

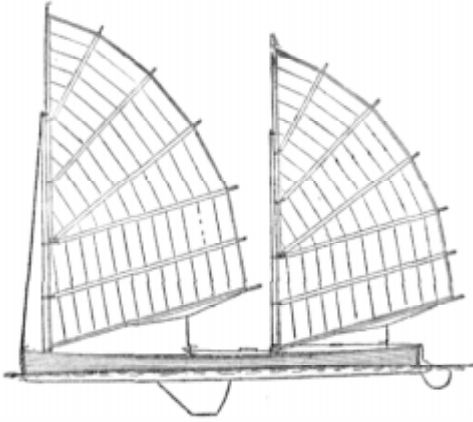
# MODERN CANOE BUILDING

## FOR AMATEURS,

Second Paper.

### A SAILING CANOE.

BY HENRY L. STROBRIDGE.

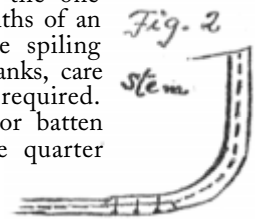


IN OUTING for March I described the construction of an inexpensive and serviceable canoe for cruising under paddle. As there is no question regarding the growing popularity of the modern sailing canoe, it may be as well to describe and explain the methods by which an amateur may build a useful craft of the latter class. To gain stability for sail carrying, elements different from those required for paddling enter into the construction of the canoe, and in order to combine them so as to allow either mode of propulsion some sacrifice in the respective qualities is necessary. Hence it will be noted that the addition of sails, centerboard and rudder, changes the character of the craft. Of course according to modern decree such a vessel maintains its place in aquatic nomenclature as a canoe, since it can be propelled by a paddle.

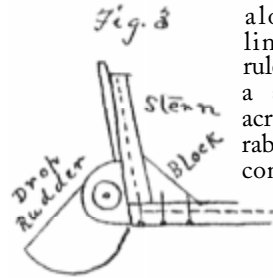
The canoe to be considered offers a design that has shown ability in rough water sailing, and it furthermore accommodates two persons comfortably in paddling. In this boat the clinker mode of build is described, for, owing to the more perpendicular stem and stern, the former style of construction is not so well adapted. Here, also, separately built stem and stern pieces are got out and joined to a keel, in all of which a groove or rabbet is cut to receive the edge of planking. The keel is of clear oak three-quarters inch thick and four or five inches wide, tapering to one inch where it joins stem and stern. Cut the stem and stern pieces from hackmatack root, or saw out of oak plank one inch thick. Join to the keel by a long square splice after cutting the rabbet.

This boat may be built bottom up on the stocks, the molds having been properly secured in place. Figs. 2 and 3 show the joining of stem and stern to keel, the rabbet groove and a rudder. Fig. 4 shows top of stem and stern planking and rabbet.

The planking will be a quarter inch thick, put on five or six streaks to the side and each lapping the one below for five-eighths of an inch. To take the spiling for shaping the planks, care and patience are required. The spiling staff or batten is cut out of one quarter inch, or less, soft wood the length

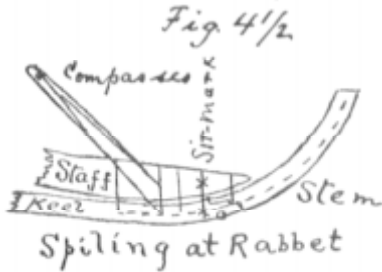


of the gunwale line and four or five inches wide. Tack the staff to the molds and shape it roughly to the rabbet line, a couple of trials will get it near enough. Tack it on again so it will lie roughly along the rabbet line. Now with a rule and pencil draw a straight mark across the staff, the rabbet and the stem; continue this every

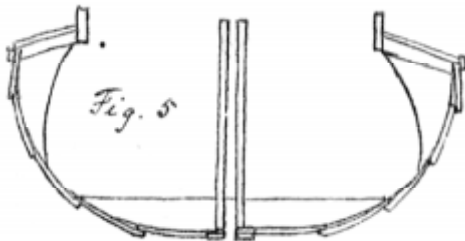


two inches until the straighter part of keel is reached, where the marks may be four inches apart and so on to the end at the stern. See Fig. 4 1/2. At one of the marks along the fore part make a cross (X) on the staff line and also on the stem to determine its place and called the surmark. These lines insure setting the compasses to transfer the spiling to the plank. Take the compasses and set the points, say two and a half inches, and sweep a circle on the staff

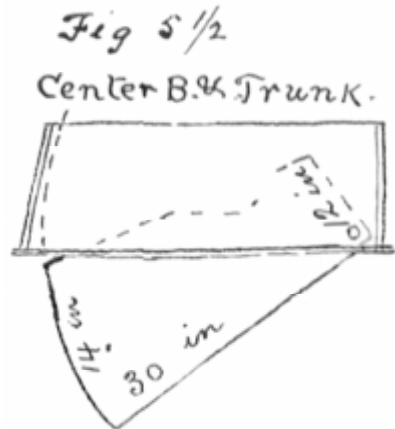




so that if the points become accidentally changed they can be reset. One point of the compasses is then set at the pencil line on the lower edge of the rabbet and the other pricks a point on the staff on the continuation of the line. Apply the compasses in succession to all the lines along the staff and rabbet. Mark with chalk on the staff the position of each mold and then remove the staff. Lay it on the board you will cut the plank from, tack it fast and then with the compasses reverse the measurements, that is, lace one point on the prick spot on the staff and prick the board or the plank with the other point which will correspond to the edge of the rabbet line where it met while the staff was fastened to the molds. Mark also on the plank the surmark and the position of the molds as marked on the staff. Remove the staff, bend a batten to the prick points on the plank and draw the pencil line. Saw to the line and the shape will be given of the garboard where it lies along the rabbet. Set off from the lower edge of the garboard where the positions of the molds are marked the width of plank to its upper edge and bend a batten through the points, allowing five-eighths of an inch for the lap. To get the proper widths, take a thin board of the widths desired, tack it at stations 3 and 4, bend the ends down over the rabbet at stem and stern and tack. Mark along the upper straight edge of the plank its intersection on each mold. Remove plank, and by measuring from the rabbet the mark on each



mold you get the width of the plank at the corresponding positions on the plank to which the staff was applied. Cut the other garboard from this one, bend the edges that fit the rabbet and put on, commencing at one end. As the overlapping edges of the lap streak will not look well at bow and stem, they should fit the rabbets, thereby presenting a smooth surface. To do this the plank before putting on is beveled on the top edge, commencing about eighteen inches from the end. The plank above is also beveled on its lower surface to correspond. Draw a line along a batten the length of planks to mark where the overlapping planks are to be nailed together. If a centerboard is used it must be fitted with care (see Fig. 5 1/2). The trunk can be made of five-eighth inch pine running up to deck. For the



amateur it is better to fasten to the keel in this manner. Select a hard wood board half inch thick, the width of keel and length of trunk; screw it firmly to the bottom of trunk laid in lead with cloth. Then the affair can be fastened to the keel by screwing the board fast, laid in lead with a cloth between. Do not forget to cut the slot through both board and keel, nor to bore the pivot hole for the drop board. At stations 1 and 7, the molds may be left in permanently if they are cut on their edges to receive the planks or put in tight bulkheads three feet from stem and stern, and so form water-tight compartments. It is quite essential in a craft liable to capsizing that air chambers should be provided. The amount of air space necessary can be computed, since one cubic foot of air will in fresh



The canoe should have a weather helm, that is a tendency to turn up in the wind when the tiller is let go, and therefore the center of effort of the sail plan should be just aft of the center of the boat's lateral resistance.

Put in two mast tubes for the use of a large or small mizzen—one four feet from stern and the other three feet from stern. The positions of the masts are for the use of the Mohican or balance lug style of rig. The centerboard can be of <sup>1</sup>/<sub>16</sub> inch brass or galvanized iron 30x14. The forefoot should round up well, and the rabbit line, one foot aft of a perpendicular line at the stem, should be <sup>1</sup>/<sub>4</sub> inch above the base. A fair shaped stem is shown in Fig. 2. The base line, from which heights are taken, excludes the thickness of the external keel, and is horizontal with the bottom of the planking amidships,

All work should be smoothly rubbed with sand paper. Lead paint is cheap and durable, and in conjunction with red-lead putty hides many imperfections. On a nice surface oil and varnish make a handsome finish. Paddles and masts can be made of spruce or pine and oiled. Booms can be made of pine or bamboo.

In the following table the figures

after the decimal point denote eighths of an inch; thus, 14.3 means 14<sup>3</sup>/<sub>8</sub> inches.

TABLE OF OFFSETS FOR SAILING CANOE.

Stations.	HEIGHTS.		HALF BREADTHS.					Keel.
	Rab.	Deck	Deck	No. 1.	No. 2.	No. 3.	No. 4.	
0	—	18	0.1	0.1	—	—	—	—
1	0.4	14.3	8	5.3	4.4	3.3	8	0.4
2	—	11.6	12	10.5	9.3	7.7	5.2	1.1
3	—	10.4	14.3	13.7	13.1	11.6	9.3	1.4
4	—	10.1	14.7	14.7	14.6	13.7	12	1.4
5	—	10.2	14.7	14.7	14.6	13.7	12.1	1.4
6	—	10.6	13.4	13.2	12.6	11.5	9.4	1.3
7	0.3	12.5	8.4	7.7	7.3	6.2	4.2	1
8	—	16	0.1	0.1	0.1	0.1	0.1	0.1

- Length over all..... 16 feet
- Greatest beam..... 30 inches
- Depth amidships at gunwale..... 10<sup>1</sup>/<sub>2</sub> inches
- Sheer at bow..... 8 inches
- Sheer at stern..... 6 inches
- Greatest width of keel..... 3 inches
- From fore side of bow to mast..... 18 inches
- To fore end of centerboard case..... 5 feet 7 inches
- To fore end of cockpit..... 6 feet
- Length of cockpit..... 5<sup>1</sup>/<sub>2</sub> feet

Bleached muslin makes good sails, and the cloth should be bighted according to fancy—that is, the number of seams in which the sail is run, and the bights run parallel with the leach of the sail. Sails may be partially mildew and water proofed by dipping or soaking in a bucket of water in which has been dissolved one-half pound each of sugar of lead and powdered alum, and then hung up to dry without wringing.



C A N O E S O N G .

**S**TRENGTH of the tree that gave the blade  
Make my heart strong and unafraid.

And, wind, come fill the sail that I  
May see the friendly shores go by.

As one may love a brother true,  
I love my boat, my light canoe,

Where I can lie at length and hear  
The song of robins sweet and clear,

With now and then a winter blast  
Through towering treetop dashing past,

These are the dreams that men will know  
When down the summer streams they flow,

We are content when winds propel,  
Or when my arms the way compel.

Our only thought is this—to steer  
Of hidden rock and sand-bar clear.

The sweetest hour to me is when  
I journey from the sight of men,

Dipping the blades that, left and right,  
Are wings that give me ready flight.

It makes me glad to see the town  
Behind the hills and bluffs go down,

Knowing that liquid pathways run  
To where the sweetest peace is won.

—MEREDITH NICHOLSON.