ANNUAL BOATING ISSUE

...here presents a unique low-cost and easy-to-build houseboat as the highlight of our annual boating issue. In addition, our Special Section on boating opens on page 80.

MECHANIX ILLUSTRATED
MARCH 1973



Build Our Budget Houseboat!

By Hal Kelly

WHEN we first thought of doing a story on a little trailerable houseboat you could build yourself we thought it a pretty good idea. Little did we know then that it wouldn't be until we'd finished, looked at what we had, then toted up the cost of building that we'd realize just how good an idea it really was. Honestly, if we weren't so modest we could claim our Budget Houseboat to be the best thing in boats since girls. It has so many good features it's difficult to decide where to begin.

In the first place, Budget Houseboat is like a camper that goes on water. She's 20 ft. long with a 9-ft. beam, containing 300 sq. ft. of usable floor area. This means that while she can accommodate two in outrageous comfort, she can easily take a family of four on an extended vacation and be entirely self-

contained. There are two full-size permanent bunks in the forward section of the cabin. The dining table, in the rear section of the cabin, seats four and then drops down to convert into an extra bunk 6 ft. 4 in. long and 38 in. wide. Cabin headroom is 6 ft. 2 in., and two cots can be stationed to the rear of the cabin area.

In the second place, Budget Houseboat's storage and work areas are just as much a marvel. She features a large-size enclosed head up front, room for a 4½-cu.-ft. fridge, sink and two-burner stove in the galley, storage and drawer under the sink, and storage under the bunks, dining table, rear cockpit, and in other scattered areas. Part of the storage in the cabin is a 2-ft.-wide hanging closet.

And in the third place, deck area doesn't end on the cabin level, as you can see. Budget Houseboat sports a full flying bridge more than 6x9 ft. in size, with more storage area in it. The bridge has an alternate steering console, two seats and deck area for a couple of lounge chairs, plus the capability of taking a convertible Bimini top.

But that's not all. Budget Houseboat may sound like a barge from the foregoing, but she handles like a dream. The little home-on-the-water-away-from-home is designed to hang a 30-hp outboard, and with this kind of power she can do 15 mph with four people aboard! Her draft is only 4 in.

Piloting from the bridge is the way to go. Back her off to a cruising speed of 8 mph and the motor is just a whisper with gas consumption minimal. It's quiet enough so you can listen to a radio under way. Two side windows slide open sideways, the front window in the cabin swings up, and there's a good-size hatch cover up front that can be opened to let the breeze drift through the boat.

And there's more. Since Budget Houseboat is trailerable, you never have to worry about the campgrounds being full, on the water or on the road. When you're ready to camp just throw out the anchor and settle down for the night.

But the best thing about Budget Houseboat may be the thing we've left

[*Text continued on page* 62]



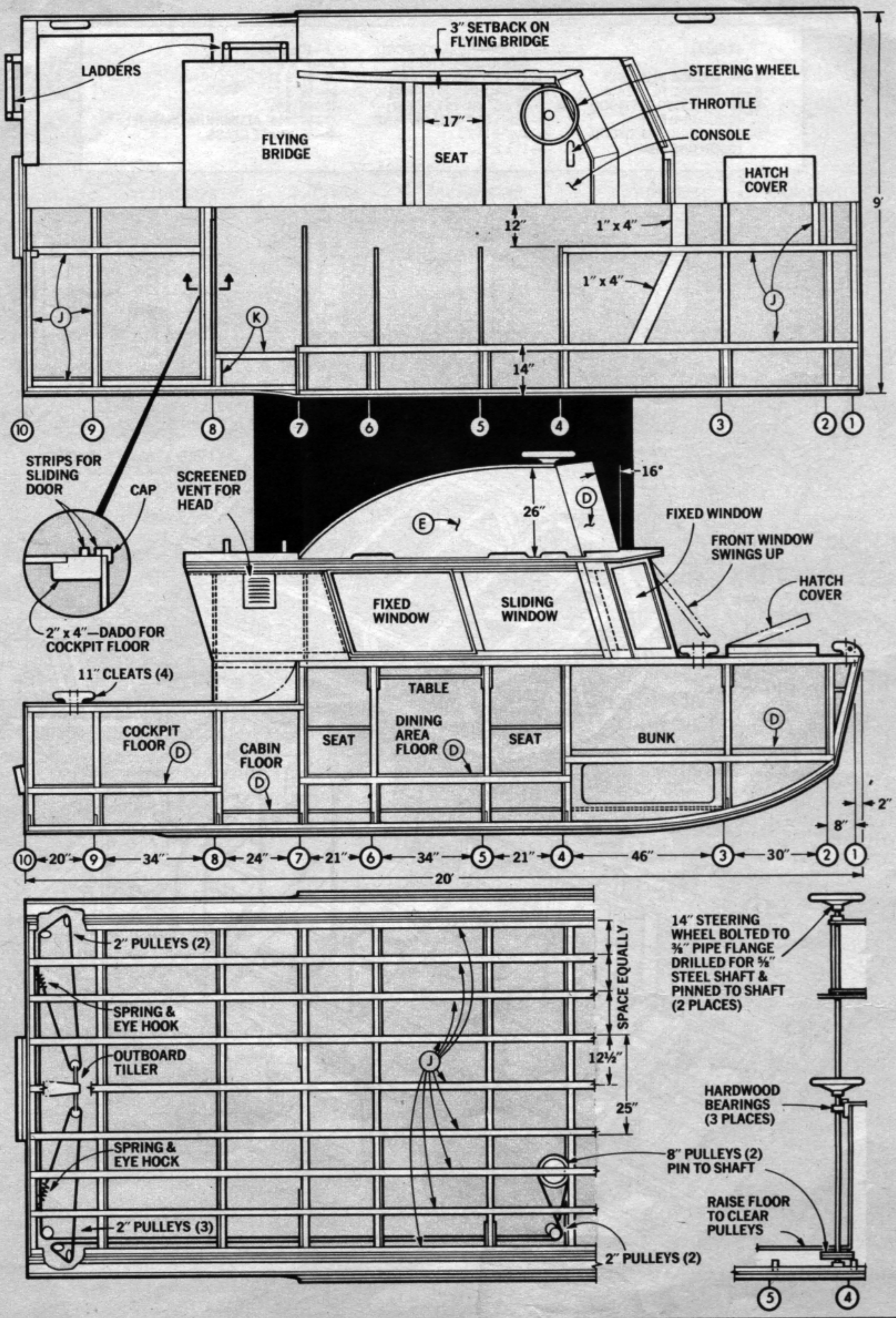
DINING table seats four, then drops flush with seats to form an extra bunk inside.



GALLEY area, next to table and rear of cockpit. Fridge is installed under the stove.



VIEW of one of the two forward permanent bunks. There's full standing room between.

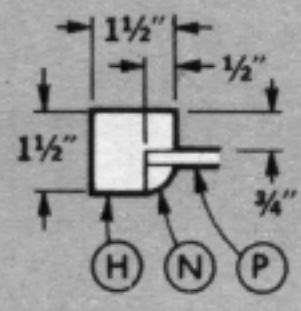

3" SETBACK ON FLYING BRIDGE
LADDERS
STEERING WHEEL
THROTTLE
CONSOLE
FLYING BRIDGE
17"
SEAT
HATCH COVER
9'
12"
1" x 4"
1" x 4"
J
K
14"
10
9
8
7
6
5
4
3
2
1
STRIPS FOR SLIDING DOOR
CAP
SCREENED VENT FOR HEAD
16°
26"
D
E
FIXED WINDOW
FRONT WINDOW SWINGS UP
HATCH COVER
FIXED WINDOW
SLIDING WINDOW
2" x 4"—DADO FOR COCKPIT FLOOR
11" CLEATS (4)
TABLE
COCKPIT FLOOR
CABIN FLOOR
SEAT
DINING AREA FLOOR
SEAT
BUNK
2"
8"
20"
34"
24"
21"
34"
21"
46"
30"
20'
2" PULLEYS (2)
SPRING & EYE HOOK
OUTBOARD TILLER
SPRING & EYE HOCK
2" PULLEYS (3)
SPACE EQUALLY
12½"
25"
2" PULLEYS (2)
14" STEERING WHEEL BOLTED TO ¾" PIPE FLANGE DRILLED FOR ⅝" STEEL SHAFT & PINNED TO SHAFT (2 PLACES)
HARDWOOD BEARINGS (3 PLACES)
8" PULLEYS (2) PIN TO SHAFT
RAISE FLOOR TO CLEAR PULLEYS
5
4

Budget Houseboat!

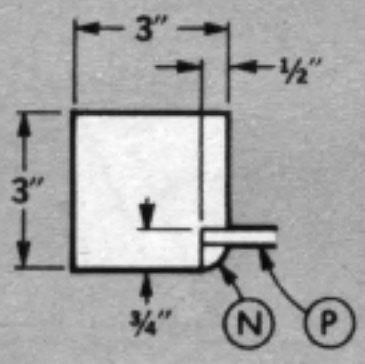
LEGEND

A—½" MARINE PLYWOOD
B—⅜" MARINE PLYWOOD
C—½" EXTERIOR PLYWOOD (GOOD ONE SIDE)
D—⅜" EXTERIOR PLYWOOD (GOOD ONE SIDE)
E—½" EXTERIOR PLYWOOD (GOOD BOTH SIDES)
F—1½" x 3" ROOF BEAMS—2" CROWN (CUT FROM 2" x 6" x 8' CLEAR FIR)
G—1½" x 3½" YELLOW PINE
H—1½" x 1½"
I—1" x 2"
J—1" x 1½"
K—1" x 1"
L—¾" x 1½"
M—½" x 1"
N—½" x ½"
O—½" x ½" ALUMINUM CHANNEL
P—¼" PLATE GLASS

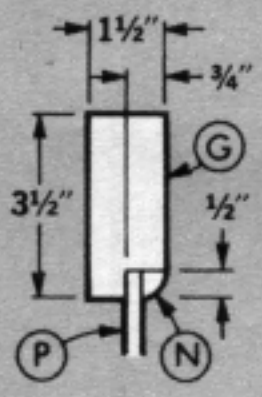
SECTION UU



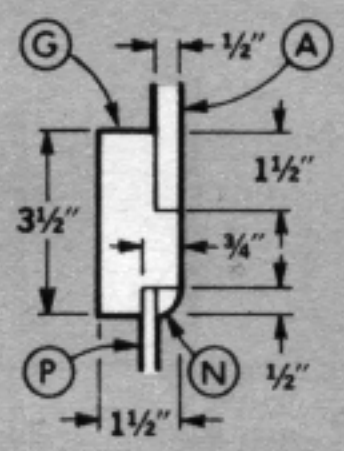
SECTION VV



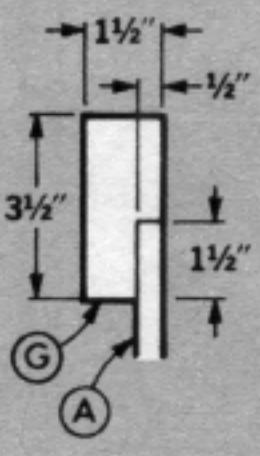
SECTION WW



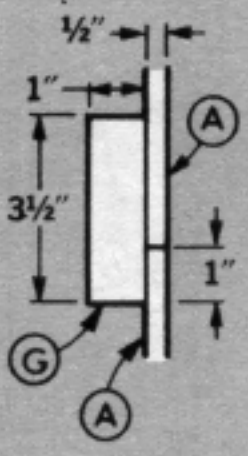
SECTION XX

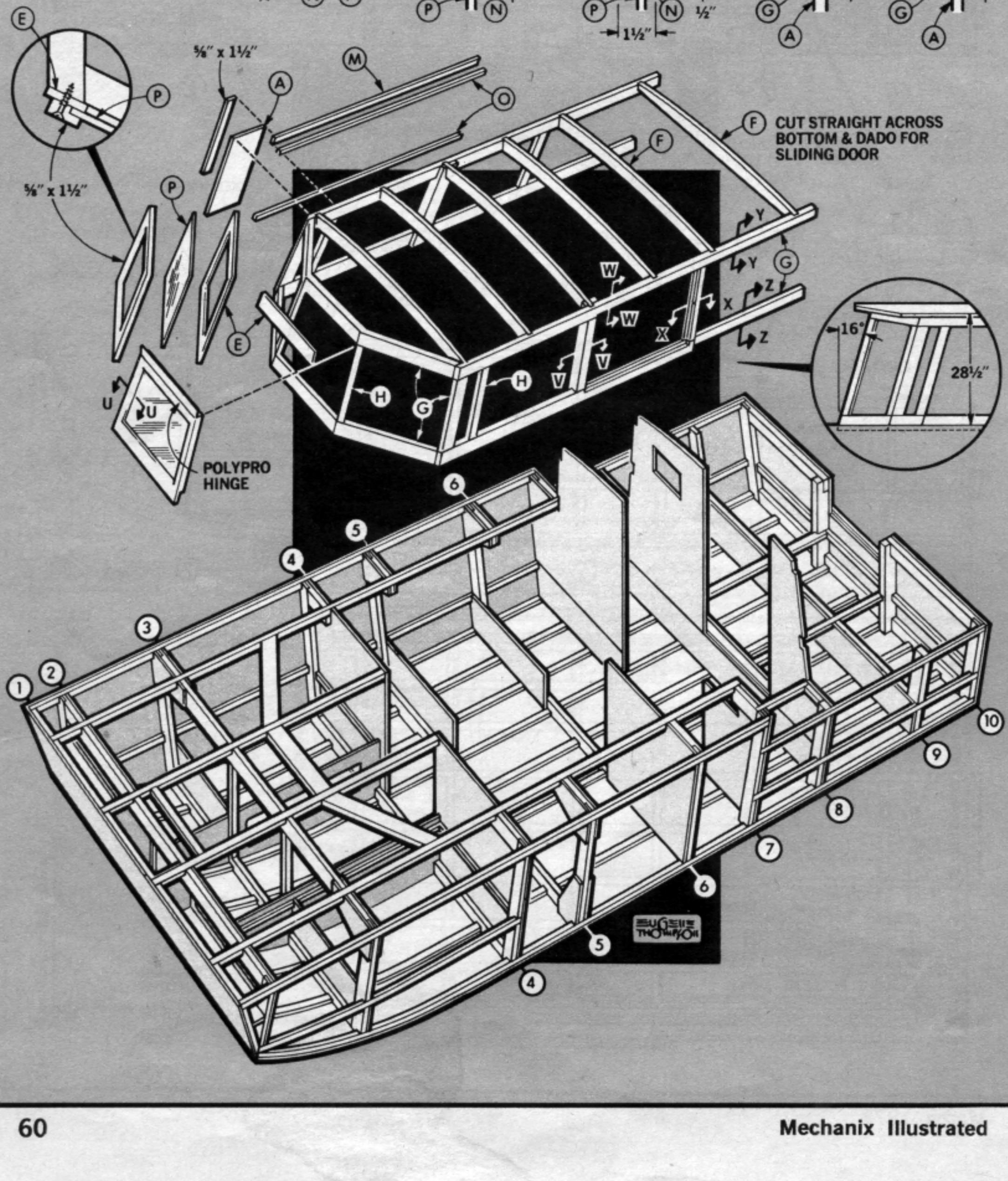


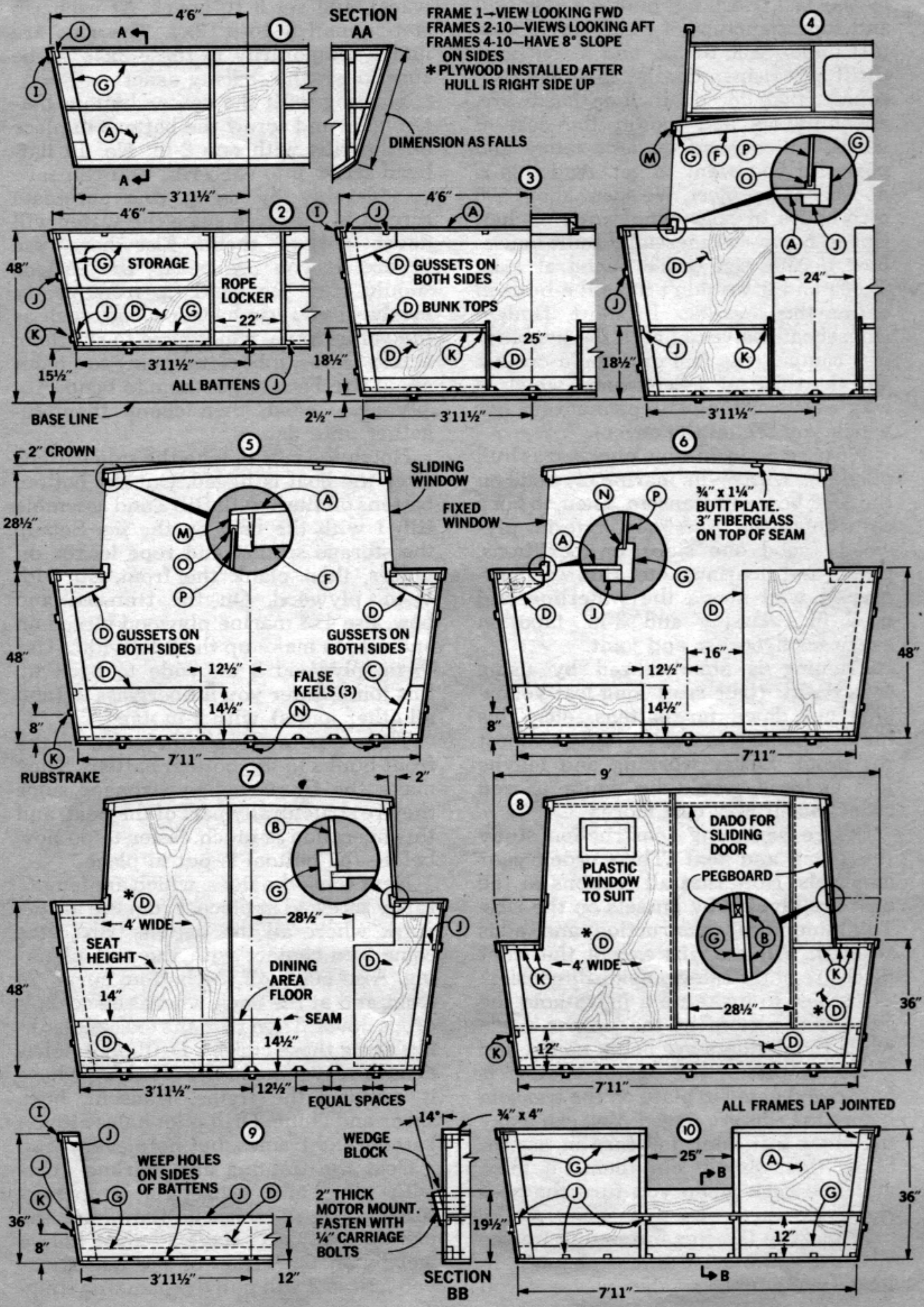
SECTION YY



SECTION ZZ






FRAME 1—VIEW LOOKING FWD
FRAMES 2-10—VIEWS LOOKING AFT
FRAMES 4-10—HAVE 8° SLOPE ON SIDES
* PLYWOOD INSTALLED AFTER HULL IS RIGHT SIDE UP
SECTION AA
DIMENSION AS FALLS
1
4'6"
3'11½"
2
STORAGE
ROPE LOCKER
22"
48"
15½"
ALL BATTENS
BASE LINE
3
GUSSETS ON BOTH SIDES
BUNK TOPS
25"
18½"
2½"
4
24"
5
2" CROWN
SLIDING WINDOW
28½"
FALSE KEELS (3)
12½"
14½"
8"
RUBSTRAKE
7'11"
6
FIXED WINDOW
¾" x 1¼" BUTT PLATE. 3" FIBERGLASS ON TOP OF SEAM
16"
7
2"
4' WIDE
SEAT HEIGHT
14"
DINING AREA FLOOR
SEAM
EQUAL SPACES
8
9'
PLASTIC WINDOW TO SUIT
DADO FOR SLIDING DOOR
PEGBOARD
9
WEEP HOLES ON SIDES OF BATTENS
10
ALL FRAMES LAP JOINTED
WEDGE BLOCK
14°
¾" x 4"
2" THICK MOTOR MOUNT. FASTEN WITH ¼" CARRIAGE BOLTS
19½"
SECTION BB

to the last. Cost for building the hull and superstructure of the craft came to just under $800 for us, and if that isn't thrift a Scotsman doesn't wear kilts. Of course, that doesn't include hardware, appointments and motor, the cost of which will depend on how fancy and powerful you want to get. And this is no weekend project. We spent about 500 man-hours of sparetime work on her. But to buy a commercially built houseboat of this size you'd spend at least $5,000 and it wouldn't have the built-in extras this one has. In short, Budget Houseboat is a vessel with the livability of a camper, the feel of a cabin cruiser and the thrift of a Scotsman (which is why we chose the plaid pennant for her which you see on the cover).

We used ⅜-in. marine plywood as hull planking, with ½-in. marine plywood on the roof, bow and transom. Then, to keep costs down, we used ⅜-in. exterior plywood (good one side) on partitions, bunks and floorings, etc. But we fiberglassed well above the waterline and used fiberglassing and 3-in. tape on every seam, corner and joint.

Framing is standardized by using 1½x3½-in. (true size) long leaf yellow pine cut down for battens, etc. This lumber is tough to work with but almost rot proof. Easier working and maybe just as good would be white or red cedar, but it may cost more.

Before beginning construction study the plans and text. Then order your materials. Note that all sections in the boat are divided by gussets on the ribs. This simplifies construction and adds strength. All the ribs except the front three are of the same outside dimension.

It's best to make up a jig to hold the sides and bottom at the proper angle while the dividers are being nailed and glued in place. The motor mount is bolted and glued in place on the transom before the ribs are jigged. You can make the sides 5 ft. long for ease in assembling, then simply cut them off flush with the deck when you turn the boat right-side-up.

In making the jigs for setting up the ribs, use two outside beams about 21 ft. long (made up of smaller pieces if you want) and set 9 ft. apart. At each rib station nail a 10-ft. 2x4. The ribs are nailed temporarily to these 2x4s, so be sure to get the spacing exact.

Starting with the center bottom batten, glue and screw the battens in place on the ribs with one 2-in. No. 10 flathead screw into each rib. You can save considerably by using zinc chromate screws in this area since the water will never get to them. Elsewhere use bronze. If you use cedar, the battens should take the bend up front pretty nicely. If you use harder wood, such as the yellow pine, you'll have to slit them across (like a split clothes pin) to a point about 5 ft. back to get them to bend. Apply glue, bend, then clamp them together until dry.

Notch the ribs to take the side battens after the boat is jigged. Cut the bottom battens off flush with Rib 2 and assemble Rib 1 with the boat on the jig. Set up the storage section and rope locker dividers, then plank the front rib with ½-in. plywood. On the transom and bow, use 4x8 marine plywood pieced on one side to make up the 9-ft. width. Use ½-in. plywood 2 in. wide to back up this joint. Later you'll fiberglass it (and all other joints) with 3-in. tape.

Then glue and nail the sides of the front bunks to the bottom battens. They make the front section stronger since they're structurally part of the boat, and this operation is much easier to do now before the bottom is put in place.

Next come the sides, which are temporarily screwed in place. From the inside, mark where all the battens, ribs, etc., come into contact with the side planking. Also mark off the bottom curve up front and at the back where the cockpit drops down. Then trim the excess planking along these curves. Drill pilot holes, about every 3 in., in the planking where it contacts the frame, transom, bow, sheer and chine. Drill pilot holes also on battens and frames, but here every 4 in.

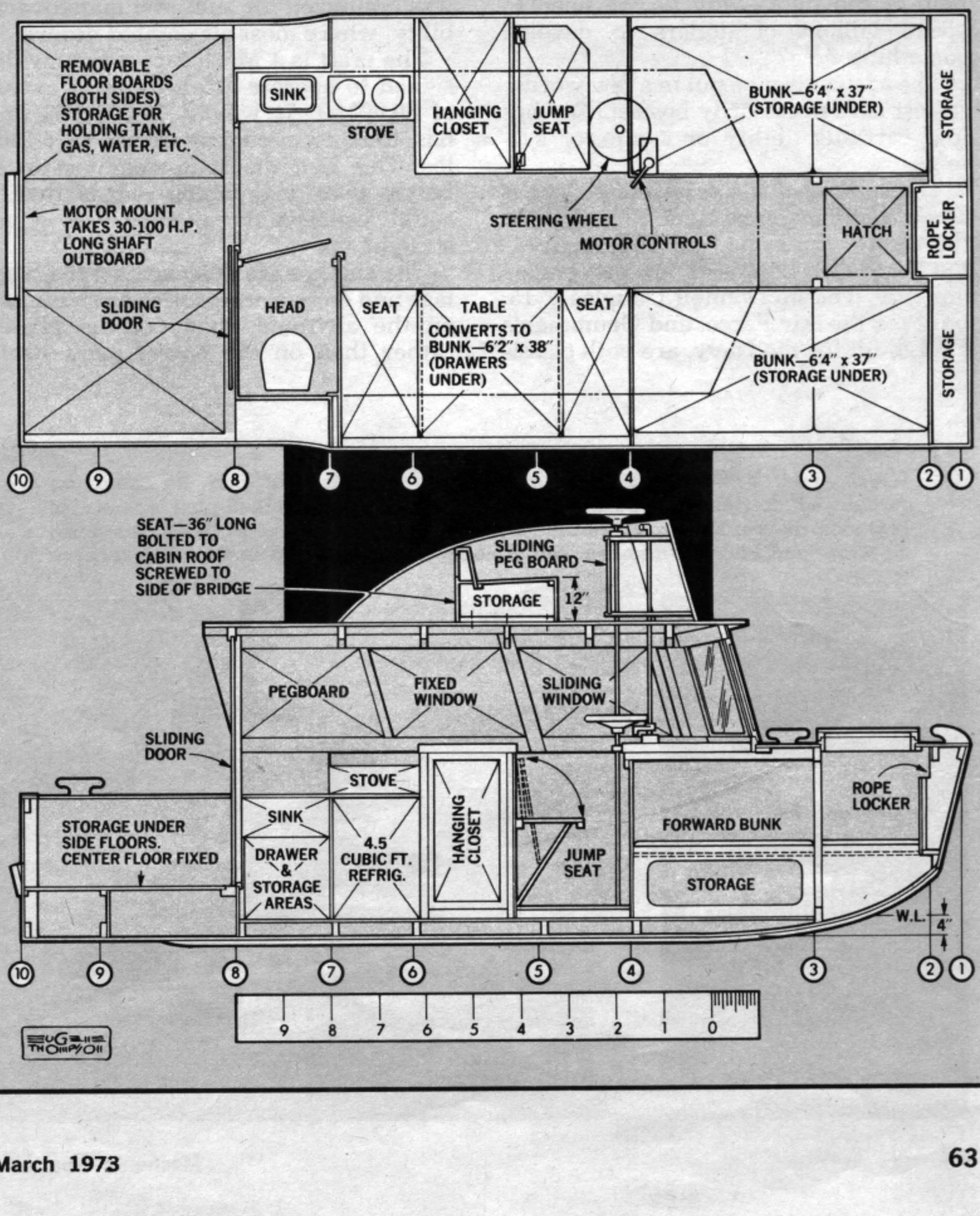
Coat the framing and marked areas with glue, and using the temporary screws as guides for position, nail the planking in place. Have a helper hold a weight on the inside of the battens as you nail so it will pull the planking snug-

ly to the frame. Use the same procedure on the bottom, which goes on next.

With the bottom in place, apply its fiberglass. Glass up the side about 10 in. Mix color with the resin (we used red) and you'll paint and glass at the same time. Fasten a 1-in. rubstrake around the sides about 8 in. up from the transom. This is nailed from the inside and goes over the fiberglass. Paint the keels and the bottom is finished.

Now is the time to pull her loose from the jig and turn her over. If you do it by hand it'll take 10 or 12 men. Set her on a few 2x4s on the floor and begin gluing and nailing the deck framing in place and finishing off the dining area, sink, closet, etc. The deck planking goes from the front back over the bunk area that runs into the cabin. There'll be less waste if you run the panels from front

[*Continued on page* 122]



Budget Houseboat

[*Continued from page* 63]

to back and sides to center. Fill in the middle area with smaller pieces.

Then begin cabin framing. It's best to start with the sides of the cabin and bottom of the front windows. Then put on the roof beams, which are cut from 2x6 clear fir and assembled to give the roof a 2-in. crown. Cut dadoes into the outside beams for the cross beams to fit into. Glue and screw the outside frame to the cross beam using 2-in. No. 10 flatheads, two to each cross-beam end.

Now for the cabin roof. Use 2½-in.-thick 4x12-ft. panels of marine plywood and glue and nail them in place. Use a ¾x1½-in. block under the seam where they butt together. Don't notch the roof beams for the block, though, since that would weaken the roof. Apply blocks between beams. Later glass the seam with 3-in. tape on the roof.

With the roof in place, frame the windows. Cut a piece of ½-in. plywood, with the window area cut out to fit over the frame of the front windows. The two outside front windows will be fixed in place, so caulk the ¼-in. plate glass and fasten it with L-shape window trim screwed in place. The center front window swings out and is made to fit the space. You can use a Polypro continuous hinge, which can be bought by the foot. The side rear windows also are fixed and are caulked and held in place by a small strip of wood. The windows at the front of the side are fitted to slide in a U-shape aluminum track. Drill a few 3/16-in. holes into the track from the outside so water won't collect in it.

With the inside finished, coat it with a clear wood preservative such as Woodlife. You can use paint, but a natural finish is easier to keep clean and lets the wood breathe to prevent rot.

Before painting the outside, cover all seams, corners and joints with fiberglass and 3-in. tape. When it's hard, sand in the edges and do the painting. We used Glaze White, to which you can add your own coloring. It'll take about 6 qts. for the deck and cabin and about 6 for the sides and flying bridge. It'll cover both wood and fiberglass and can be brushed

or rolled on. Where you want a good footing mix white beach sand with the paint and roll it on as a last coat.

The flying bridge is the last item of actual construction. Build the console and sides as a unit, with the seat as another unit, and both fitted to the shape of the roof. Be sure to check its positioning so the controls run up nicely to the console. Bolt the console unit to the cabin roof with 6 carriage bolts, with the head end of the bolts in the cabin. Then screw the seat into position against the side of the console. On the opposite side put one carriage bolt through roof.

In hooking up the steering, run both cables down the left side of the boat, with one running to the left side of the motor and the other branching out to run under the cockpit floor to the right side of the motor. It'll take seven 2-in. pulleys and about 45 ft. of cable. Use springs to keep the cable taut.

For alternate steering from the bridge, use a simple ⅝-in.-thick metal rod running from the bottom of the boat to the bridge. We used three simple wooden bearings to hold the rod. Fasten a steering wheel to this shaft in the cockpit and another to the top of the shaft on the bridge. Use PVC pipe to go over the outboard controls, and thus control speed, backward and forward from either the cockpit or bridge. This steering system is a bit of off-hand engineering, but it's simple and works nicely. ●

1-2 Punch in the Sky

[*Continued from page* 66]

terms of maneuverability, acceleration and weaponry.

Have we, in fact, kept pace? Let's look at the F-15. That plane was designed to meet a composite threat, not that of any one specific aircraft. However, it *was* designed with due consideration given to what Russian MIGs and other planes could do. Air Force literature states that "where air-to-air combat takes place, the F-15 will outclimb, outmaneuver and outaccelerate a MIG-21, a MIG-23 or any kind of MIG you might find in the next decade." Why shouldn't we be as confident as the military brass? ●

