Rigging and Handling an Open Canoe

Warren H. Miller, 1917

Selected pages from The Boys? Book of Canoeing and Sailing.

A paddler?s illustrated chapter on seating, paddle strokes, steering in current, carrying the canoe and fitting a small sail.

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PART TWO: CANOEING AND CRUISING

CHAPTER I

HOW TO RIG AND HANDLE AN OPEN CANOE

Probably of all craft the open paddling canoe gives the most sport, the greatest change of scene, and the most ease of woods travel with the least effort. Compared with rowing a boat, riding horseback or back packing through the forest trails, the canoe is paradise, as the work of paddling is so divided among the muscles of the whole body as to make none of them ache, and one sits down comfortably, not with bumping seat and strained knees as on horseback. A down-stream canoe trip, particularly on a wild river where there is plenty of fish and game and one camps nightly along the banks, is one of the most enjoyable outings a boy can take, and none of it is too hard work for the unformed muscles of youth.

Wherefore, owning a canoe is the ambition of every boy living within reach of lake, stream or bay. Nowadays they are very cheap—as boats go—a good canvas canoe, staunchly built, canvas

covered over wooden sheathing, being had from such a concern as the Detroit Boat Co. for as little as $20. One of the best canoes in the world, the White guide's model, is only $28, and the extra-well-built canoes of the Morris company cost around $40, so the youth from twelve to twenty has a wide range of choice in the quality purchasable.

I should not advise trying to build such a canoe. Later on in these chapters I will tell you how to build a decked sailing canvas canoe over a spruce and ash frame. I have built four of these canoes, my first offense being at the age of twelve, and they all cost about $7 for material alone, so that the material for the much-ribbed and sheathed open canvas canoe would run at least $14 and one will get a better boat for $20 than could possibly be built by an amateur.

In choosing a canoe the first question comes up, shall we have a keel or not? This has been argued pro and con by many an experienced woods voyageur. The keel adds staunchness but increases her draft at least an inch, so that she may stick in getting over a ledge or a down tree while the other would slip over. On the other hand the keelless canoe will get her canvas badly scraped if the ledge is sharp and she touches, and, in lifting over



CORRECT BEGINNING OF STROKE

Note boy in stern, and position of his left arm. Boy in bow exemplifies wrong position.



CORRECT FINISH OF STROKE

Small boy in bow shows incorrect position, with no power.

trees when heavily loaded, she is apt to buckle or "hog-back" amidships. My own Morris, which has done over a thousand miles of wilderness river travel, has a keel an inch deep, and she bears few scars on her bottom, most of them being on the turn over the bilge, yet going over dams and down trees is her specialty,—I should say at least a thousand of the latter have passed under her keel first and last! A compromise measure, adopted by recent canoeists and suggested by the writer, has been to put on a flat strip keel of hard maple about ⅜ inch thick and three inches wide, which will protect her from scraping yet only increase her draft a tiny bit.

In picking a canoe, the safest and fastest model has a quite flat bottom, with a sharp, round turn to the bilge. The tippy ones are those deep and round on the bottom with no bilge, having no more stability than a barrel. The flat bottom draws but little water, slides over the stream like a duck, and it makes her a prime sailer because she is so staunch. The dimensions of my own canoe, a faster canoe by hours than many another model which she has raced down stream, are: length, 16 feet; beam, 33 inches; depth amidships, 12 inches; depth bow and stern, 24 inches; width of comparatively flat bottom, 24 inches. The cheaper type

$20 canoe, one of which is owned by my boys, has the following dimensions: length, 15 feet 6 inches; beam, 31 inches; depth amidships, 12½ inches; depth, bow and stern, 22 inches; width of comparatively flat bottom, 16 inches. This latter canoe is much more tottly than mine, hard to sail and nowhere near so staunchly built. Both canoes weigh about 60 pounds.

Having purchased the canoe, the first thing to learn is how to paddle her. The sign of the novice is his reaching far ahead for his water. Do not let yourself do that; you have no leverage there, most of your strength is to be put in as the left wrist passes your left hip, the while your right hand is sweeping the top of the paddle forward. This will put your shoulder and body into it and the motion can be kept up all day without fatigue. If paddling with another fellow in the bow, the stern boy is always captain, and he is to correct with a turn of his paddle any deviation from the true course during each stroke. Your mate may be weaker than you, and the canoe then tends to swing towards his paddle side, which is generally opposite to yours. In that case, correct him at the end of each of your strokes with a turn of the paddle. If paddling alone it makes a vast difference where you sit as to how the canoe be-

haves. Abandon the rear seat and find a place kneeling somewhere just forward of the rear cross brace. Here you can paddle on one side indefinitely, holding the paddle blade at a slight angle inwards from straight across. If you find that the canoe tends to sheer away from course opposite from the side where you are paddling, move a bit further forward and alter the angle of your paddle slightly until you get her balanced just right. It is the only way to win a race, for the time lost in correcting your course at each stroke, as you would have to do sitting in the rear seat, will lose you out every time.

River paddling, especially in rapid white water, is full of kinks which you have to know and use instantly. If the bow man, never embarrass the stern man by striking at rocks, etc., with your paddle. You will do no good whatever, and may upset the canoe. The water always takes care of the bow, the stern is the thing to be swung clear with the paddle. You report "Rock ahead!" and be sure that he sees it, and then leave it to him. His stunt is to back paddle the stern of the canoe *away* from the position of the obstruction when the current will swing the bow, as it is flowing faster than the canoe is going. The bow man's hard work comes going around bends. The river

tends to swing the canoe into the main eddies and your aim is to keep out of them, cutting across in the still water. If you want hard work going down stream just let the canoe stay indefinitely in the deepest and fiercest waters! And so the bow man must anticipate the river each time and get his bow headed out of the eddies and into the quiet part of the bends, as here the stern man can aid but little. As soon as the bow is right the stern man puts in his strength and shoves her ahead across the head of the bend. Never back paddle at these times, you lose all your steerage way and put yourself at the mercy of the current.

Down trees and shallows require instant decision as to where to take them and agreement at the same time between bow and stern as to what they are going to do. Don't argue or fight when the river is bearing you swiftly on the obstacle! All other things being equal, the stern paddle has the say. There is usually a hole around one end or the other of the tree through which the canoe can be snaked. Occasionally it is advisable to cross the stream without going either up or down, and to do this, bow back-paddles lightly and stern paddles forward heavily, which will have the effect of holding the canoe stationary at a slant upward

to the stream. The current will then take her across.

In approaching a down tree which cannot be gotten around, back her and let her swing about gently until broadside to the stream alongside the log. Pull out the heaviest duffle and set on log. One boy stands on the log on either side of the canoe, and between them she is slid over. Most of the duffle can be left aboard. In rocky waters, go ahead and looked over the rapids before venturing out, for once started there is no turning back. More than once you will need to have the courage to be a coward,—for it takes a brave boy to say "No!" when an inexperienced crowd want to run a rapids that better men than any of them have portaged around. If there is a portage trail it is a pretty fair sign that most canoeists go around instead of shooting the rapids. Look for a landing, apparently much used, or a blazed tree, or tin can on a sapling. If you have decided to run, see that all duffle is lashed securely and go to it, the stern man being the responsible one. As the current splits over rocks it forms a cushion which will float your bow away if the stern man but guides it in the current and takes care to keep his stern clear. Keep where there is plenty of current and water, but avoid the main bend, if pos-

sible, particularly if there are many rocks. Back paddle and let her come down easy at all points of danger.

The stern paddle should be heavy, of hard maple and copper shod, five feet long, 28-inch blade, 6½ inches wide. The bow paddle is lighter, of spruce, five feet long, 26-inch blade, 5½ inches wide. If upset in a rapids, hang to the canoe and let the paddles go; you can find them somewhere in an eddy down stream later, but to swim after them in rough water is folly. One man takes the bow and the other the stern, and you work her ashore as soon as possible, build a conflagration and dry out everything. In traversing, i.e., crossing, a lake or bay, look carefully at your whitecaps first, or indications of wind if the water is calm. A canoe lightly loaded will live in an incredible sea; heavily loaded she becomes logy and a death trap. Once in November I came spinning down the Metedeconk River with seven miles of white water behind me in which even a heavy 25-foot launch made desperate weather. I had my boy and a chum along and all our duffle, but one look at the whitecaps made me decide on a back-packing expedition for them along shore, while I took the canoe alone. I left 50 pounds of duffle in her and started down wind for a point three miles



LATTEEN RIG FOR OPEN CANVAS CANOE
This is as much sail as this type of canoe can stand.



"SHOVING" THE WATER OUT
Canoe is being bailed out by alternately shoving and pulling, letting the momentum of the water carry it out over bow and stern.

away. It was sure a wild ride! The seas were three to four feet high, white-capped, and the wind so strong that it blew the canoe bodily across the waters. Gradually I worked the canoe out abreast of the point, but I blew down on it so fast that I suddenly realized that I would clear it, if at all, only by the most desperate paddling. As it was, I ran into the big combers off the point, the second one of which picked up the canoe broadside and curled her over as if to dash her bottom up on the shoals.

"No you don't!" I gasped, and, shoving hard down on the weather gunwale with my elbow, I righted her and took the sea aboard. It filled her a third full of water, but, before the next comber could pour in its cap, I had flown around the point and was in the still water under its lee, where the boys soon joined me. So, if you must traverse, and the seas are high and choppy, better make it in two trips lightly loaded than try to do it in one and get swamped. When you see a sea about to curl aboard, give the canoe a flip so she shows her bottom to the wave, when it will go under you and all will be well. If any come in and there are likely to be more, lay to, and one boy (bow) starts bailing. Always have your paddle tied to the crossbar by about eight feet of small cotton rope

in making a traverse and have the duffle loose. If swamped or upset, hang to your paddle and regain the canoe, for it's a drowning matter if she gets away from you.

In reasonably still waters one boy alone can bail out an upset canoe. There are two good methods, rocking it out and shoving it out. In the first, swim around to the stern of the canoe and get the water inside rocking from side to side so that it flops out at each reverse. As soon as enough is out to give her a few inches of freeboard get aboard over her stern and dash out the rest with your hands. "Shoving" the water out also depends on the momentum of a body of water. Swim astern, and, grasping the stern breasthook, give her a smart pull towards you. The water will slop out in a torrent over her bows. Then shove away from you with all your strength and the water will come rushing aft and slop out over her stern. Keep this up until about half emptied, when get aboard over her stern and dash out the rest with your hands. No boy under sixteen years is strong enough to be successful with either of these methods, but by lying down in her when she is awash the water can be dashed out if you are patient and do not try to move about. I do not believe that a single man or boy can bail out a



TO SWING CANOE OVERHEAD

The canoe is the famous Peterboro wooden canoe used in the Hudson Bay country.



PADDLES LASHED IN POSITION

Lashed to rear and forward thwarts the blades form a yoke which rests on the shoulders.



CARRYING SINGLE

A yoke makes this much easier; cannot be done in a strong wind.

swamped canoe in a heavy blow. Stick to her, for she is your only hope, and get overboard all the heavy duffle. If the water is not too cold, take time to get out some twine or fish line and buoy-mark rifles, axes, etc., by lowering them to the bottom and tying a floating duffle bag at the surface anchored by the gun. This leaves the canoe free; right her and get into her still awash. Watch your chance to get water out and do so at every opportunity. Sooner or later she will drift ashore, and, if you feel yourself getting numb, rest your head on bow or stern cross brace and keep quiet. If the water is cold, act quickly; heave out all duffle, right the canoe, get in and bail steadily with your hat or any container. You may beat out the waves, and at least will keep exercising while you drift to the shore.

But upsets and the like seldom happen more than a few times in a lifetime with a staunch canoe, most of which are more able than a row-boat of the same size. The portage is the surest preventative of disasters, and how to do it right is worth knowing. Two boys, each carrying an end of a canoe under their arms, will work much harder than one boy alone carrying it properly. Even carrying it upside down, with an end over each boy's head is preferable, but the time-hon-

ored Hudson Bay method is to lash the paddles to the middle and forward thwart braces, the blades of the paddles resting on the middle thwart. Then, when you turn the canoe over, your head will go between the two paddles and the blades rest on your shoulders. With a coat or sweater bunched up on each shoulder you can carry an ordinary 60-pound canoe with ease while the other boy packs the duffle. Keep your baggage low in weight if you are going to have many portages, for double tripping it means three times the time and work lost. Suppose you have a two-mile portage from one lake to the other. With a single trip that is two miles to the lake, launch the canoe and on your way; with a double trip you have two miles there loaded, two miles back empty, and two miles there again loaded—six miles! Ever hike six miles along a woods trail, with no load at all? I'd rather do that two miles in one lap if I had to stop and rest every five minutes!

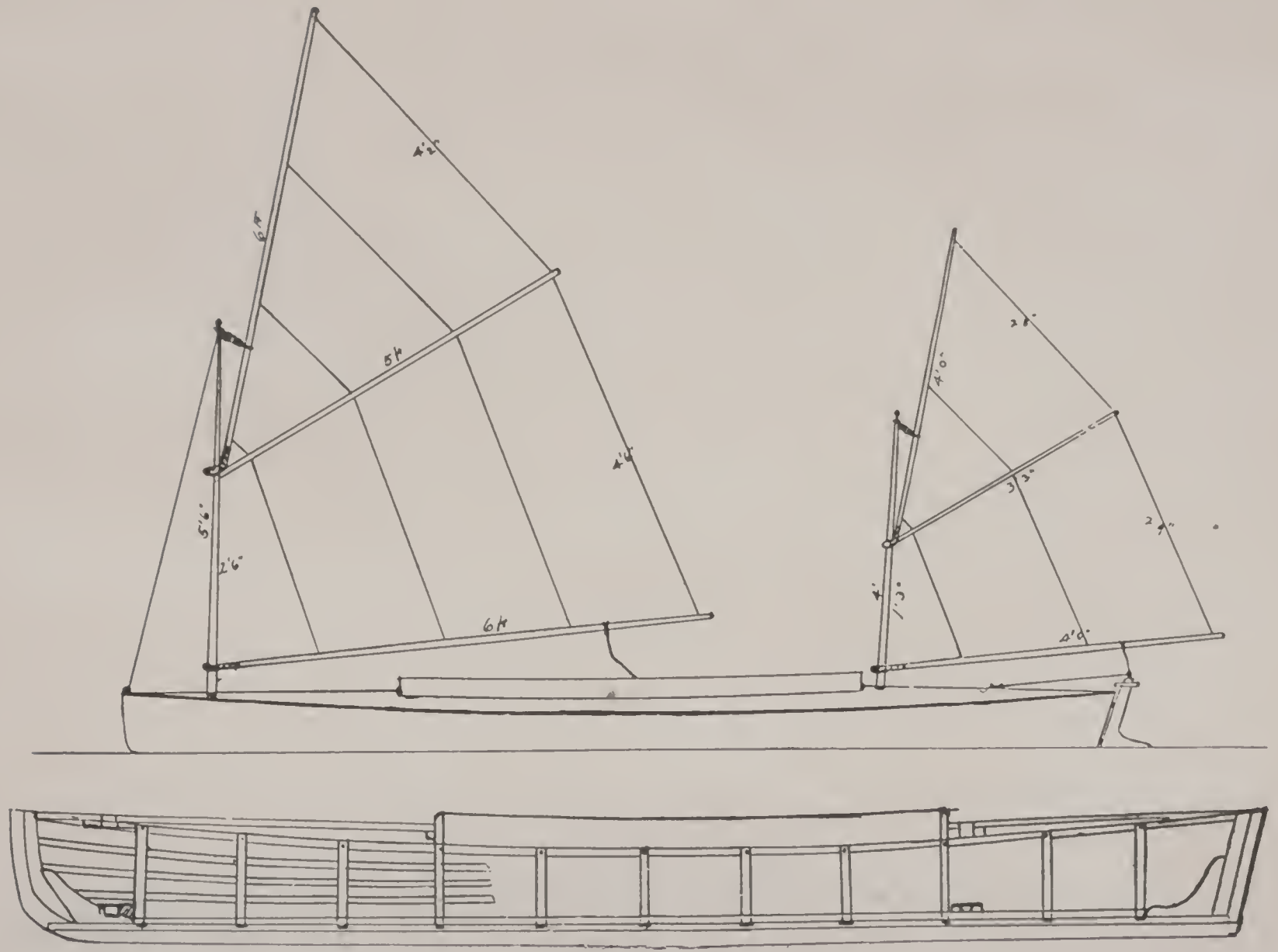
CANOE SAILING

If one has but a moiety of the real Indian spirit in him he will have a pronounced aversion to anything even in a remote degree resembling work. Paddling a canoe comes under this head; you don't realize this until once under sail in the same

canoe, where she goes right along like a greased eel with no more effort on your part than the exercise of a little skill and judgment. And, if you give her all the sail power she is really capable of, you will get such exciting hikes, such breathless speed, such a glory of existence out of that canoe as you never dreamed of. A full-powered sail canoe is in the same class as regards thrills and sport as a game fish or carnivorous big game,—any of these will keep your hands full mastering their tricks with all the resourcefulness at your command. Far be it from me to utter a word counter to the delicious memories of day-long paddles in the open Indian canoe, down green-arched rivers, across long whitecapped lakes and down rushing streams. But I have other memories;—of the open ocean and the green-sedged marsh; of wide estuaries and hill-rimmed bays, where the decked canvas canoe, heeled down to the cockpit coaming under the stress of her great white sails, tore and raced over and through the long ocean swells,—when every black catspaw put you out over the pickle with your toes hooked under the opposite coaming and that little witch lay down and shot through the whitecaps like a flying fish! And these breathless memories far eclipsed the best

sport that the Indian canoe affords,—taken strictly and solely as canoeing. If you have no portaging to do and your river or chain of lakes affords reasonable sea-room, I prefer a single sail and a pair of lee-boards for the open model canoe. Take along a leg-o'-mutton sail, eight feet hoist by nine feet along the foot, of American drilling, hemmed and provided with grommets every foot along the luff. This takes but little space in your kit and can be bent to a spruce sapling as a mast with plenty good enough results. Spread it with a sprit of light spruce or birch which you can cut in the woods. She will go right along with such a rig, but will make leeway like a floating leaf if you have no lee-boards. For canoe voyaging I prefer these of the folding, collapsible type.

The sail for my Morris, which I have used for over four years in lake and bay cruises, has a 2-inch diameter mast, 6 feet 9 inches long; and a lateen rig, 10-foot 2-inch head, and 11-foot 2-inch foot, with 10-foot 6-inch leach. The jaw is attached to bring the mast 19 inches from the fore peak of the sail. The sail is made of light 4-ounce duck canvas and with it she is very fast. The mast is stepped with a cross brace, attachable with brass hooks and wingnuts, and the foot step is screwed stoutly to three ribs, giving the mast



FRAME PLAN AND SAIL PLAN, DECKED SAILING CANOE "WATERAT IV"

a very slight rake backwards. The lee-boards for this rig are gotten out of inch spruce and are 30 inches long with a 12 x 20-inch blade. They are secured to stout shoes on the ends of the cross piece by brass wing nuts passing through holes in the shank of the lee-boards. The cross piece is 1 x 5 x 38 inches long.

To make your own lee-boards whittle out of clear spruce two blades about the size and shape of your broad double paddle-blade with square stocks 3 by ⅞ inches. Get a pair of brass 3-inch hinges and cut a length of clear spruce 3 by 1 inches, a foot longer than the canoe is wide. Lay it across the gunwale of your canoe and mark where the two shanks of the lee-boards will come to fit snug up to the gunwale. Screw on the hinges, facing inward so that the lee-boards will fold toward each other. The length of the lee-board does not need to exceed 24 inches, all told, and should fine off to a thin edge much as does a broad-blade canoe paddle. Having screwed the hinges fast, erect the two lee-boards so that they stand upright bringing up hard-and-fast on the ends of their own shanks. They should then stand a little outward. Get two heavy brass hooks, such as are used aboard ship for doors and skylight hatches, and screw the eye of these hooks onto the back of the pad-

dle, and the shackle of the book onto your spruce cross-rail, letting the hooks come over at about 45 degrees and planting them so that when each hook is snapped into its eye it will hold its lee-board upright, firm and solid. To use the board set the cross-rail across the canoe with the lee-boards in the water on each side of the canoe. The cross-rail is lashed to the cockpit coaming by a couple of turns of marlin around two cleats screwed to either side of the coaming inside, below where the rail will cross, i.e., a little forward of amidships. Twelve inches wide by 24 inches long is plenty lee-board enough for an ordinary 16-foot canoe.

For canvas-decked canoe I have used a number of different sails, including leg-o'-mutton and lateen, but have finally come to prefer the Canadian Club canoe sail, with short stubby mast and long gaff cocked up almost vertically. This sail has less spar weight than the lateen, practically the same weight as the leg-o'-mutton, and has not the bad leach of the latter, because the batten keeps it flat and well spread. It is a wonder for quick reefing as one can lower the gaff, tie the batten to the boom at both ends and the middle, and hoist away again in less than three minutes. In making it, avoid too heavy spars. For a 12-foot

canoe, the boom and gaff of the mainsail should be six feet long, each of 1¼-inch clear spruce, tapering to ¾ inch at each end. Batten, 1¼ x ⅜ inch 4 feet 10 inches long and mainmast 5 feet 6 inches long, of 1½-inch spruce, tapering to ¾ inch; material of sail, American drilling. Mizzen sail boom and gaff 4 feet each, of 1-inch spruce, tapering to ½ inch, batten 1 x ⅜ inch 3 feet 6 inches long. Hoist of mainsail, 2 feet 6 inches, of mizzen, 1 foot 6 inches. You will note from this that only two mast rings are needed on the mainmast and one on the mizzen. To cut out sails the easiest scheme is to stake out the dimensions, either on a lawn or in a large empty room, and run a string around the stakes or tacks, giving the outline of the sail. Lay the canvas parallel to the leach (rear outer edge of sail), and cut as many gores as will be needed, allowing an inch of hem. Leave 1½ inches overlap along the line of the batten, and when the two parts of the sail are done, turn under and sew the overlap, forming a sort of pocket 1½ inch wide into which the batten can be slipped. Along the head, foot, and luff of the sail will be wanted brass ⅜-inch grommets, which are little brass eyeholes through which the lashing rope is run. These grommets space about 9 inches, and are easily put in by punching a hole

in the hem, slipping in the male half of the grommet, putting on the ring and turning over with a fid, or, in lieu of any such nautical implement a large 20-penny wire nail. To make the spars buy the stock from a door-and-sash mill in the rough square or rounded if they keep it. They will rip it off a clear plank for you for a few cents more than the cost of the plank. Work the spars round with a jack-plane and a spoke-shave, finish to a nice taper each way from the middle (except the mast, which tapers from the foot), sandpaper and varnish with marine spar varnish. Whittle the jaws for the gaff out of natural bend maple forks giving them the proper twist so as to seize the mast when the gaff is cocked up taut. All the running rigging, lashings, reef-points, etc., should be of white ⅛-inch cotton rope and the blocks (pulleys) of ⅛-inch galvanized iron. The main sheet (rope) is single and is held in the hand while sailing (it pulls about as hard as a large dog). The mizzen sheet is made fast on a cleat on the rear deck after trimming true to the wind. It should pass through a brass screw-eye on the rudder-head, so as to sway clear at each tack. The rudder is best managed by a yoke on the head of it, with steer lines running flat over the rear deck and through screw-eyes along the inside of



OFF FOR A LONG LAKE AND PORTAGE CRUISE

No more enjoyable summer vacation exists than a canoe cruise on some chain of lakes.



RIVER CANOE CRUISING

A stop for a camp is made each night at some spring along the river banks.

the cockpit. The steer rope is endless and taut throughout its length. To steer you can grab it anywhere, and wherever you leave it the rudder will stay. Most of canoe steering is done by sails alone. A centerboard can be done without in a canvas canoe, as the 3-inch fin keel gives her plenty of grip on the water, but an 8 in. x 36 in. keel board fastened to the keel with carriage bolts and ring nuts as described in Part Two, Chapter III, is a great aid.

A word to the inexperienced as to the value of the mizzen or dandy. With it a canoe is far safer than with the mainsail alone, because the tendency of the dandy is always to shove you up into the wind. The minute you spill the wind out of the mainsail (too strong a catspaw) the dandy shoves you safely up into the wind unless checked by the rudder. Without it the canoe would simply knock down and probably fall off the wind, thus filling the mainsail again just when you don't want it, and, unless you check her immediately with the rudder, you are in for very serious trouble indeed. With the dandy astern she will be much faster, safer and quicker to mind her helm, and the only reason I do not advocate it for the open Indian canoe is because of the high curling stern of the latter.