YO HO!—Plywood Cartopper

By WESTON FARMER

Designed with easy bends in her planking this boat is light enough to be tossed atop your car. Cheap, too

YO HO! is not the best looking boat I have lifted from my drawing board these past 35 years—not by a long shot. But she very successfully incorporates extreme ease of building with very nice water feel.

As my good old friend Billy Atkin, dean of American motorboat designers, says, "A good small boat is harder to design than a good large boat." So I am happy to relate that an unusually good compromise has been doped out in *Yo Ho!*

She has enough rocker to row reasonably well, yet not enough to kill her for planing work. She will putzz along with a 1½ hp Elgin kicker at 7 miles; can use the Evinrude angle shaft 3 hp motor, and even take 7½ hp Champions, Johnsons, Scott-Atwaters or Mercuries. A *Yo Ho!* was built—see photos—and the lessons learned are here incorporated for the final release as a perfected design.

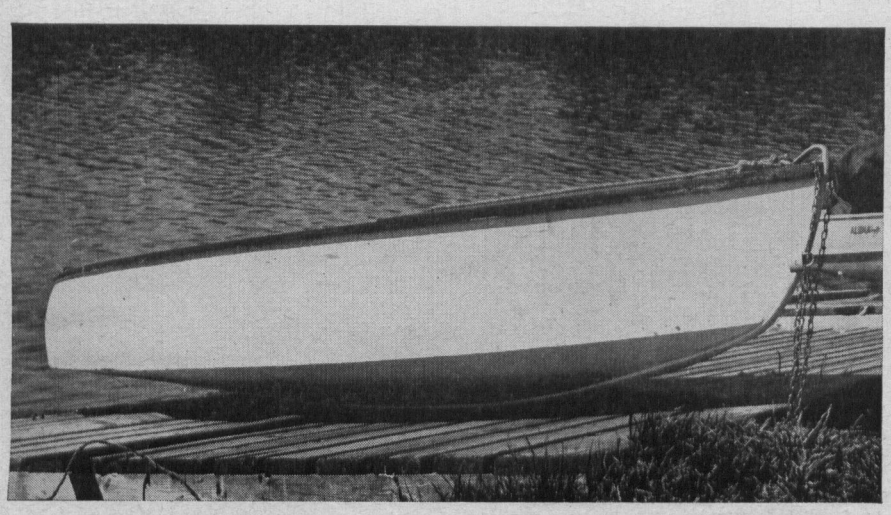
A boat for ideal cartop carrying should come within the limits set by the usual 52″ car carrier spreaders, and should be reasonably flat in sheer to accommodate wide variation in car crowns.

The *Yo Ho!* experimental model, preliminary to this design, was 12′ long by 48″ beam, 16″ depth. While her water performance fitted the outlined requirements, I felt that her rocker could be flattened a little without interfering with good rowing, that her dead rise could be increased to give a boatier feel, and that a pram type bow with a rounded block stem would take less bending. So our published and final version of *Yo Ho!* is one foot longer—13 ft.; her beam is 50″ over the sheer guard; and her depth has been increased to 18″. This accounts for the slight difference in modeling between the photo version and the design here. Another difference incorporated was to put the steering wheel on center. This gimmick is useful with 5 hp and over. So is a little water speedometer, shown on the dash.

She is simplicity itself to build. There is no sny in any of her planks —no twisting bends, in landlubber language—to baffle the neophyte constructor. Anybody who can run a saw, use a plane, and drive screws can do about as good a job as a professional boatbuilder.

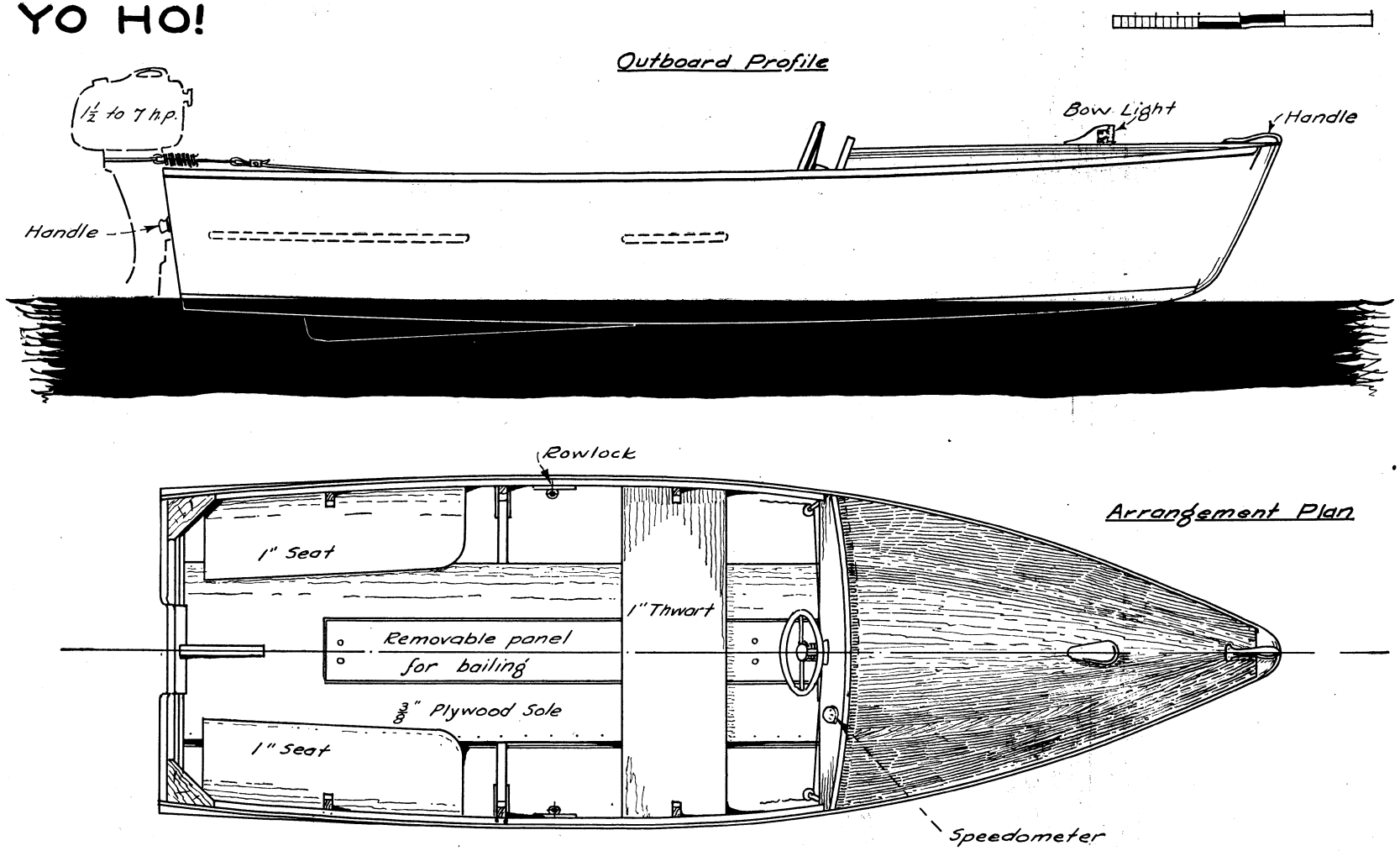
To get these features, we have innovated a bit. Trouble with nearly all plywood designs is that when you have seen one, you've seen them all, constructionwise. But the modeled block schnozzle on *Yo Ho!* though not new, is seldom seen these days. And the canted frame forward put in thus to dodge bevelling that frame, is a new idea, and a very good one. It lets the screws go flat to the face of the plywood planking, and square into the frame. Thus, there is no need of "aiming" the screw from outside, hoping you'll end up with most of said screw somewhere in the frame.

Yo Ho! is planked with ¼″ plywood topsides, and ⅜″ plywood bottom. All plywood, of course, to be

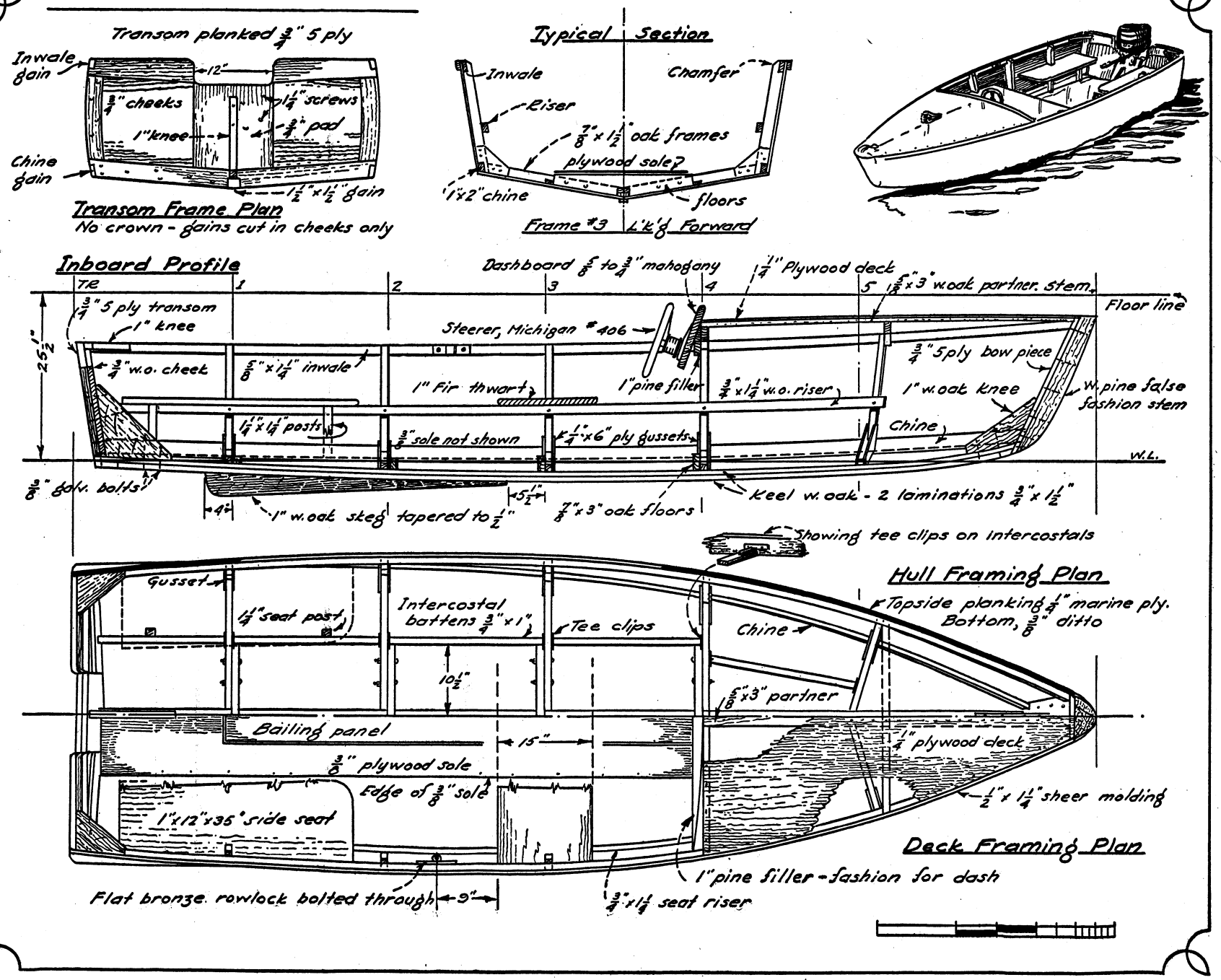


Yo Ho!'s parent design was this boat. As shown in the drawings, the final design had her bow piece changed and less dead rise forward. After testing this hull, designer Westy Farmer then made the final drawings that accompany article.

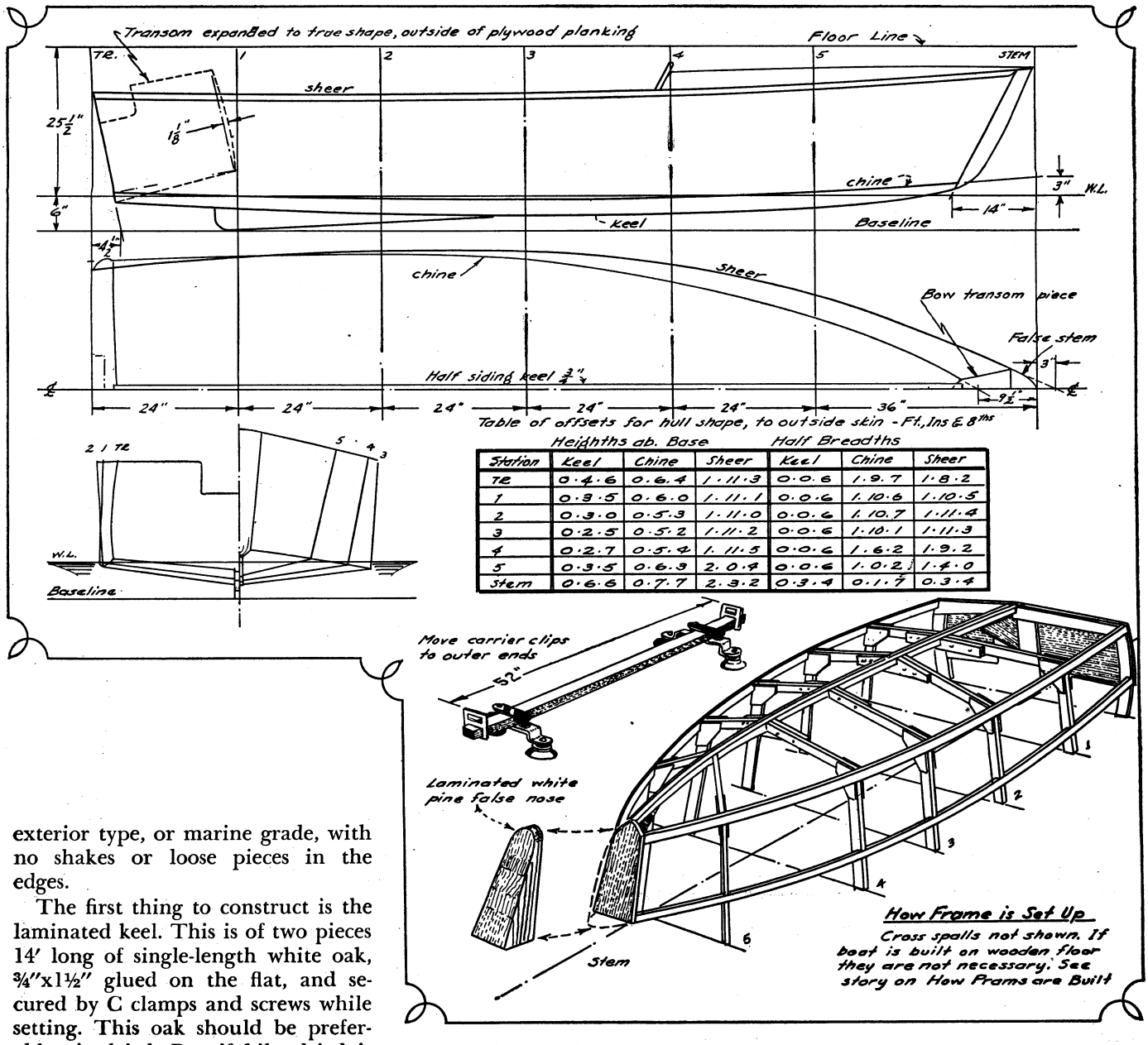
YO HO!



Here is Yo Ho! Her outboard profile suggests a skiff, but she has enough dead rise to throw water aside under the urge of motors up to 7½ hp. Deck hardware and suggested steering cable hook-up are shown. The bow and transom handles will be a great aid to handling the lift to the top of your car. For fishing the seat arrangement has worked out very well, and the removable panel for bailing will be blessed by those who know what score is.



Her designer lays no claims for good looks in Yo Ho! but she is a practical boat for the beginner. Here shown are all the constructional details one must have to complete the hull. Note that the intercostal battens are installed after the hull is built, being held to the frames by Tee clips. The construction of the fashion piece which forms the stem is depicted. This false stem is screw fastened through the bow transom piece and forms a hood for planking, and added protection.



Station	Keel	Chine	Sheer	Keel	Chine	Sheer
TR	0·4·6	0·6·4	1·11·3	0·0·6	1·9·7	1·8·2
1	0·3·5	0·6·0	1·11·1	0·0·6	1·10·6	1·10·5
2	0·3·0	0·5·3	1·11·0	0·0·6	1·10·7	1·11·4
3	0·2·5	0·5·2	1·11·2	0·0·6	1·10·1	1·11·3
4	0·2·7	0·5·4	1·11·5	0·0·6	1·6·2	1·9·2
5	0·3·5	0·6·3	2·0·4	0·0·6	1·0·2	1·4·0
Stem	0·6·6	0·7·7	2·3·2	0·3·4	0·1·7	0·3·4

The lines drawing is duplicated full size from the measurements in the offset table. The frame setup is clearly drawn. See note, lower right.

exterior type, or marine grade, with no shakes or loose pieces in the edges.

The first thing to construct is the laminated keel. This is of two pieces 14′ long of single-length white oak, ¾″x1½″ glued on the flat, and secured by C clamps and screws while setting. This oak should be preferably air dried. But if kiln dried is all you can get, see that it is clear—no knots. And then, before running it through the planer to size it, put it outdoors in the grass for a couple of nights, returning it to shelter out of the sun daytimes. In a couple of days the dew will have restored enough cellular water to make the oak about the equal of air dried stuff, which is tougher, bends easier, doesn't check as much.

See that there is about 3″ of overbend in the keel as glued up. It will unbend easily, but trying to get more into it, once set, will be hard.

Then, *lay down the lines full size.* No boatbuilder needs to be told why to do this. Yet the amateur always wants to get right to making the frames, thinking that if he follows the printed dimensions, he'll be in the Promised Land.

But confidentially, it just ain't so.

You lay down the lines to correct any errors in scaling the naval architect makes, but more important, you do this laying down to provide yourself with a faired, dovetailed master chart showing the trail-in of all bevels, the size and position of frame gussets and the like. These are all details that take perhaps a half day's time in a boat this size, and will possibly save a week in building.

The lines as drawn to the offsets are to the *outside* of the skin, and planking thickness must be subtracted in the amount of ¼″ for the topsides and ⅜″ for the bottom. The procedure is exactly as outlined in the story *How Prams are Built* elsewhere in this issue. As a matter of reference, since *Yo Ho!* is a pram with a fine pram bow, extended to a bulbous bow by the false piece on her nose, the procedure of building *Yo Ho!* is exactly like the little pram I just mentioned. The only difference of construction will be that the frames stay in *Yo Ho!*, and that slightly longer screws will be used through the bottom: 1″ No. 6 screws on 2½″ centers through the

⅜″ bottom planking instead of ¾″ screws as in the pram.

Otherwise all screw specifications are the same for *Yo Ho!* as for the pram. See Figs. 11, 12 and 13 in the pram story. For those too lazy to turn the pages, I have also drawn a framing setup with the lines plan here which will depict the essential differences.

The secrets of a good plywood boat are two: a heavy strong frame, and good bevels set in elastic seam compound, such as Kuhl's, obtainable at all marine hardware stores. The frame of *Yo Ho!* as you may note from a perusal of the drawings, consists of the following members:

Keel, laminated, two pieces ¾″x 1½″x14′.

Chines, one piece single length 1″x2″ mahogany. The secret of a good chine in a plywood boat is one of good dimension, preferably a good fastener holder, like mahogany, and one which will swell. I know oak is used a lot, and there is nothing better for holding power. But oak doesn't swell much, and it takes very sharp tools to get fair faying surfaces.

Frames are of white oak, ⅞″x1½″, gusseted at the chine by a piece of ¼″ plywood at each side of the frame, glued, screwed and preferably filled with a block across the diagonal of the gusset.

The transoms, both bow and stern, are of ¾″ 5-ply plywood. The cheek pieces are of ¾″x2½″ white oak, glued and screwed. The floors, the members which tie the keel ends of the frames together, are of ⅞″x3″ oak, wide enough to accommodate the width of the cockpit sole. The sole rests on these floors.

Bolt the frames and floors with two ¼″x2″ galvanized carriage bolts each side of the keel. The floor is gained out to go over the keel. *Don't cut the keel.* Two small galvanized finishing nails driven from the frame heel into the keel while the boat is bottom up and being framed, will locate and hold the frame to the keel while planking. A long screw from the floor into the keel holds the floor.

Along the edge of the cockpit sole, battens are put in *between* frames after planking. They are held at each end to the frame by a standard tee clip about ½″ on the face, and screwed to the frame and batten. Of course there is no law against half-gaining the battens through the frame, but I wouldn't. It weakens the frame. The object of the battens is to prevent panting, and consequent working of screws.

There is a ¾″x3″ white oak partner running along center on the deck, and to this the plywood decking may be jointed. It is screw-fastened with ¾″ No. 6 screws spaced about as depicted.

The false stem is a fashion piece made of white pine in laminations. These laminates may be glued with Cascophen or other good glue, held temporarily by brads as the sandwich is made up, but see to it that the nail ends won't be near a cutting edge of your plane or draw knife when you shape the thing up. This fashion piece is glued and screwed to the bow transom, driving the screws into the pine piece from inboard outward.

The skeg is dimensioned as shown, and is very necessary if you're doing any rowing while you fish. If you just want a cartop speed pot, leave it off.

The knees, inwales, seat risers, thwart and seats are all clearly drawn, and need nothing but reference to the drawings to enable any craftsman to understand them.

The sole is of ⅜″ plywood, and as shown has a removable panel, the better to bail from. Too many of the kits on the market are never thoroughly tried out by their perpetrators. And getting a boat dry under a fixed sole flat can never be done. We've got that fixed here!

Prime the plywood with Firzite—about two coats—before applying the best marine finish obtainable. I would paint the interior green, the outboard portions white, and leave the sheer guards, the thwart and seats bright varnished. This is yacht-like and Bristol fashion.

Yo Ho! will weigh something in excess of 100 pounds, depending upon how neat to dimension you have worked. This makes easy cartop stowage. In that department she is fine. But do not expect too much of a little boat like this. On a boat you tote on top of an auto, you can't get everything. If it is out and out speed and planing qualities you want, build something like *Scram Pram,* which appeared in the 1953 SPORTS AFIELD BOATBUILDING ANNUAL, a few copies of which are still available. But if you understand boats, and know what a good little rowing boat can be, and use horse sense in conjunction with a motor, you'll find her delightful. She will not trim exactly as shown in the outboard profile, as the motor was drawn in after the initial drawing was made. But she will float to that line when first launched, and you'll know enough to trim her so she rides well.

As to cost, $40 will buy everything, I am sure, unless larceny has set into the hearts of the local pirates. Boats are funny—you can spend twice as much on one identical twin, and few people can tell the difference when the jobs are done.

Drop me a line if she turns out well, will you?

Originally installed off center, the steering wheel was found to be unworkable, so in final plans the wheel has been centered and the speedometer, useful gadget on sale at marine stores, is placed offside.

