

***DANIEL
CARTER BEARD***



***BOAT-
BUILDING
AND BOATING***

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Boat-Building and Boating

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PREFACE

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THIS is not a book for yacht-builders, but it is intended for beginners in the art of boat-building, for boys and men who wish to make something with which they may navigate the waters of ponds, lakes, or streams. It begins with the most primitive crafts composed of slabs or logs and works up to scows, house-boats, skiffs, canoes and simple forms of sailing craft, a motor-boat, and there it stops. There are so many books and magazines devoted to the higher arts of ship-building for the graduates to use, besides the many manufacturing houses which furnish all the parts of a sail-boat, yacht, or motor-boat for the ambitious boat-builder to put together himself, that it is unnecessary for the author to invade that territory.

Many of the designs in this book have appeared in magazines to which the author contributed, or in his own books on general subjects, and all these have been successfully built by hundreds of boys and men.

Many of them are the author's own inventions, and the others are his own adaptations of well-known and long-tried models. In writing and collecting this material for boat-builders from his other works and placing them in one volume, the author feels that he is fulfilling the wishes of many of his old readers and offering a useful book to a large audience of new recruits to the army of those who believe in the good old American doctrine of: "If you want a thing done, do it yourself." And by doing it yourself you not only add to your skill and resourcefulness, but, what is even

more important, you develop your own self-reliance and manhood.

No one man can think of everything connected with any one subject, and the author gratefully acknowledges his indebtedness to several sportsmen friends, especially to his camp-mate, Mr. F. K. Vreeland, and his young friend, Mr. Samuel Jackson, for suggestions of great value to both writer and reader.

DAN BEARD.

FLUSHING, L. I., *Sept., 1911.*

Boat-Building and Boating

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Fig. 1.—The logomaran.

BOAT-BUILDING AND BOATING

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CHAPTER I

HOW TO CROSS A STREAM ON A LOG

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How to Build a Logomaran

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THERE is a widespread notion that all wood will float on water, and this idea often leads to laughable errors. I know a lot of young backwoods farmers who launched a raft of green oak logs, and were as much astonished to see their craft settle quietly to the bottom of the lake as they would have been to see the leaden sinkers of their fish-lines dance lightly on the surface of the waves. The young fellows used a day's time to discover what they might have learned in a few moments by watching the chips sink when they struck the water as they flew from the skilful blows of their axes.

The stream which cuts your trail is not always provided with bridges of fallen trees. It may be a river too deep to ford and too wide to be bridged by a chance log. Of course it is a simple matter to swim, but the weather may be cold and the water still colder; besides this, you will probably be encumbered with a lot of camp equipage—your gun, rod, and camera—none of which will be improved by a plunge in the water. Or it may so happen that you are on the shores of a lake unsupplied with boats, and you have good reasons for supposing that big fish lurk in some particular spot out of reach from the shore. A thousand and one emergencies may arise when a craft of some kind will be not only a great

convenience, but almost a necessity. Under these circumstances

A Logomaran

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may be constructed in a very short time which can bear you and your pack safely to the desired goal ([Fig. 1](#)).



Fig. 2.—The notch.

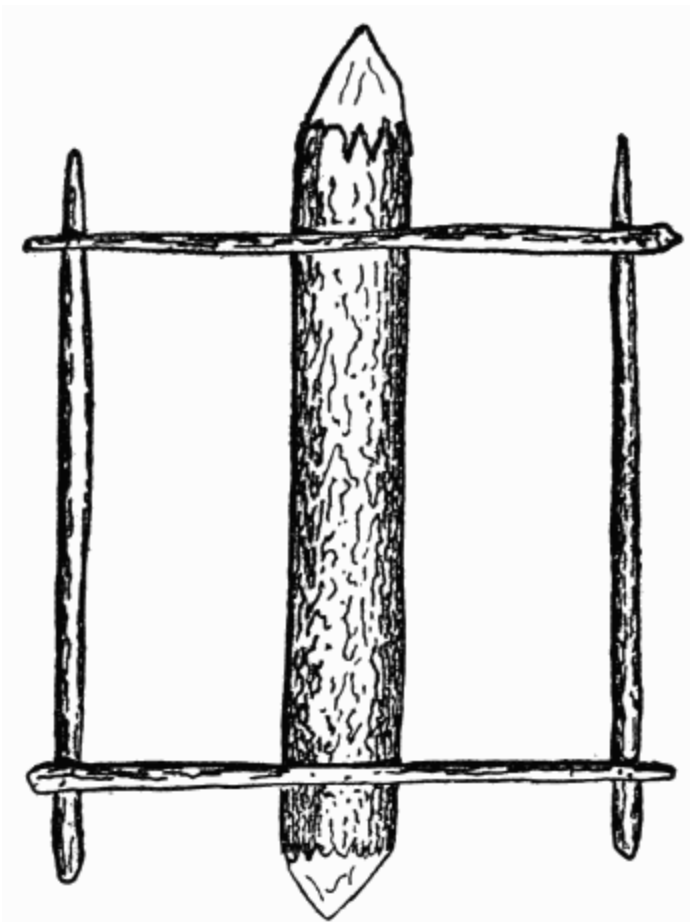


Fig. 3.—Top view of logomaran.

In the Rocky, Cascade, and Selkirk Mountains, the lakes and streams have their shores plentifully supplied with "whim sticks," logs of fine dry timber, which the freshets have brought down from the mountain sides and which the rocks and surging torrents have denuded of bark. These whim sticks are of all sizes, and as sound and perfect as kiln-dried logs. Even in the mountains of Pennsylvania, where the lumberman's axe years ago laid waste the primeval forest, where the saw-mills have devoured the second growth, the tie-hunter the third growth, the excelsior-mills and birch-beer factories the saplings, I still find good sound white pine-log whim sticks strewn along the

shores of the lakes and streams, timber which is suitable for temporary rafts and logomarans.

In the North Woods, where in many localities the original forest is untouched by the devouring pulp-mills, suitable timber is not difficult to find; so let the green wood stand and select a log of dry wood from the shore where the floods or ice have deposited it. Cut it into a convenient length, and with a lever made of a good stout sapling, and a fulcrum of a stone or chunk of wood, pry the log from its resting-place and roll it into the shallow water. Notch the log on the upper side, as shown by [Fig. 2](#), making a notch near each end for the cross-pieces.



Fig. 4.—Flattened joint.



Fig. 5.

Fig. 6.

Matched joints.

The two side floats may be made of pieces split, by the aid of wooden wedges, from a large log, or composed of small whim sticks, as shown by [Fig. 3](#).

The floats, as may be seen by reference to [Figs. 1](#) and [3](#), are shorter than the middle log.

It is impracticable to give dimensions, for the reason that they are relative; the length of the middle log depends, to some extent, upon its diameter, it being evident that a thick log will support more than a thin one of the same length;

consequently if your log is of small diameter, it must be longer, in order to support your weight, than will be necessary for a thicker piece of timber. The point to remember is to select a log which will support you and your pack, and then attach two side floats to balance your craft and prevent it from rolling over and dumping its load in the water.

An ordinary single shell-boat without a passenger will upset, but when the oarsman takes his seat and grasps his long spoon oars, the sweeps, resting on the water, balance the cranky craft, and it cannot upset as long as the oars are kept there. This is the principle of the logomaran, as well as that of the common catamaran. The cross-pieces should be only thick enough to be secure and long enough to prevent the log from wobbling and wetting your feet more than is necessary.

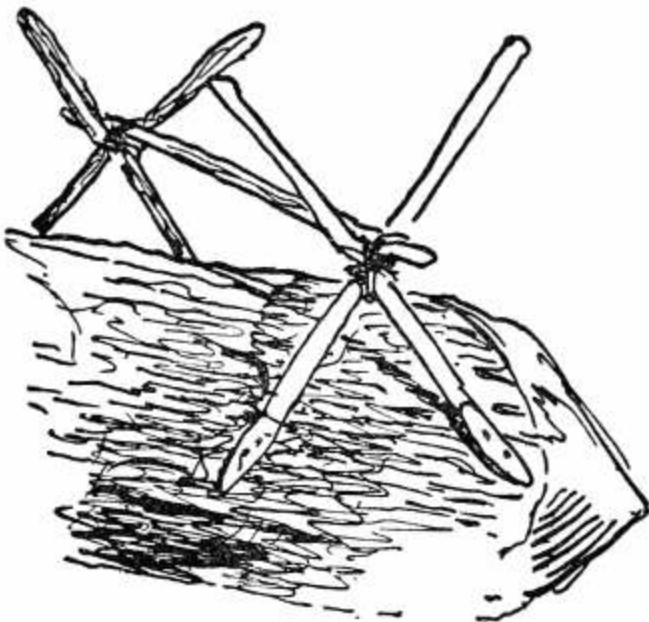


Fig. 7.—The saw-buck crib.

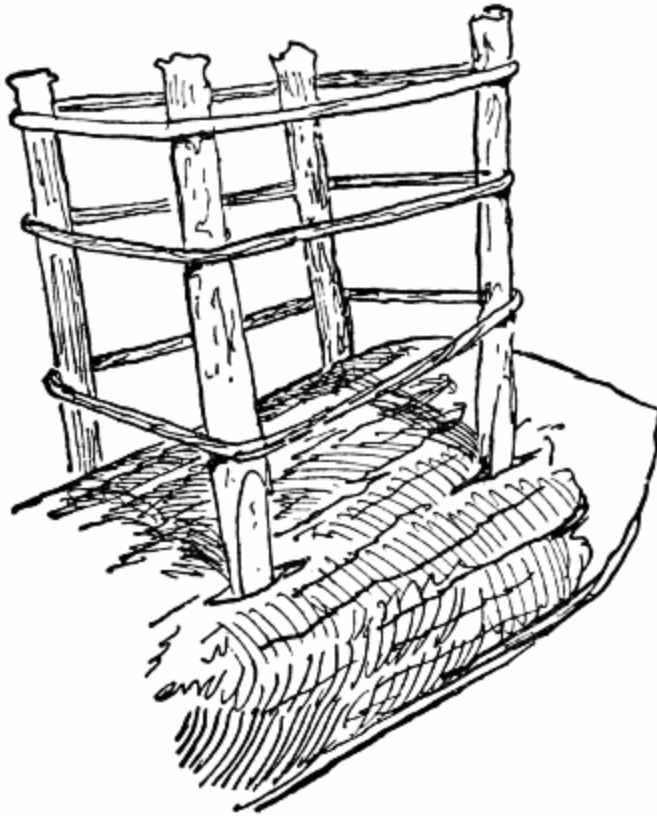


Fig. 8.—The staked crib.

If You Have an Auger and No Nails

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the craft may be fastened together with wooden pegs cut somewhat larger than the holes bored to receive them, and driven in with blows from your axe.

If you have long nails or spikes the problem is a simple one; but if you have neither auger, nails, nor spikes you must bind the joints with rope or hempen twine.

If you have neither nails, auger, nor rope, a good substitute for the latter can be made from the long,

Fibrous Inner Bark

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of a dead or partly burned tree. For experiment I took some of the inner bark of a chestnut-tree which had been killed by fire and twisted it into a rope the size of a clothes-line, then I allowed two strong men to have a tug-of-war with it, and the improvised rope was stronger than the men.

How to Make a Fibre Rope

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Take one end of a long, loose strand of fibres, give the other end to another person, and let both twine the ends between the fingers until the material is well twisted throughout its entire length; then bring the two ends together, and two sides of the loop thus made will twist themselves into a cord or rope half the length of the original strand.

If you nail or peg the parts, use your axe to flatten the joints by striking off a chip, as in [Fig. 4](#).

If you must lash the joints together, cut them with log-cabin notches, as in [Figs. 5](#) and [6](#).

If you have baggage to transport, make

A Dunnage Crib

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by driving four stakes in cuts made near the end of the centre log and binding them with rope or fibre ([Figs. 7](#) and [8](#)), or by working green twigs basket-fashion around them, or make the rack saw-buck fashion, as shown by [Fig. 7](#), and this will keep your things above water.

A couple of cleats nailed on each side of the log will be of great assistance and lessen the danger and insecurity of the footing.

A skilfully made logomaran will enable you to cross any stream with a moderate current and any small lake in moderate weather. It is not an especially dry craft, but it won't sink or upset, and will take one but a short time to knock it together.



CHAPTER II

HOME-MADE BOATS

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Birth of the "Man-Friday" Catamaran—The Crusoe Raft and Chump Rafts

NOT so very many years ago I remember visiting, in company with my cousin Tom, a small lake at the headwaters of the Miami. High and precipitous cliffs surround the little body of water. So steep were the great weather-beaten rocks that it was only where the stream came tumbling down past an old mill that an accessible path then existed. Down that path Tom and I scrambled, for we knew that large bass lurked in the deep, black holes among the rocks.

We had no jointed split-bamboo rods nor fancy tackle, but the fish there in those days were not particular and seldom hesitated to bite at an angle-worm or grasshopper though the hook upon which the bait squirmed was suspended by a coarse line from a freshly cut hickory sapling.

Even now I feel the thrill of excitement and expectancy as, in imagination, my pole is bent nearly double by the frantic struggles of those "gamy" black bass. After spending the morning fishing we built a fire upon a short stretch of sandy beach, and cleaning our fish and washing them in the spring close at hand, we put them among the embers to cook.

While the fire was getting our dinner ready for us we threw off our clothes and plunged into the cool waters of the

lake. Inexpert swimmers as we were at that time, the opposite shore, though apparently only a stone's throw distant, was too far off for us to reach by swimming. Many a longing and curious glance we cast toward it, however, and strong was the temptation that beset us to try the unknown depths intervening. A pair of brown ears appeared above the ferns near the water's edge, and a fox peeped at us; squirrels ran about the fallen trunks of trees or scampered up the rocks as saucily as though they understood that we could not swim well enough to reach their side of the lake; and high up the face of the cliff was a dark spot which we almost knew to be the entrance to some mysterious cavern.



Fig. 8½.—The Man-Friday.

How we longed for a boat! But not even a raft nor a dugout could be seen anywhere upon the glassy surface of the water or along its rocky border. We nevertheless determined to explore the lake next day, even if we should have to paddle astride of a log.

The first rays of the morning sun had not reached the dark waters before my companion and I were hard at work, with axe and hatchet, chopping in twain a long log we had

discovered near the mill. We had at first intended to build a raft; but gradually we evolved a sort of catamaran. The two pieces of log we sharpened at the ends for the bow; then we rolled the logs down upon the beach, and while I went into the thicket to chop down some saplings my companion borrowed an auger from the miller. We next placed the logs about three feet apart, and marking the points where we intended to put the cross-pieces, we cut notches there; then we placed the saplings across, fitting them into these notches. To hold them securely we bored holes down through the sapling cross-pieces into the logs; with the hatchet we hammered wooden pegs into these holes. For the seat we used the half of a section of log, the flat side fitting into places cut for that purpose. All that remained to be done now was to make a seat in the stern and a pair of rowlocks. At a proper distance from the oarsman's seat we bored two holes for a couple of forked sticks, which answered admirably for rowlocks; across the stern we fastened another piece of log similar to that used for the oarsman's seat ([Fig. 8½](#)). With the help of a man from the mill our craft was launched; and with a pair of oars made of old pine boards we rowed off, leaving the miller waving his hat.

Our catamaran was not so light as a row-boat, but it floated, and we could propel it with the oars, and, best of all, it was our own invention and made with our own hands. We called it a "Man-Friday," and by its means we explored every nook in the length and breadth of the lake; and ever afterward when we wanted a boat we knew a simple and inexpensive way to make one—and a safe one, too.

The Crusoe Raft

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is another rustic craft, but it is of more ambitious dimensions than the "Man-Friday." Instead of being able to float only one or two passengers, the "Crusoe," if properly built, ought to accommodate a considerable party of raftsmen. Of course the purpose for which the raft is to be used, and the number of the crew that is expected to man it, must be taken into consideration when deciding upon the dimensions of the proposed craft.

All the tools that are necessary for the construction of a good stout raft are an axe, an auger, and a hatchet, with some strong arms to wield them.

The building material can be gathered from any driftwood heap on lake or stream.

For a moderate-sized raft collect six or seven logs, the longest not being over sixteen feet in length nor more than a foot in diameter; the logs must be tolerably straight. Pick out the longest and biggest for the centre, sharpen one end, roll the log into the water, and there secure it.

Select two logs as nearly alike as possible, to lie one at each side of the centre log. Measure the centre log, and make the point of each side log, not at its own centre, but at that side of it which will lie against the middle log, so that this side point shall terminate where the pointing of the middle log begins (see [Fig. 9](#)).

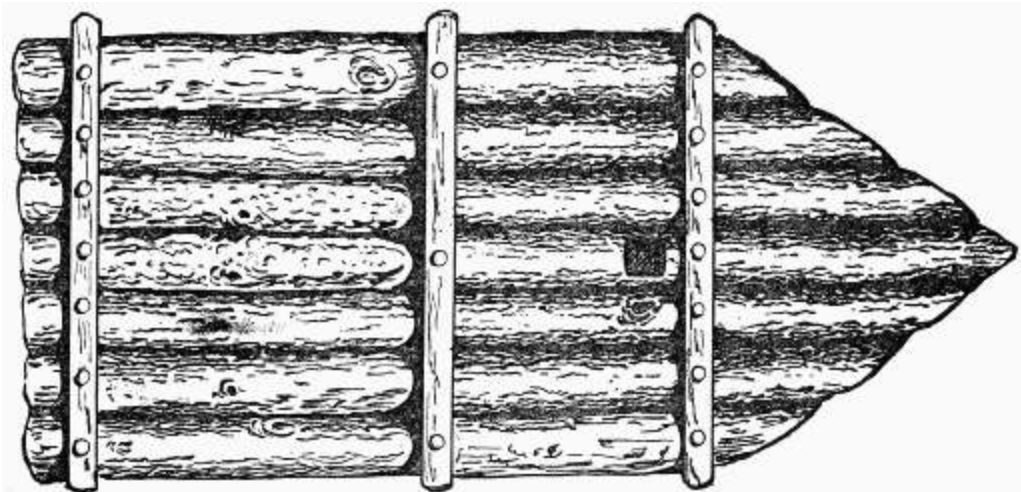


Fig. 9.—Plan of Crusoe raft.

After all the logs needed have been trimmed and sharpened in the manner just described, roll them into the water and arrange them in order ([Fig. 9](#)). Fasten them together with "cross-strips," boring holes through the strips to correspond with holes bored into the logs lying beneath, and through these holes drive wooden pegs. The pegs should be a trifle larger than the holes; the water will cause the pegs to swell, and they will hold much more firmly than iron nails.

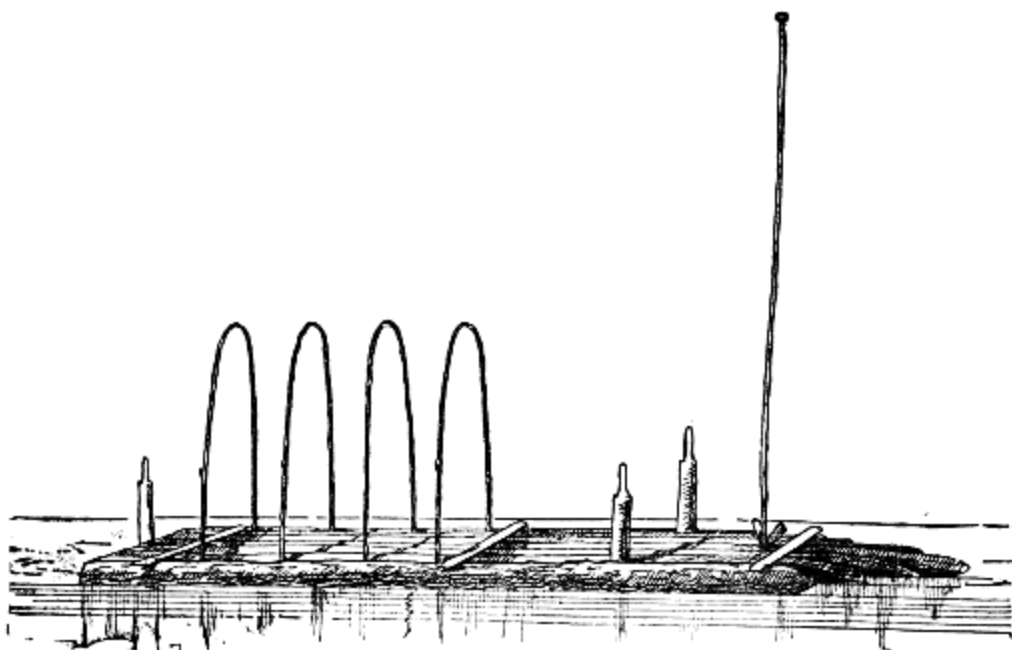


Fig. 10.—Skeleton of Crusoe raft.

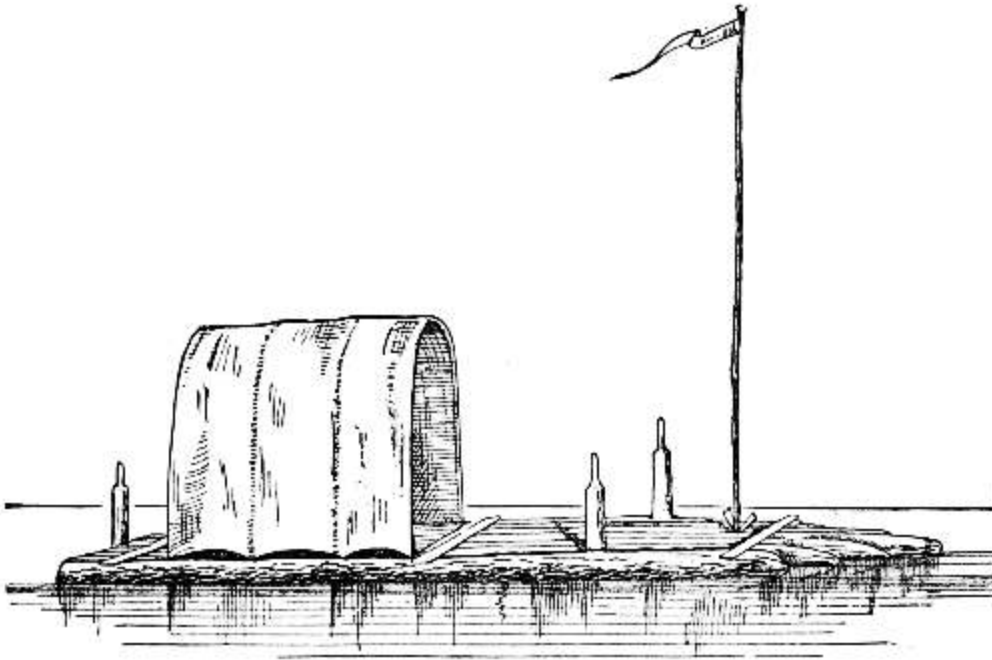


Fig. 11.—Crusoe with cabin covered.

The skeleton of the cabin can be made of saplings; such as are used for hoop-poles are the best.

These are each bent into an arch, and the ends are thrust into holes bored for that purpose. Over this hooping a piece of canvas is stretched, after the manner of old-fashioned country wagons ([Figs. 10](#) and [11](#)).

Erect a "jack-staff," to be used as a flag-pole or a mast to rig a square sail on.

A stout stick should be erected at the stern, and a similar one upon each side of the raft near the bow; these sticks, when their ends are made smaller, as shown in the illustration ([Fig. 10](#)), serve as rowlocks.

