely faster than the conventional "rocker" or camber in the sheer plan.

Where canoes have to work in open ocean considerable thought has to be given to a design that is essentially a good sea boat in the first case. Everything seems to be in favour of carrying the outboard motor on the canoe on the same side as the out-rigger float. A motor carried about one third of the distance from the stern forward is in a better place for canoes which work in rough water. In this place it is quite easy to get at the engine when it stops in rough water for running repairs, such as the changing of a spark plug or the draining of water from the carburettor. The heavy motor is not right at the end of the canoe where it stops the stern lifting in a following sea. Often the combination of a heavy outboard motor and a man trying to effect repairs on the extreme stern of a canoe invites disaster in rough water.

There are a number of canoes in the Samoan Islands and the Cook Islands which have been modelled on plans published in the South Pacific Quarterly Bulletin. This plywood canoe, designed by Mr. Alphonse Phillips of Apia, is a very practical small fishing craft.

Already this basic type is being modified further in the Cook Islands to suit local conditions.

In the Hawaiian Islands surfing in canoes has traditionally been a sport. The Hawaiian surfing canoes are too well known to need a description. They are of course propelled with paddles and it is interesting to hear the comments of the surfing enthusiasts when asked of their use of outboard motors. They have tried outboards and as a sport they feel they have no place at all. The reason of course is that the outboard makes it possible to follow in the trough between the heavy surf. With a twist of the throttle it is possible to come through breakers without any thrill at all. While this is no doubt rather dull to sport enthusiasts it is of interest to the P Pacific fisherman who, tired after a night's fishing, generally wet and hungry, has little interest in surfing. His only concern is to get his valuable catch ashore without the possible disaster of being rolled over in the surf. Outboard motors can be a blessing indeed. At this time one might well ask whether there could be one design of canoe that could do most of these requirements satisfactorily.

The answer is probably rather like designing an all purpose automobile. Canoes can be used as carriers of iced fish and copra where speed with very low power and low fuel consumption is important. They find a ready use as fishing craft where the higher speed of the canoe with the low powered motor is all important. Perhaps as important too is the comfort of travelling fast to windward in a canoe which does not throw spray in one's face as small beamy boats invariably do.

High topsides or low topsides will depend on whether the canoe does at some stage have to be kept over a lift net in a fresh breeze by paddles as in the Hawaiian Opelu net fishery. Fishermen who have to cross the surf of a lagoon passage where a confused sea can build up quickly naturally want all the freeboard they can get at such times. There is of course no "all purpose" canoe, boat, or fishing craft. But for those fishermen who are slowly changing from a subsistence living to a monetary economy, the canoe has a great appeal. A gallon of gasoline will drive a canoe faster over a longer distance than a similar displacement planing hull loaded with fishing gear. A small insulated ice box or a live fish well can be easily incorporated either as a "lift in lift out" fitting or as permanent part of the design.

Plywood is an easy material to work with and the good marine grade is long lasting if it is well painted. Fibreglass adds to the strength, water-tightness and general durability although it is not essential.

Fibreglass canoes are better than fibreglass skinning over plywood, but are not cheap yet unless a number are made at one time. Aluminium offers an interesting possibility. It is tough, light and very durable under most conditions. To be used at its very best it is preferable that some factory produced component parts are made where factory welding and assembly methods are far better than can be achieved by the small boat building workshop.

It is hoped that within the near future some assessment can be made of what Pacific islanders really consider the ideal craft for the locality and individual requirements. A factory made kit of canoe panels that could be freighted at a reasonable cost and could be assembled into a serviceable low maintenance, light tough craft has a wide appeal.

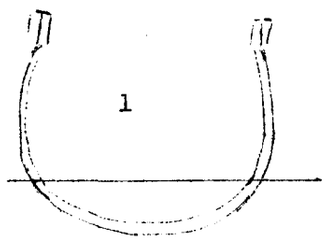
The South Pacific Commission would welcome views from anyone who needs a canoe in his life.

Original Text: English

Pacific Island Canoe Types

Piroques océaniennes

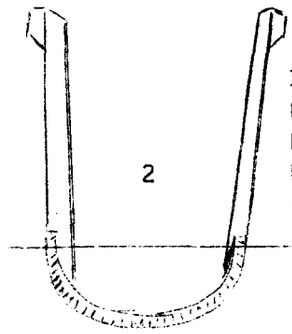
Midship Sections - Coupe au maître



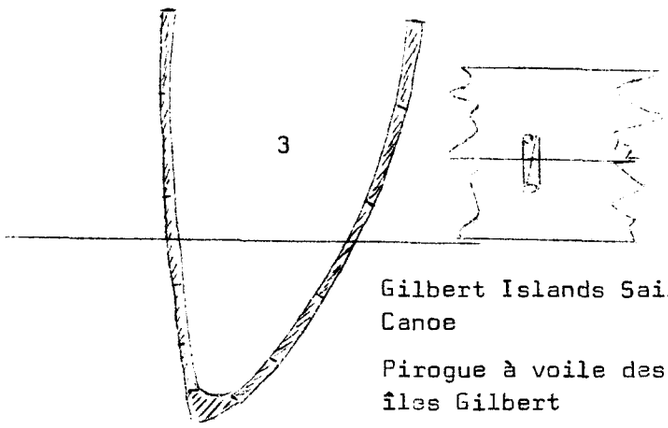
Typical Dugout
from one Log

Pirogue classique creusée
dans un tronc d'arbre

Les hauts, faits de contreplaqué, sont fixés à la quille et aux gabords creusés dans un tronc d'arbre



Dugout Keel &
Garboards -
Plywood Topsides -
Frames fastened
to Dugout base

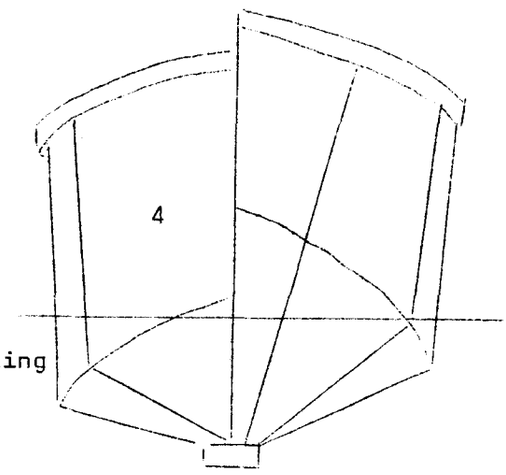


Gilbert Islands Sailing
Canoe

Pirogue à voile des
îles Gilbert

Planking & Frames Stitched
together with Sennit

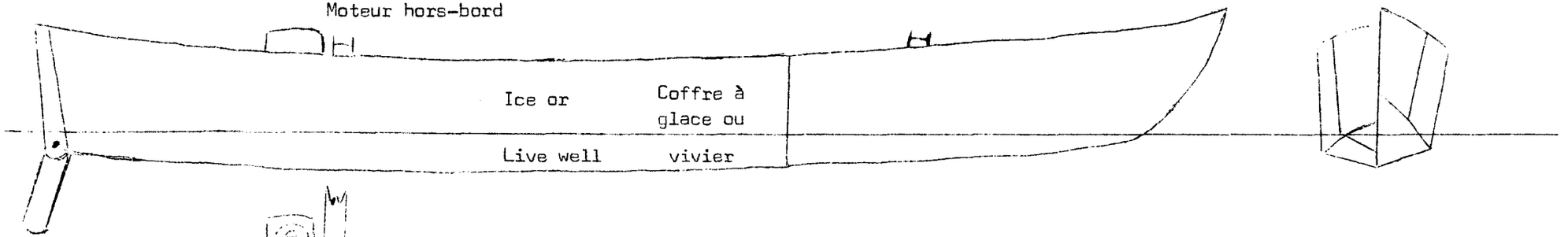
Bordé et couples assemblée
par une tresse de chanvre

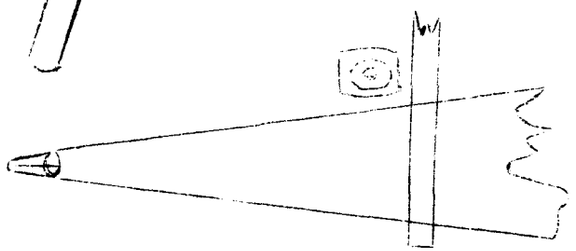


Plywood Canoe Typical
Boat Construction

Pirogue de contreplaqué,
Modèle classique d'embarcation

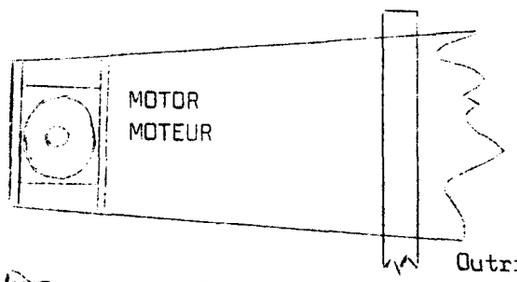
Outboard Motor
Moteur hors-bord





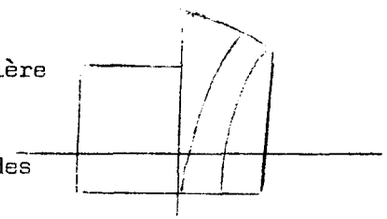
Motor carried on outrigger side
Samoa and Cook Islands
Plywood and Fibreglass

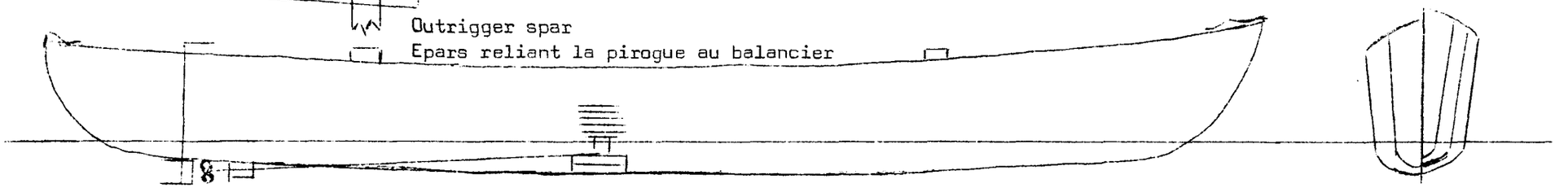
Moteur fixé du côté du balancier
Samoa et îles Cook
Contreplaqué et fibre de verre



Motor carried aft on false transom
Kona coast Hawaii
French Polynesian Islands
Construction similar to small plywood boats

Moteur fixé sur le tableau arrière
Côte de Kona, Hawaï
Polynésie Française
Construction analogue à celle des petits bateaux de contreplaqué





Manila Bay canoe - Inboard powered
Dugout and plywood topside

Pirogue de la Baie de Manille - Moteur fixe
Fond fait d'un tronc évidé, hauts de contreplaqué