BUILD THE NEW INSTANT BOATS

HAROLD "DYNAMITE" PAYSON

INTERNATIONAL MARINE PUBLISHING COMPANY
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Nicholas Peck launches an Instant Boat from a second-floor apartment in New York City. (Bill Ranch photo)

fortable nests, these first-generation Instant Boats turned dreams into realities for hundreds of first-time boatbuilders.

These boats have been built in many and sometimes strange places—in highrise apartments, on balconies, in motels (and first launched in swimming pools), in attics, in garages, under palm trees, and even in living rooms. And I have had correspondence from successful builders in Europe and Asia. All these satisfied customers have proved that the Instant Boat idea works.

Yet there remains the hard-core nonbuilder. Despite the fact that Phil and I have wrung these plans dry of any hitches, there is still an irreducible percentage who are simply incapable of producing anything, mostly because of their attitude.

I have found more would-be builders than you'd think who simply cannot stand to finish anything at all—some because they don't want to test themselves and face possible failure, and still others, I'm convinced, who are deathly afraid of succeeding and feeling too good about themselves.

For the most part, though, the people who have trouble are in such a hurry (you'd think time was not only money to them, but even oxygen) that they don't really read the plans. They glance at them only long enough to decide that something is wrong and immediately phone me.

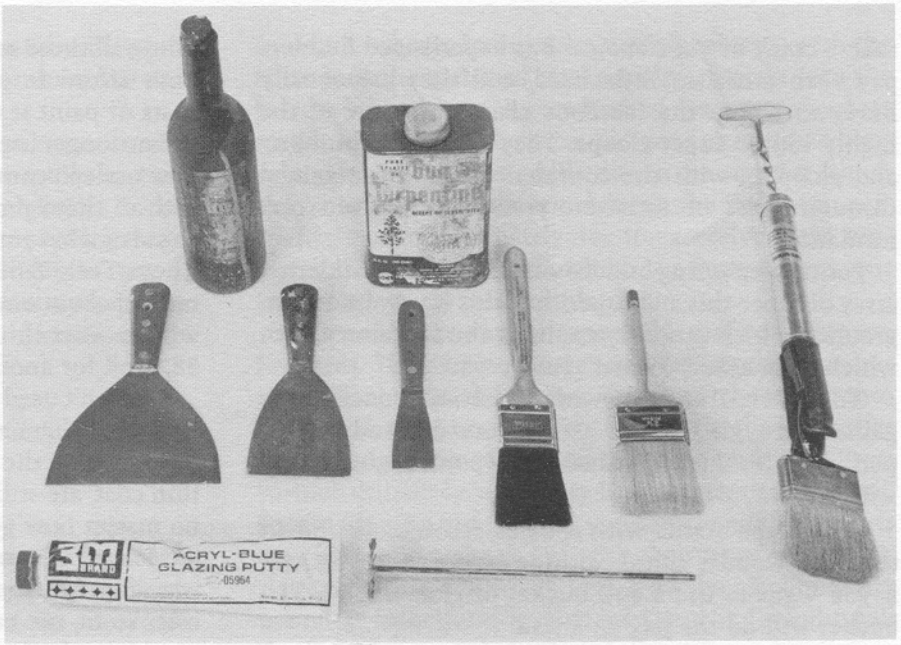
There was one fellow who began by saying that he was calling from Boston where he was an engineer in a high-tech outfit on Route 128, and that he had found an error in the forward end section of Diablo (a Tack-and-Tape craft you'll meet later). I asked him to explain it to me. As we chatted, both of us with plans in our hands, me with an architect's scale rule and him with an engineer's scale (which was clearly most of the trouble), we came to the amicable conclusion that there was no error in the plans. As usual the problem belonged to the haste-makes-waste category, easily correctable in advance with the expenditure of the one hour of planning that is always worth the two of actual work.

Only once in my years of selling these plans did I ever lose my temper, and I lost it fast and furious. This customer, a minister, wrote that I had caused him severe mental anguish, but he supposed I didn't care "now that you have my money safely in hand." He finished with a quotation from II Chronicles about the virtue of humility. I sent his money back by return mail with this comment: "Ye of little faith. If Noah built the ark, which was of considerable size, surely with God's help you should be up to a 12-footer." I went on to inform him that he could keep my plans and use them to fan the flames of hell for sinners like me if the thought pleased him.

THE BEYOND

When you have finished your Instant Boat, you may find that you have achieved your goal as far as boat-building is concerned. You wanted to build a boat, you did, and you find it answers your needs.

However, many first-time builders find they want to use their newly acquired capabilities to build another boat, or even a third. They have succeeded in opening that door, at least by a crack, which they had considered



Painting and finishing equipment. Japan drier (in the bottle) to accelerate drying of oil-based paints in damp weather; turpentine for oil-based paint thinner; three putty knives of different sizes for various applications; a 1½-inch, a 2½-inch, and a 3½-inch brush; a brush spinner for cleaning; an impeller-type paint mixing attachment for an electric drill; and fast-drying 3M Glazing Putty for shallow dents. Linseed oil (not shown) eases application of paint in hot weather.

myself with reasonable expectation of good results. The fact that I can add oils or dryers to suit the temperature, and even borrow some from a neighbor in case I run out, also makes this kind of paint attractive.

Brushes

I still prefer natural bristle brushes over nylon, and for highest quality work my choice is badger hair. As for size, 1½-, 2½-, and 3-inch widths take care of all the painting I do. The 1½-inch size works well even in tight corners and on small jobs and for brushing on glue, too, though I no longer use a brush for that. For some years now, my glue brush has been a wooden tongue depressor, so I no longer throw away hardened brushes I didn't wash quickly enough.

A box of tongue depressors lasts a long time, and with a little practice you can spread glue with one as slick as slapping mustard on your hot dog. The trick to not slobbering glue all over the place is to start in the middle, say, of a 1½-inch-wide gunwale with your loaded glue stick, and work the excess out to the edges.

Every time I've watched "What-can-I-do-to-help"–type volunteers try their hands at this, they have dumped the glue toward the outside edge of the gunwale or whatever, and then immediately have gone to work catching spilloffs instead of spreading the glue. Just put a good glob right in the middle of the work and run it out fast, as far as it will spread, with very little pressure. Then, using more pressure, go back where you started and work the glue (which by then is somewhat thinner) out toward the edges.

You might not think that spreading glue is an art worthy of describing. I didn't until I observed the slow and timid approach of these volunteer helpers; I had been taking it for granted that everyone knew.

Along with using decent paint brushes, you'll find that painting from paint pots instead of dipping and dabbing out of cans is the way to go. Metal pots that can be burned out later and reused are my choice over paper pots, but either one beats painting directly from the original cans.

I once had a kid come into my shop and offer to help me paint, so I gave him a potful and told him to go to it. We were painting together, on separate sections of the boat, and when the kid finished his, he asked what he should do with the pot. I said, "Hang it up there," pointing to the empty pots dangling from nails on one end of my bench.

That's right: A couple of days later I took down his pot and it was half full of paint. It had never occurred to me that you would have to tell anyone to pour unused paint back into the can. (Just one more example of why you can't take anything for granted.)

Care of Brushes

Ever since linseed oil and turpentine became so expen-

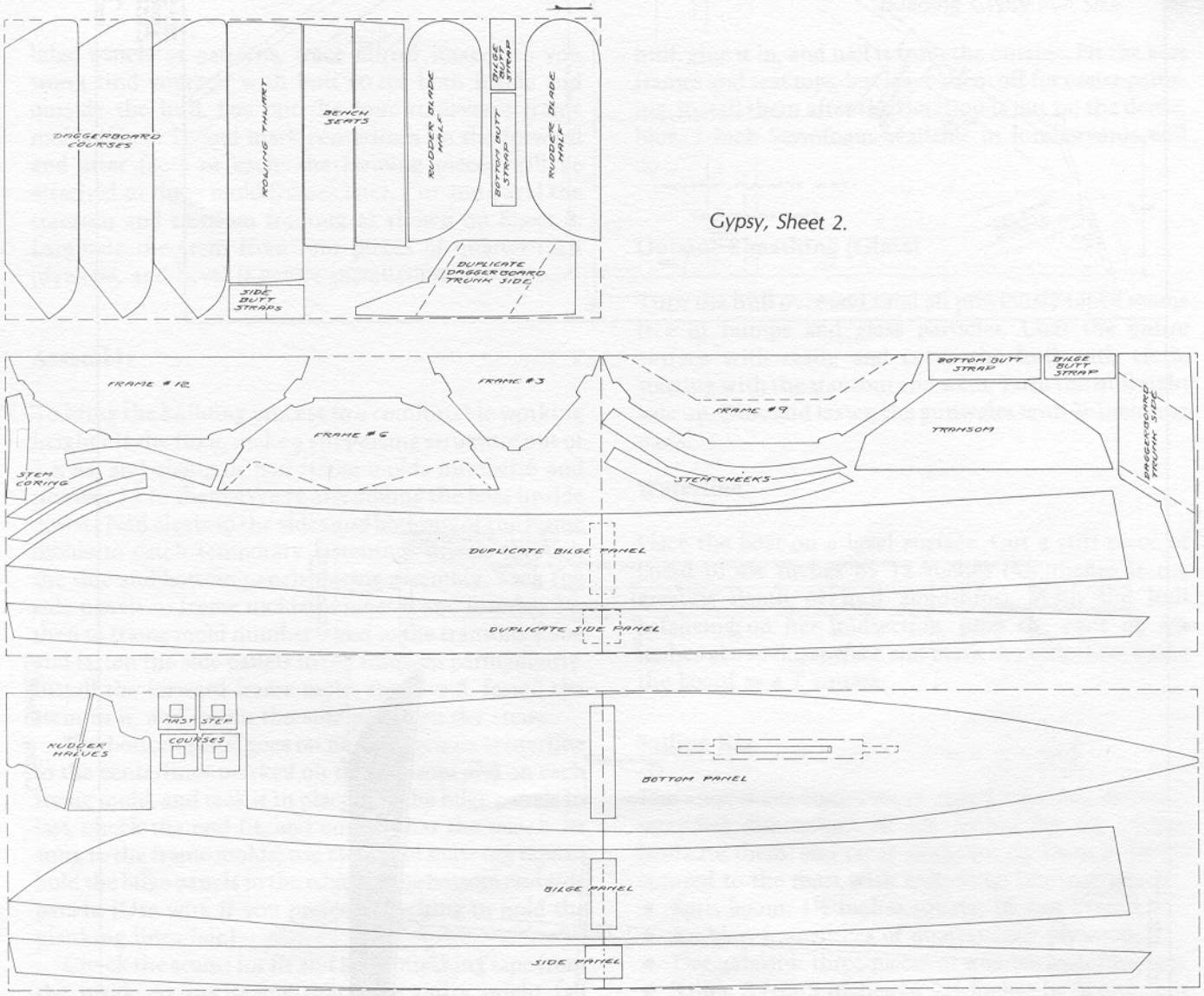
the cloth will appear grayish while it is curing and you will see pinholes in its weave.

- Very little special equipment is needed, but be sure you have the essentials. Among these, I would include a shop brush to smooth the cloth before it makes contact with any resin, paint brushes (1½ inches wide and up), 3-inch rollers, various sizes of putty knives and squeegees, and wooden stir sticks (again, my favorite is tongue depressors). You'll also need acetone to plop brushes in, to prevent their hardening, whenever you're interrupted. (You get very time-conscious when you work with a rapidly progressing and irreversible process.) Have on hand sandpaper of various grades, starting with number 20 grit for your disc sander to mow down ridges and lumps of cured resin.

For your own safety, use regular cleansers to wash resin off your hands, not acetone or lacquer thinners, both of which can be injurious to your health. And I urge you to wear a dust mask to prevent inhaling glass particles and goggles to keep them out of your eyes.

This is one crash course in fiberglassing plywood, but it's more knowledge than I started with, and I've never had any real trouble. It helps to experiment on scrap before you undertake any major effort, and it can ease the process immensely if you have a friend with some experience who will give you a helping hand.

Some of the Instant Boats require little or no fiberglassing; others are completely sheathed with it, as is the case with those constructed by the Tack-and-Tape method. All these latter craft, however, allow you to set your own pace. Whether that pace is one seam a week or damn-the-torpedoes-full-speed-ahead, Tack-and-Tape boats will accommodate themselves to match it, as you will find when we move on to come to grips with the Tack-and-Tape–constructed Gypsy.



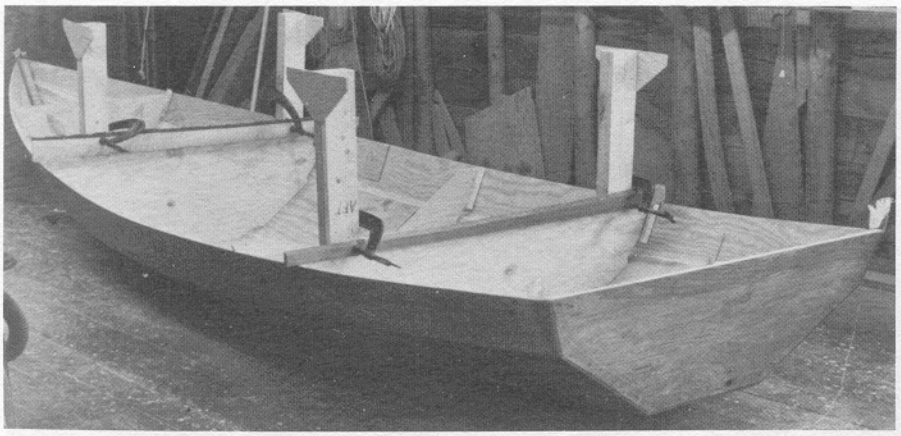
Gypsy, Sheet 2.

step in developing the shapes of one side panel, one bilge panel, and the bottom panel.

To develop the shapes (see Sheet 1), measure the given distance in from a long edge of the plywood at each 1-foot interval, or, in the case of the bilge and bottom panels, the given distance either side of a straight line struck full length. Drive nails at the measured points and wrap a batten around the nails to sweep the resultant curves. Be sure to mark the frame mold locations on all three panels. Now cut out the butt straps. You want to keep the ends of the butt straps 1½ inches clear of the seams, which will be taped. The grain of the butt straps runs fore and aft (across the joint) on the side and bilge panels and athwartships (parallel to the joint) on the bottom panel. Glue the butt straps, and fasten them with 1-inch smooth-wire copper nails. Slip sticks under the sheets and saw the parts out with a Skilsaw set square edged (no bevel needed).

Note: *Allow the glue to set thoroughly before moving the assembly. In the detailed building directions that follow, I'll give a sequence for the layout operation that gives the glue time to set without slowing down the building.*

Bend the nail points over, and using the side and



Right side up, offering a good view of the legs, which are about to be removed.

is used in saw mills and factories—is very helpful in spreading the putty along the long seams. Its flexibility adapts to the continually changing shape of the seams from the almost dead-flat edge-to-edge near the bow to the ever-increasing deadrise as the bilge panel runs aft. Immediately put the tape right over the fresh putty, and use your piece of belting to squeegee the tape into it.

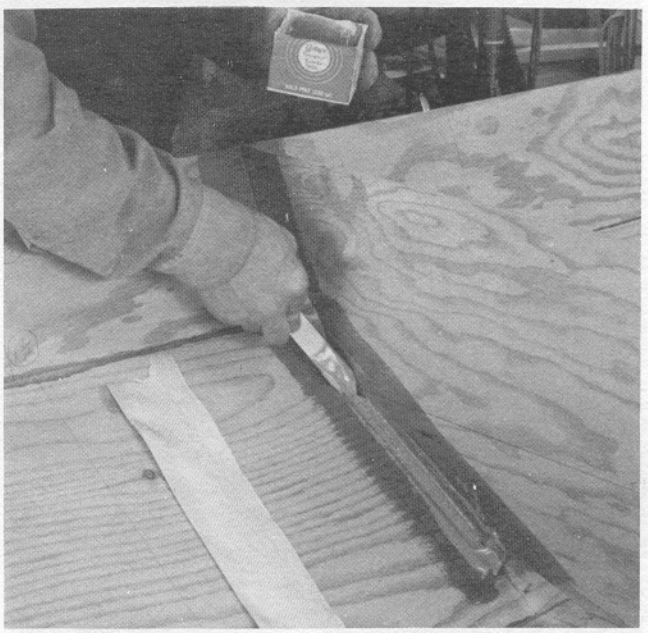
Keep the sides of the joint free of excessive globs of putty. The instant you get the whole length of tape in place, go over the joint with a coat of resin, and immediately follow it up with a second coat. Allow a little drying time for the second coat before you brush on the final coat.

Follow this procedure for glass taping the rest of the seams. You'll find it easier to do the side-panel-to-bilge-panel joints if you cock Gypsy up on her side a bit, so the seam lies flatter.

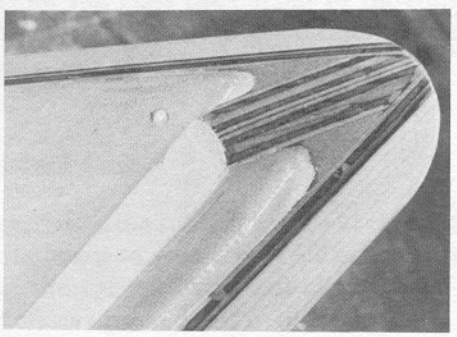
Only the stem is left to be done. Dip up a good-sized gob of putty with a tongue depressor and jam it into the crack that runs from the stem head all the way to the number 3 frame mold. Fill the crack on both sides of the stem, up to the radius of the tongue depressor, and then apply the tape.

You might be wondering if what you have done is really going to hold together. I've mentioned only one layer of tape on the inside, because that single layer along with two on the outside passed my laboratory strength test with flying colors: When I drove the rear wheel of my pickup over a sample joint, the plywood broke clean across leaving the taped joint itself intact. But it's true that the plans show two layers of tape along each seam on the inside, and I can't argue that two layers wouldn't be stronger. So double up on the tape if you like, but only on the inside seams. The outside seams get the benefit of a second layer when the overall sheathing goes on.

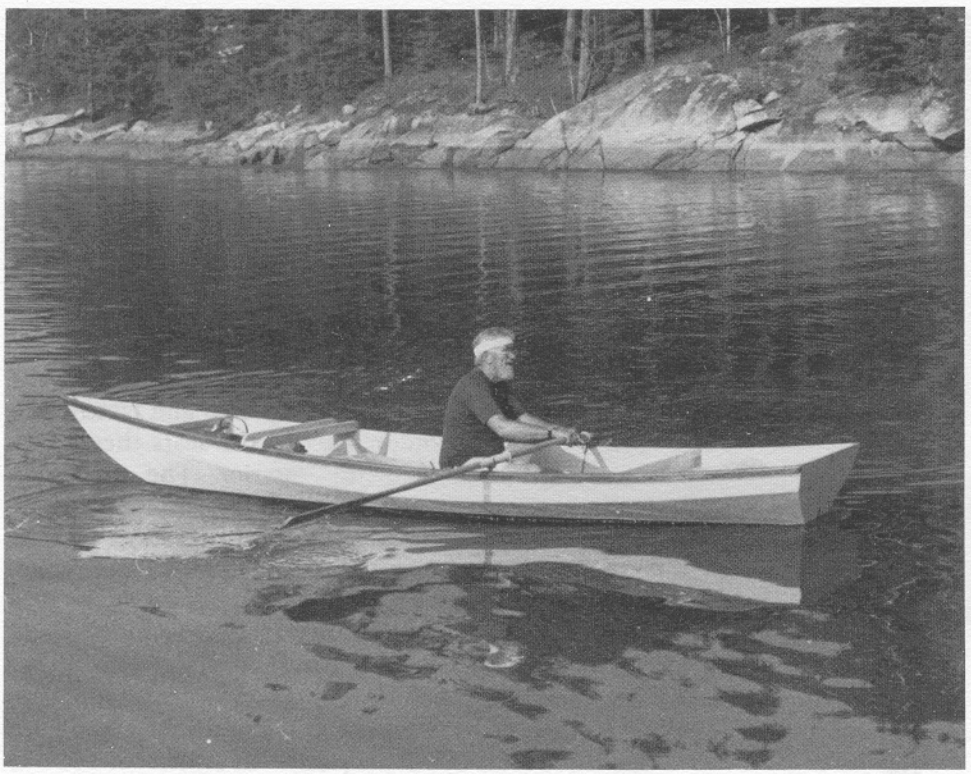
I'm going to skip a few steps in the sequence now and talk about the application of that external sheath-



The resin has been applied to a short frame-mold seam, and the glass putty is going on with a tongue depressor. Fiberglass tape is cut and ready. The resin-filled brush will be used to smooth the tape in position over the freshly filled seam.



Gypsy's stem, filled both sides with a deep fillet of glass putty and covered with a strip of fiberglass tape on either side.



John Garber is at the oars of his Gypsy. In 1983 he rowed her from Pleasant Beach to Beals Island, Maine, a voyage of some 100 miles.

On his first voyage with his new Gypsy, John Garber rowed her from my harbor here at Pleasant Beach all the way to Beals Island, a good hundred miles when you add in the necessary zigs and zags, and the nylon seizing showed no signs of wear—only a little discoloration. An occasional rub with Vaseline was all the treatment he gave it the whole trip.

Now a word about wrapping that seizing, in case you choose to go my route. Burn the end of the nylon so it won't unravel, and tack it down to the loom with an escutcheon pin, 1 foot 9 inches from the grip end of the oar. Keep your wrapping as tight as you can (a serving mallet would be nice to use for this, but it's not needed), and finish off just as you started, with the other end tacked down to the loom. The first time I tried this, I tucked the ends under the seizing, but those underlying bumps ruined the looks and performance of the job.

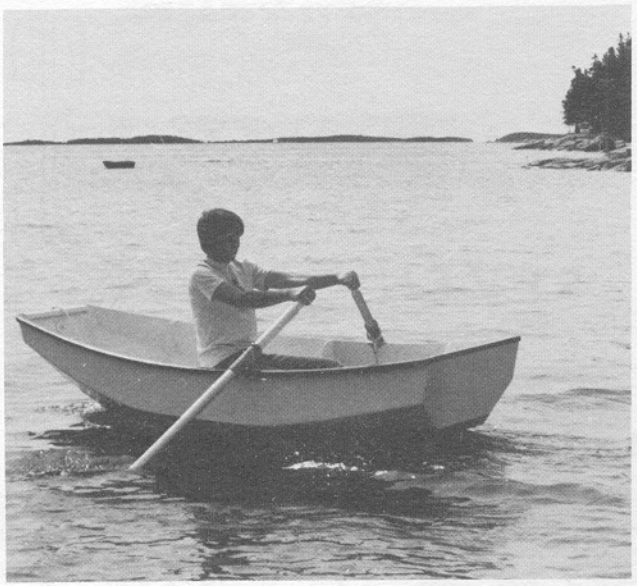
As for the button, double sealing them as I described above, I've never had a single one let go. Of course, if you are a dyed-in-the-wool rope artist, you might want to make yourself a perfect rope grommet and slide that down the loom into place, instead of using my melted-ends Dacron device.

On that maiden voyage, John Garber found her an excellent rower that tracked well, even without a skeg. Later in the chapter, we'll watch her being wrung out to a fare-thee-well under the hands of an expert sailor (not me), but for now let's just follow through on rigging her.

Bending On and Setting

You don't have to raise and lower Gypsy's sail—it stays right on the mast. For carrying, the mast and sprit are rolled right up in the sail. As I noted above, the grommet in the peak of the sail is lashed to the masthead with a piece of braided nylon. Examining the sail plan drawing on Sheet 3, you will see where seven more grommets are sewn into the leading edge, or luff, of the sail, including the bottom one at the tack. Each of these is lashed to the mast separately—there is no lacing. The tack grommet is lashed through the two holes in the bottom chock on the mast.

When it comes to securing the outboard corner of the sail, the clew, to the sprit and securing the inboard end of the sprit to the mast, the plans and I part company. At the clew, the plans indicate that the sheet should be led through the clew grommet, with a stopper knot in its end to hold it there, and then hitched back and forth around the dowels. I don't use any



The author's son Timothy enjoying a Cadillac ride in Nymph.

practice is) in a small punt or dinghy, and you have severely limited the disposition of passengers or gear. Place it lengthwise and you have maximum flexibility. I'll go for that everytime. It also adds considerable rigidity to the hull.

Back to the speed of building. I started Nymph early one morning, and she was done, rowing-version complete, a little more than 24 hours later. I have to admit that I had several strokes of luck. By noon I had all her parts and panels cut out, except for her frame molds. At that stage, local summer resident Dave Austin stopped on his way back to Rhode Island to say good-bye. He didn't leave until the next day. He had never built a boat of any kind and the fascination of what was going on swept him right into the act. I also managed to enlist the aid of my wife, Amy, always a much appreciated asset, and with her holding the various parts together when that was called for, and with Dave measuring and cutting out the frames while she and I were otherwise engaged, the three of us set something of a record. I think we would make a good team for helping the Bath Iron Works deliver one of their destroyers or frigates well ahead of schedule, as has become their habit.

In making the lengthwise thwart, I ran into one of those problems of progress that so often gets in the way of the dedicated boatbuilder. There was a time when boards 10½ inches wide could be had for the asking, or rather the buying, but no more. I had to glue and edge-nail 1½-inch-by-¾-inch strips on both sides to build a standard 8-inch board (what is now available) out to the 10½-inch width the thwart calls for.

I put the waterline on her the old, slow way, but there's no reason for you to. Since then I developed the method I described for the building of Gypsy, and I recommend you borrow it for Nymph (or any other small craft you may be inspired to build). Simply set her absolutely level and devise a kind of movable T square whose height is equal to Nymph's greatest draft, and you can easily scribe her waterline as you move it around her hull.

If you've already followed the building of Gypsy in detail, you'll remember that I recommended tacking cleats to the bottoms and sides of the frames to give the number 18-wire nails something to bite into instead of the skinny ¼-inch thickness of the frame molds themselves. This advice goes for Nymph as well. As with Gypsy, I would certainly clamp or tack boards across the frame molds, and across the transoms too, to stiffen them before you try to bend the sides around them. That ¼-inch plywood is pretty flimsy when standing free without such reinforcing. Both boards and cleats are, of course, temporary, and you remove them before you proceed with any glassing.

Before installing the oarlocks permanently, the owner should experiment with them to find the best position, which will vary according to the owner's height and arm length.

Nymph had one more surprise for me. That was when the eager would-be purchaser asked me what I wanted for her, as she stood, without mast, sprit, or sail.

I said $400, and then felt a little aghast at my valuation. (I always shy away when it comes to setting a price, and I'm apt to cheat myself if there's no staunch observer standing in my corner.) But then I remembered noticing, a few days before, that a mere kit from which to build a boat of this general size and type was regularly being sold for $600.

So I stood my ground, held my tongue, and watched the man hand over $400 without a qualm.

She still boggles my mind.

Introduction

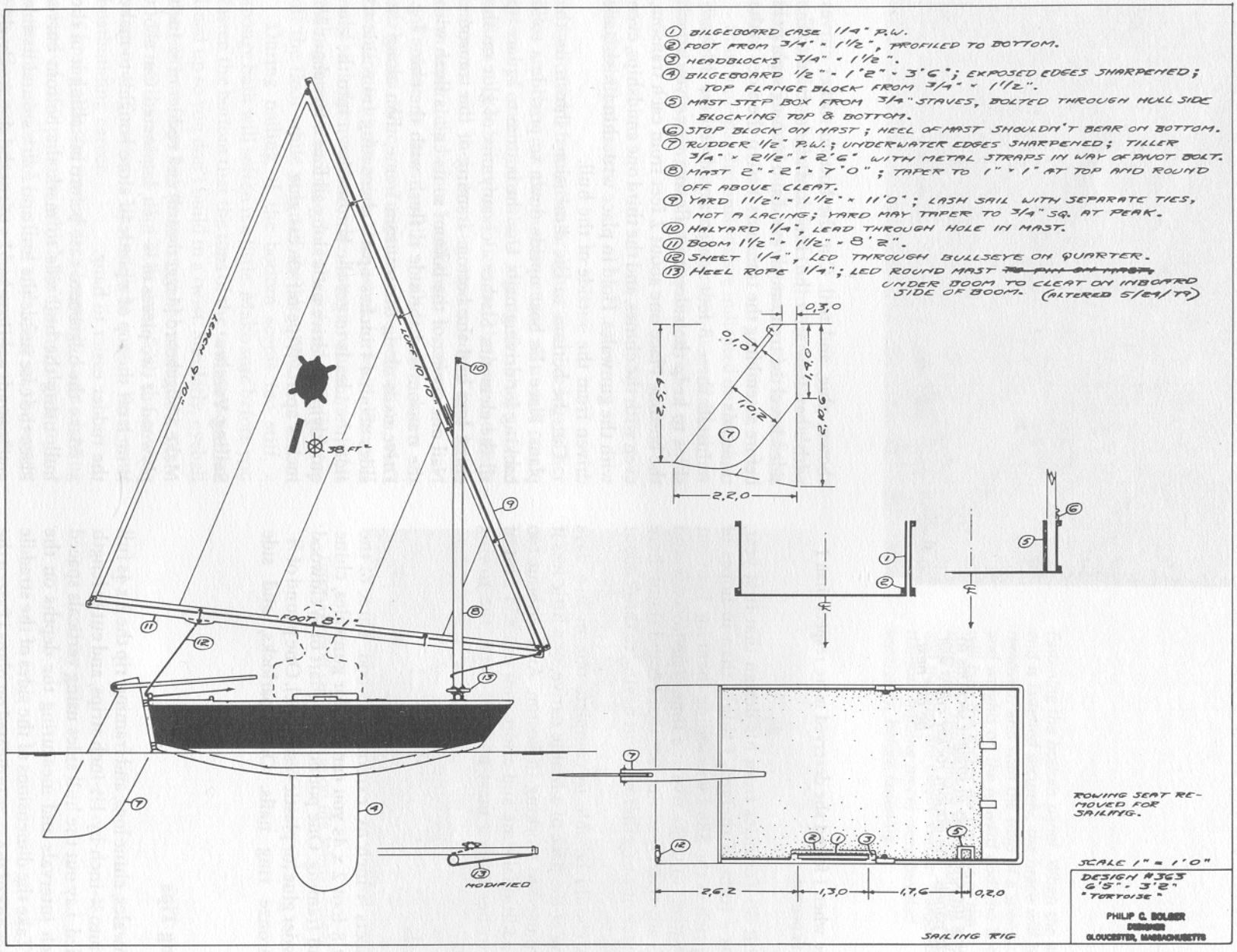
When we turn to the lineal descendants of the six Fit-and-Fasten craft presented in my first book, *Instant Boats*, we're dealing with a different kettle of fish from the Tack-and-Tape variety. Where Gypsy, Nymph, and Diablo utilize the strength and flexibility of fiberglass tape to tie their panels together, and an additional coat or two of fiberglass over the entire exterior to provide strength and rigidity, these boats are constructed by rigidly fastening flat pieces of plywood using glue and either nails or screws, with structural strength supplied by chine logs, gunwales, and seats (either lateral or longitudinal).

Even though plywood will bend along only one plane, much as a sheet of cardboard does, skillful design permits the Fit-and-Fasten hulls to embody pleasing and complex curves when seen as a whole, except in the models designed for total and simple utility, as Tortoise is.

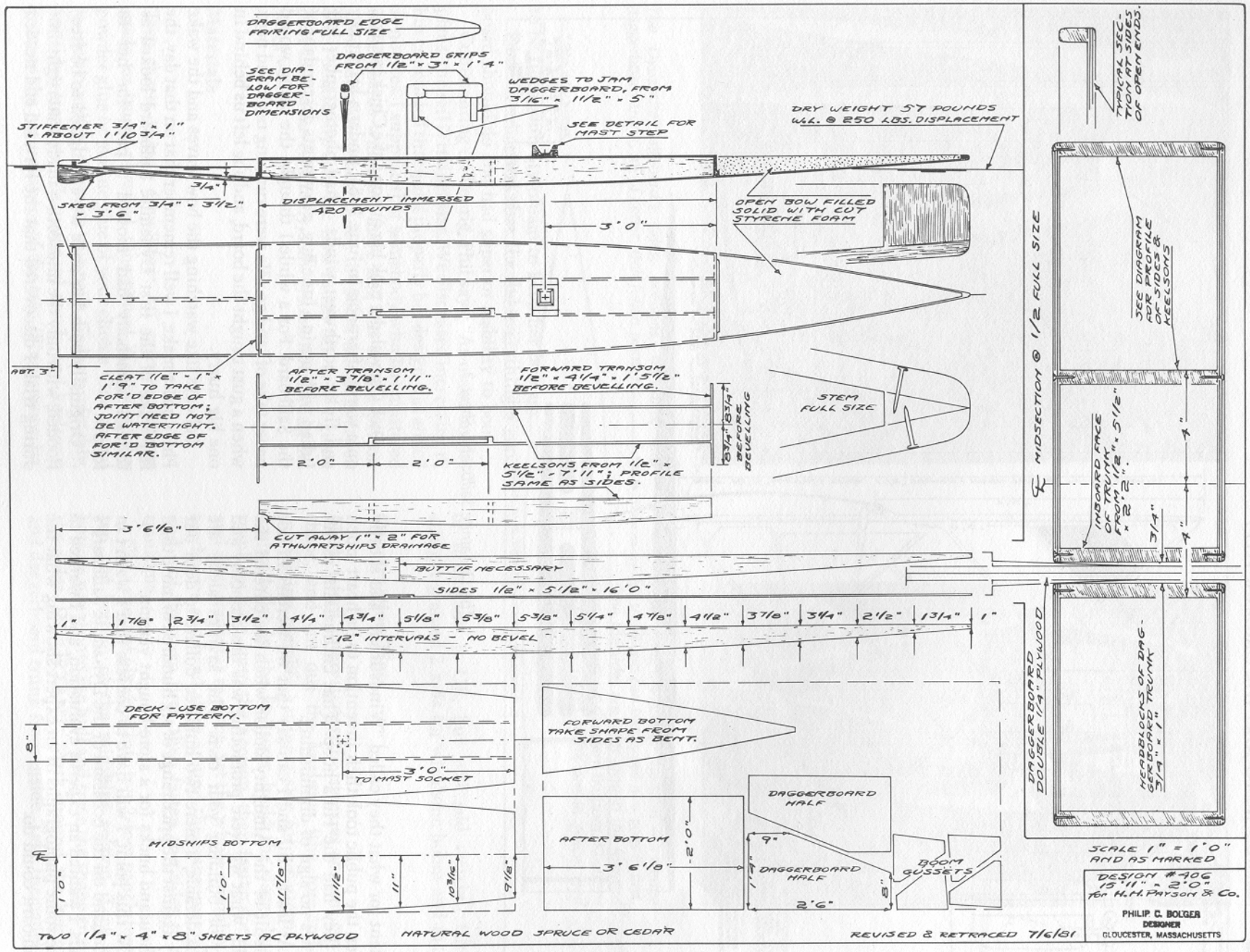
These boats require reasonably accurate sawing and fitting, but they don't demand any expertise. Most of them call for some beveling at crucial joints, and it would be a good idea to review the use of the bevel square and the bevel board. You'll also find that your architect's scale rule will come in mighty handy from time to time.

I think these boats and their sisters in the original Instant Boat fleet can take their place proudly right alongside the Tack-and-Tape boats. They require little or nothing in the way of fiberglass, and this is their chief advantage for those who prefer not to work with fiberglass any more than necessary. Despite the beveling, they are a bit faster to build than the Tack-and-Tape boats, and I, for one, am fond of the great initial stability the Fit-and-Fasten boats provide. Of course, if you prefer working with fiberglass to beveling and fitting panels and frame pieces, there's nothing to stop you from using Tack-and-Tape techniques wherever common sense allows. The point is to be flexible; using good judgment, alter techniques and materials to suit your requirements and desires.

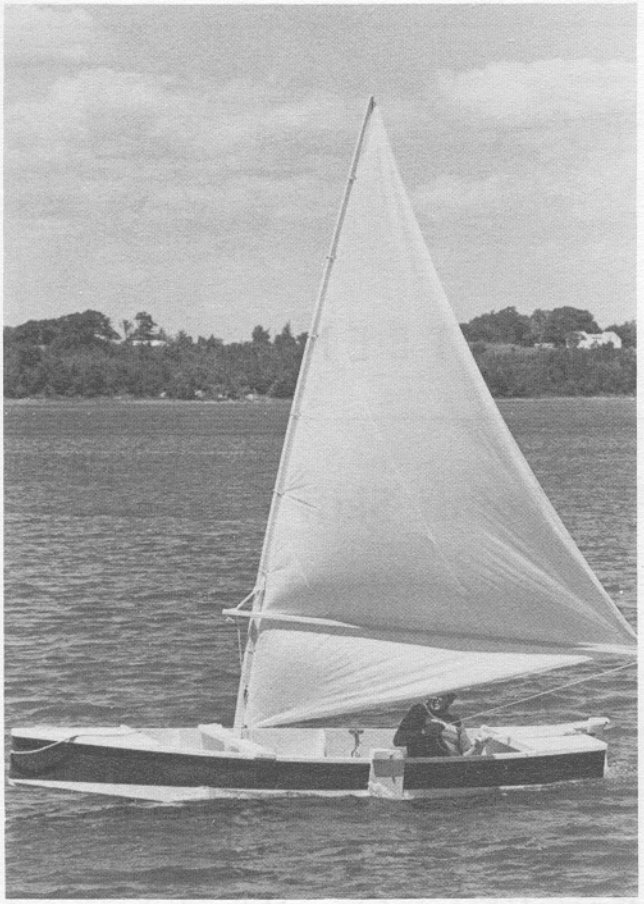
Some Instant Boats are more instant than others. You can probably whack Tortoise together in very short order, but Windsprint and the Light Schooner will take more time. In every case, however, these designs are



Tortoise, Sheet 2.



The Dynamite Sailboard, Sheet 1.



What June Bug lacks in looks, she makes up for in performance. (Jeff Julian photo)

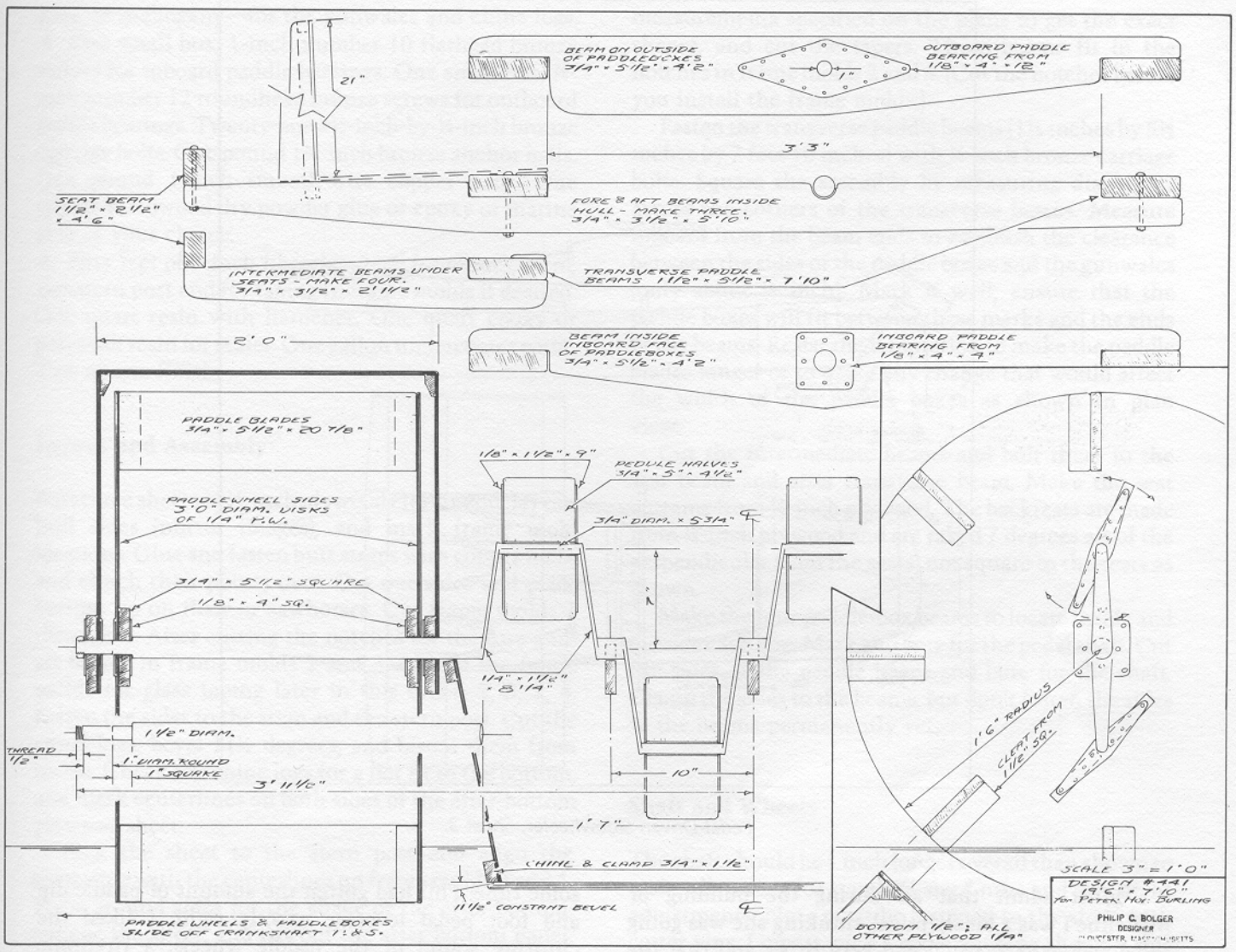
the forward rowing position. If two oarsmen are rowing, or if for any reason you want to row solo from the forward position, you have to unstep the mast and remove the partner.

Check out the little drawing in the upper left-hand corner of the sail-plan sheet. As the end-on view shows, there are little ears on the partner, port and starboard, which hook over the gunwales. The top view, which includes the hole for the mast, indicates two small holes bored port and starboard. These are bored to receive short lanyards led down through the oarlock side plate sockets. The ends of the lanyards are knotted underneath the mast partner to hold it securely in place.

Jeff and I took our time building her, partly because he was making a series of photographs of the project and partly because he wanted to learn the ins and outs of building. Working at that leisurely pace we completed June Bug's hull in one week and spent another two days on her sailing rig components.

We went about 50 pounds over the 100 Phil designed her for, primarily because we decided to use yellow pine plywood. Yellow pine is about twice as heavy as fir, but you're not much aware of the difference, handling one sheet at a time. You're surprised only when you've finished the whole thing.

June Bug proved her stability during her sailing and rowing trials, and I never felt nervous about her plumb sides. She carries a load well and has no vices, in my experience.



Pedal-Driven Sidewheeler, Sheet 2.

and fiddling, including the price of the stainless steel itself, brought the cost of the shaft and its components to $800. With all this, it took about 182 hours to build her, of which only about 36 hours were devoted to the hull. Materials, excluding the pedal shaft, cost $376. Constructing the Pedal-Driven Sidewheeler is not an inexpensive proposition, but with a decent machine shop, it certainly need not approach the cost of Madeline.

In the original plan, the Pedal Boat's steering system consisted of two 7-foot ash oars mounted on the seat beam port and starboard, which works well enough as long as both operators agree on the course. But it was a little like having a car with two steering wheels, each working independently of the other.

From the start, Peter obviously had some misgivings about this rig, because he had me install gudgeons on her stern post on which to hang the rudder he had Phil design for him after our trials. This is the rudder shown in the drawing, but we used only one yoke arm, shortened to a length of 1 foot and mounted horizontally instead of cocked as drawn. Peter also rejected the tiller-rope system, so we used a rigid pole—a closet pole, in fact—with an eye driven into one end linked to an eye on the yoke arm to form a serviceable, if slightly crude, universal joint. The shortened yoke arm, in addition to keeping the rig farther inboard, allowed straighter in-line control of steering.

Phil's four sheets of drawings are quite detailed, with critical items or areas keyed by number to a list of explanatory descriptions. Rather than give detailed step-by-step instructions, I'll cover the basics and high spots as I go along. You'll be able to fill in gaps from the discussions of the other Instant Boats in this book.

To build her hull sides, bulkheads, and decks, you need at least six sheets of plywood—seven, if you don't take scrupulous pains to utilize every possible square inch. Use ¼-inch 4-by-8-foot AC exterior plywood. You would need six more of the same to build the laminated double ¼-inch bottom specified. This lamination would make for a stronger bottom but is more work than I think is justified considering the minimal return—one which in my view is uncalled for. Instead, I would buy three sheets of ½-inch 4-by-8-foot AC exterior grade for the purpose.

By now, the following steps must have a familiar ring: Lay out the boat's sides on three sheets of plywood butted end to end; mark the locations of the frame molds on the sides, lay out the frame molds, cut, and tack to the sides in an upside-down assembly. Take note that before the final assembly, you must cut notches in the frame molds for the inside chine logs.

Chances are you will not find 2 x 4s long enough for the chine logs and gunwales of a craft of this length. I would use 16-footers and scarf them to the required length with a simple tapered glued joint, letting the joints in both the gunwales and the chine logs fall where they may on the hull.

I am not suggesting that you taper and glue these joints as you are installing the chine logs and gunwales. Make the tapers, assemble the joints, and glue them on your shop floor or on some level surface where they can set up undisturbed until you're ready to slip them into place.

There's one more step before you install the chine logs: Give them a constant 13-degree bevel. This permits an exact fit of the bottom to the chine logs, after you have taken down the high outboard edges of the side panels.

Once the sides are fastened to the bulkheads or frame molds and the chine logs are in place, the bottom goes on. Draw a fore-and-aft centerline on both faces of the three ½-inch plywood sheets. Tack the aftermost sheet to the transom temporarily, and match the centerline on the bottom to the centerlines on the transom and number 4 bulkhead. Slip a 6-inch butt strap right under the forward end of this bottom sheet, and fit its ends to the side panels. Do this right on the hull; it yields the most accurate fit. Fit the after-bottom panel to the sides, pie crust fashion, take it off, and saw it to shape. Replace it and fasten with glue and nails.

Use the same procedure for constructing the rest of the bottom, making sure that all centerlines match up. The symmetry of the hull depends on this alignment, so don't slight it. With the forward-bottom panel on, the centerlines of the individual sections should line up as you sight along them, straight as looking down a gun barrel.

If you choose to construct a double bottom from ¼-inch ply, you should stagger the joints of the individual sheets by about 6 inches.

Now, using your overall centerline and working from outside the hull, bore holes for the fastenings of the bottom shoe; stagger the holes a little, laterally, to preserve strength. Apply glue, and drive fastenings from the inside while a helper holds a backing iron or heavy maul against the bottom to reduce bounce.

These are the essentials of building the hull, and when you have got her as far as this, you are in good shape to proceed on your own, following the plans.

I would like to point out that neither the dagger-board and its trunk nor the rudder pose as much of a challenge as they do in Gypsy.

Probably the most demanding step, in terms of skill, is the shaping of the schooner's masts. And yet, in practical terms, it is the least critical. It really doesn't matter if the masts are not perfectly round or if their tapers are less than perfect—except, perhaps, to the builder.

Even though I've made my share of spars, I'm no pro in this field. I am still bothered by the niceties of trying to produce a smooth taper while keeping the spars neatly rounded.

But first, let's see what we'll be working with. We'll begin with four 2 x 4s, 16 feet long, to make her two 3½-inch diameter masts. Two of them glued together will make the 16-foot mainmast, and the other two, the 14-foot 6-inch foremast.

You will get the best glue line by inspecting the growth lines of the sticks and putting the two concave faces together. This ensures that their edges will mate tightly. Place clamps about every foot, and support the glued pairs securely to prevent sagging while the glue is setting.

When you're ready to start shaping, lay one of your embryo masts across a couple of sawhorses, and scribe diagonals through the corners at the heel end to establish the center. Set your dividers at 1¾ inches to swing the 3½-inch diameter; this will show you how much you must take off the corners to bring the stick to round. But first establish the taper. The plan doesn't show the diameter of the truck, the top of the mast, but your scale rule will tell you it's to be 2 inches in diameter, so scribe a 2-inch circle around the center of that end.

Both the fore and main masts are tapered on the flat