

**USES:** A lightweight, speedy, outboard runabout, adapted to carrying atop an auto or by trailer. Powered with outboard motors up to 12 hp.

**LENGTH:** 9 ft., 10 in.

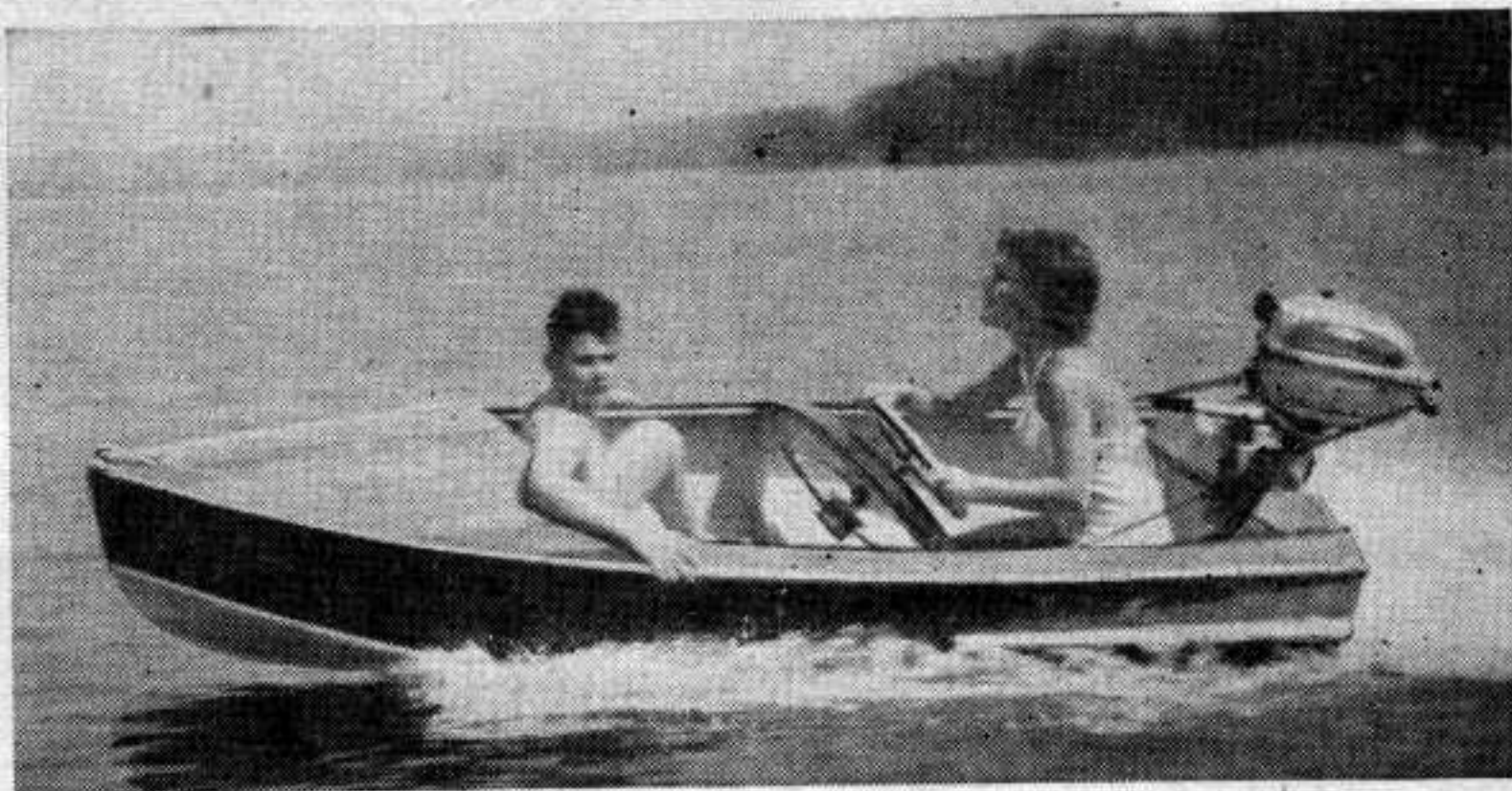
**BEAM:** 51¼ in.

**DEPTH:** 17 in. (forward).

**WEIGHT COMPLETE:** 125 lbs.

**SEATING CAPACITY:** 2 people (3 in a pinch).

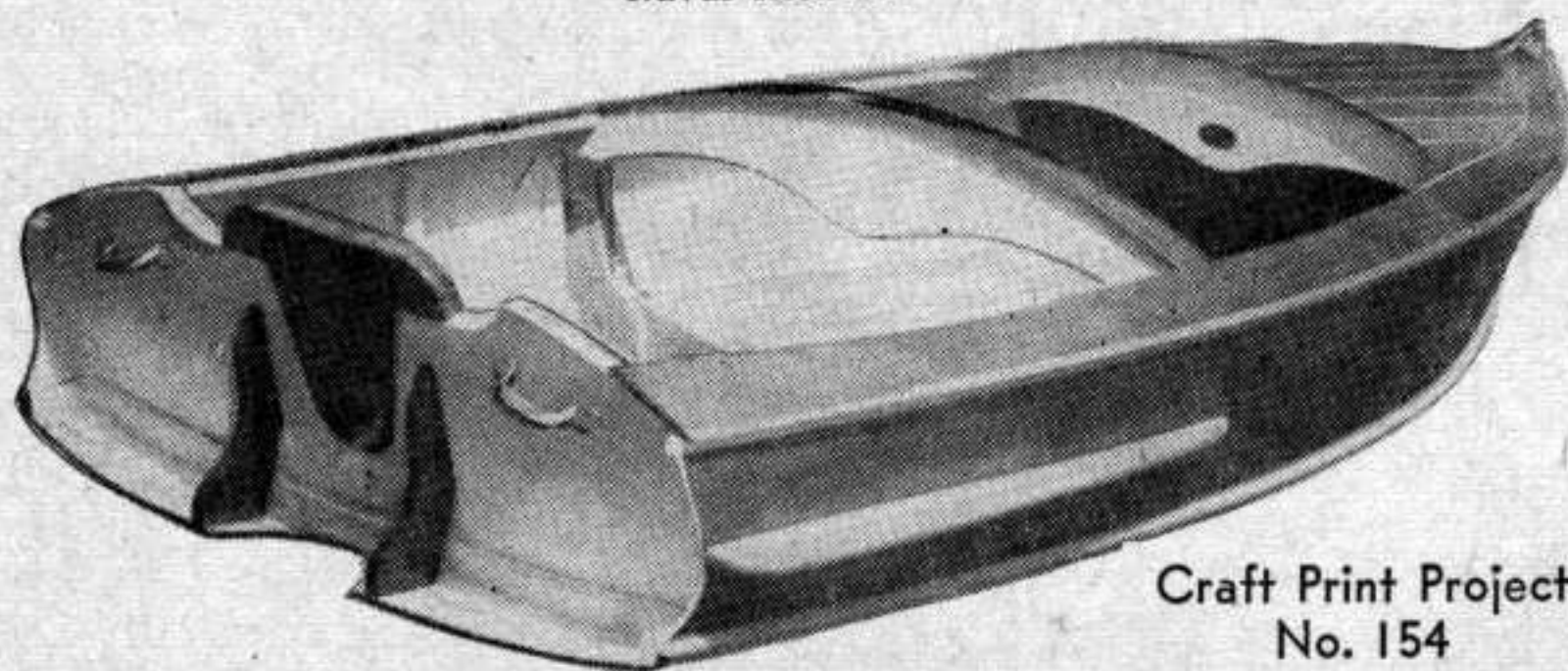
**CONSTRUCTION:** Uses ¼ in. exterior plywood over a strong framework. High speed bottom is planked with one single 4 ft. width of standard size plywood.



## Size the Mustang to Your Needs

The first of three outboard speedboats, all using the same basic design, is this 10-footer

By **WILLIAM D. JACKSON**  
Naval Architect



Craft Print Project  
No. 154

**Y**OU can't build 3 boats for the price of one, but you can take a sound, basic design and vary the dimensions to produce 3 boats whose sizes vary to meet different needs. In this 2-section article are contained plans for constructing sleek-looking 10, 12 and 14 footers, all based on a design tried and proven in over 20 actually constructed boats. And, if you're building boats for profit, you'll find it quite an advantage to be able to offer one popular design in 3 of the most popular sizes.

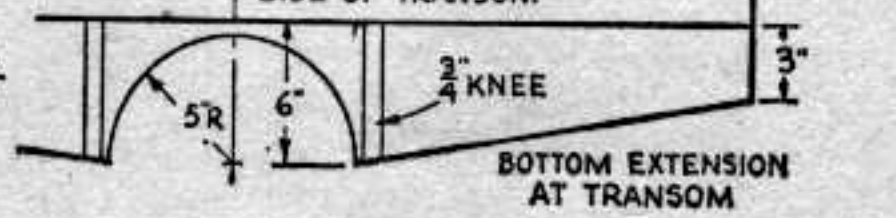
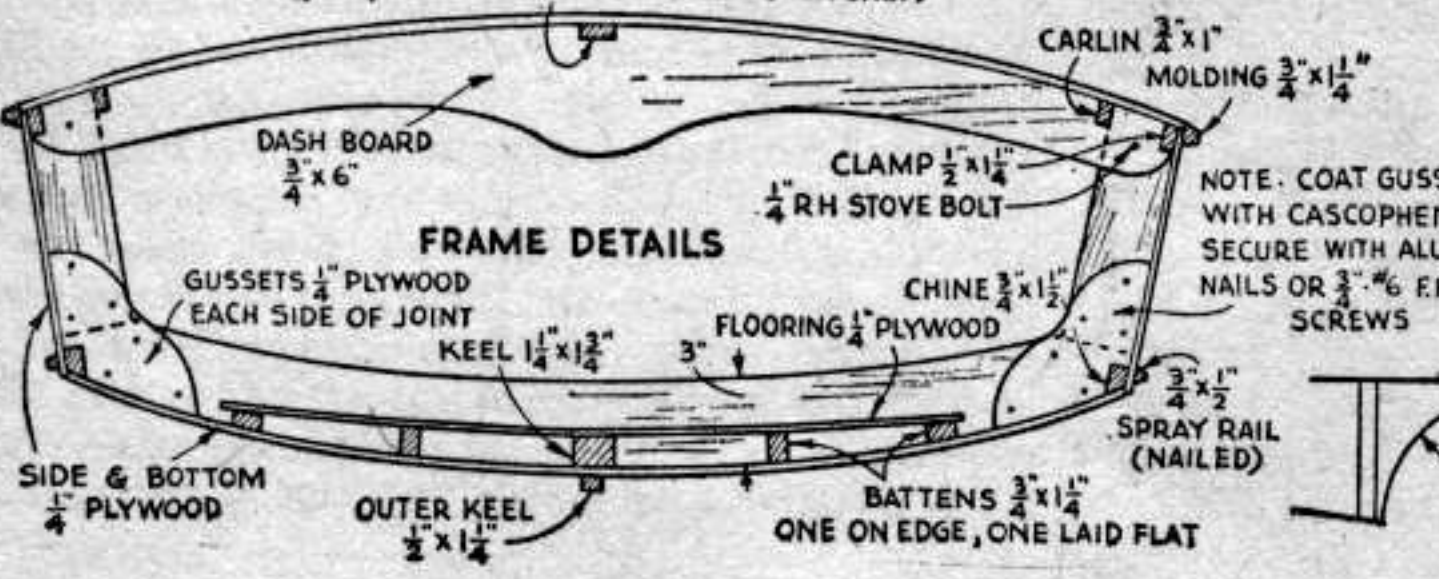
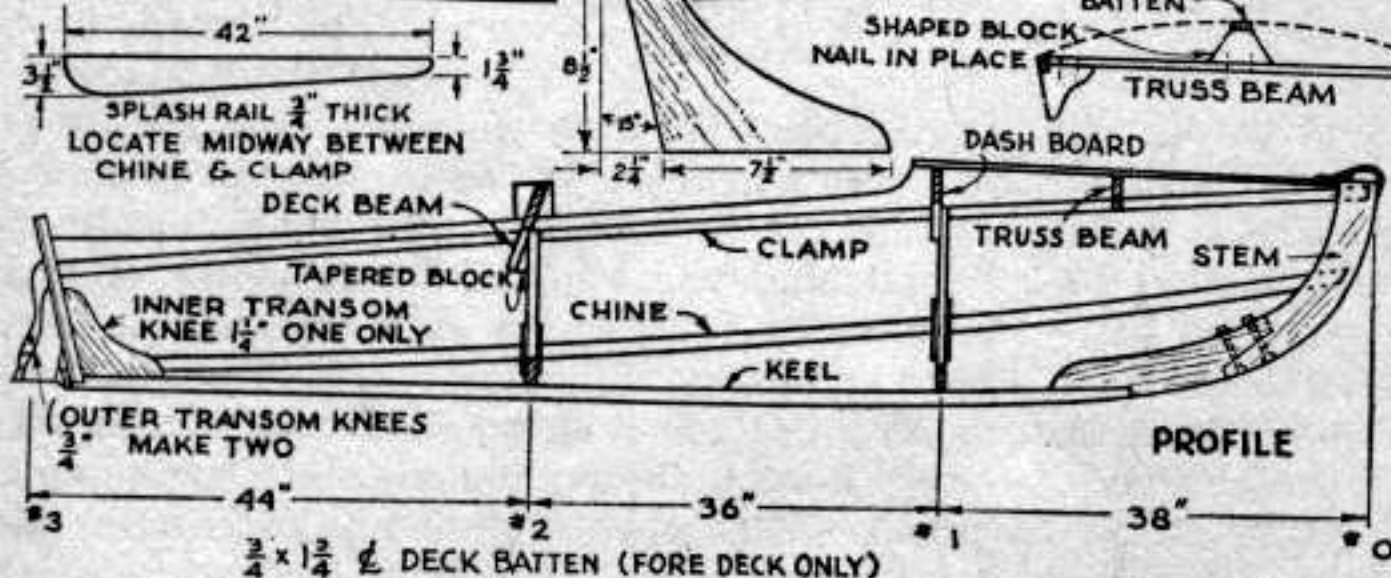
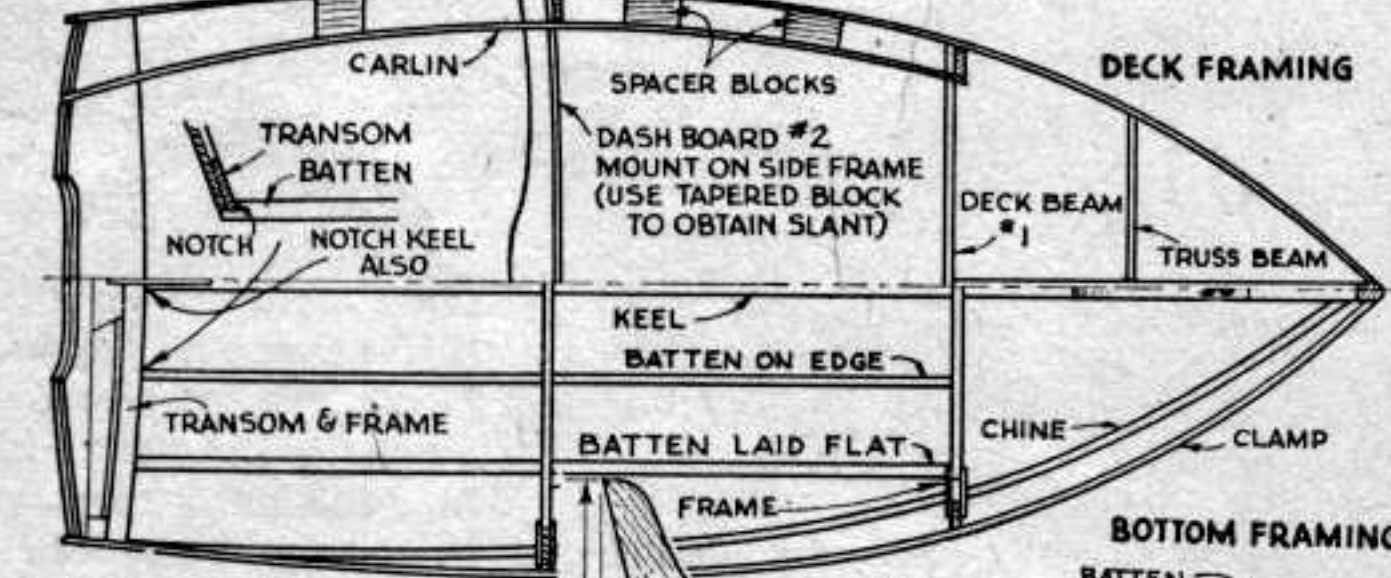
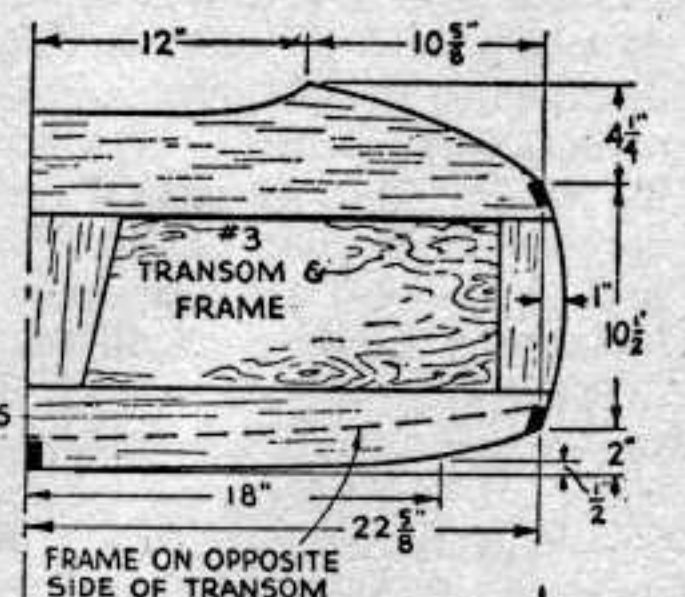
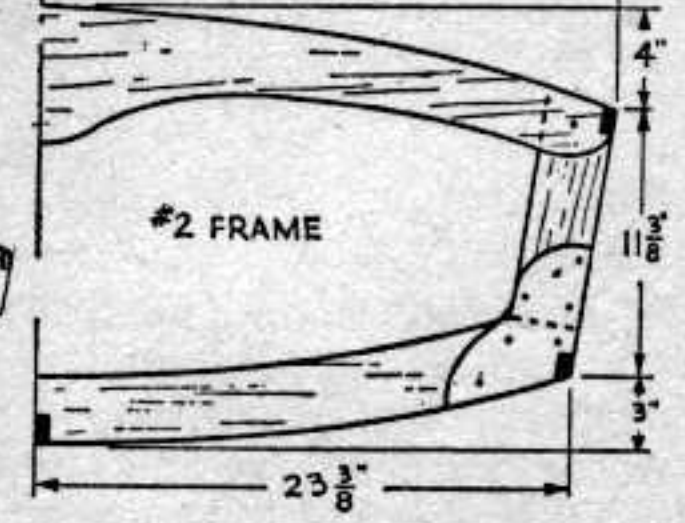
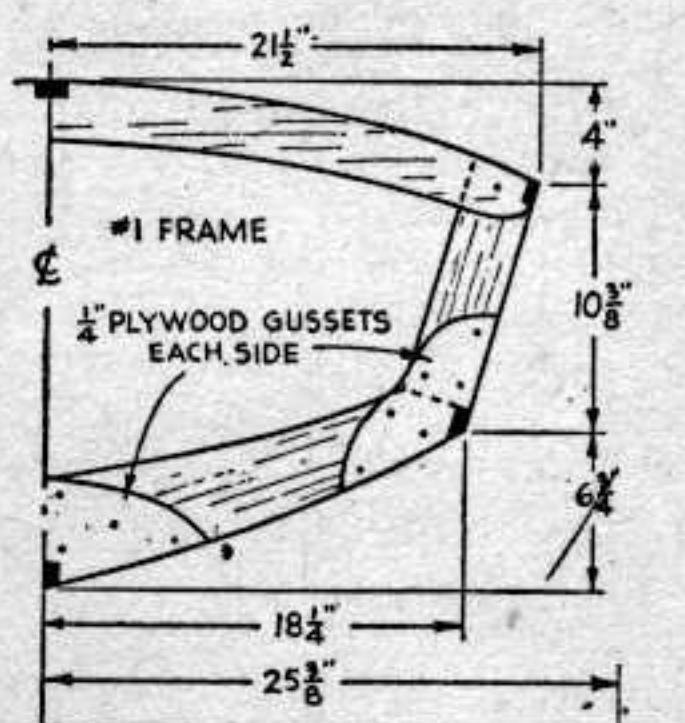
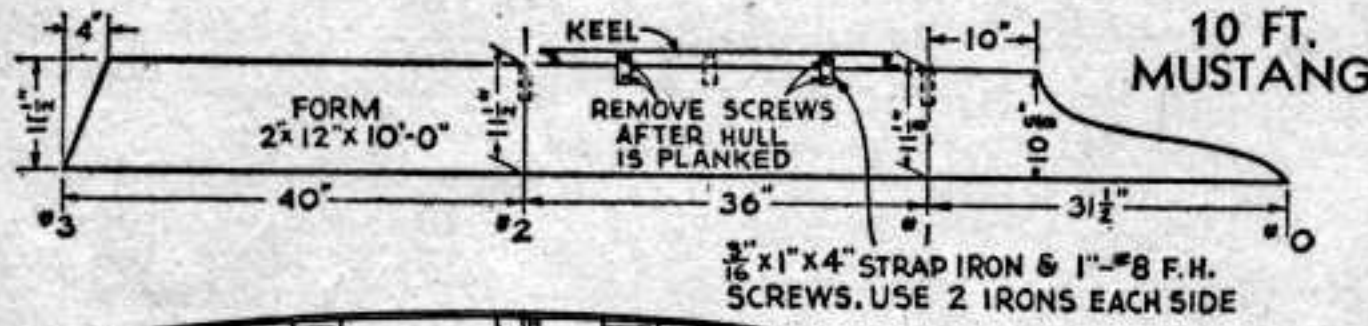
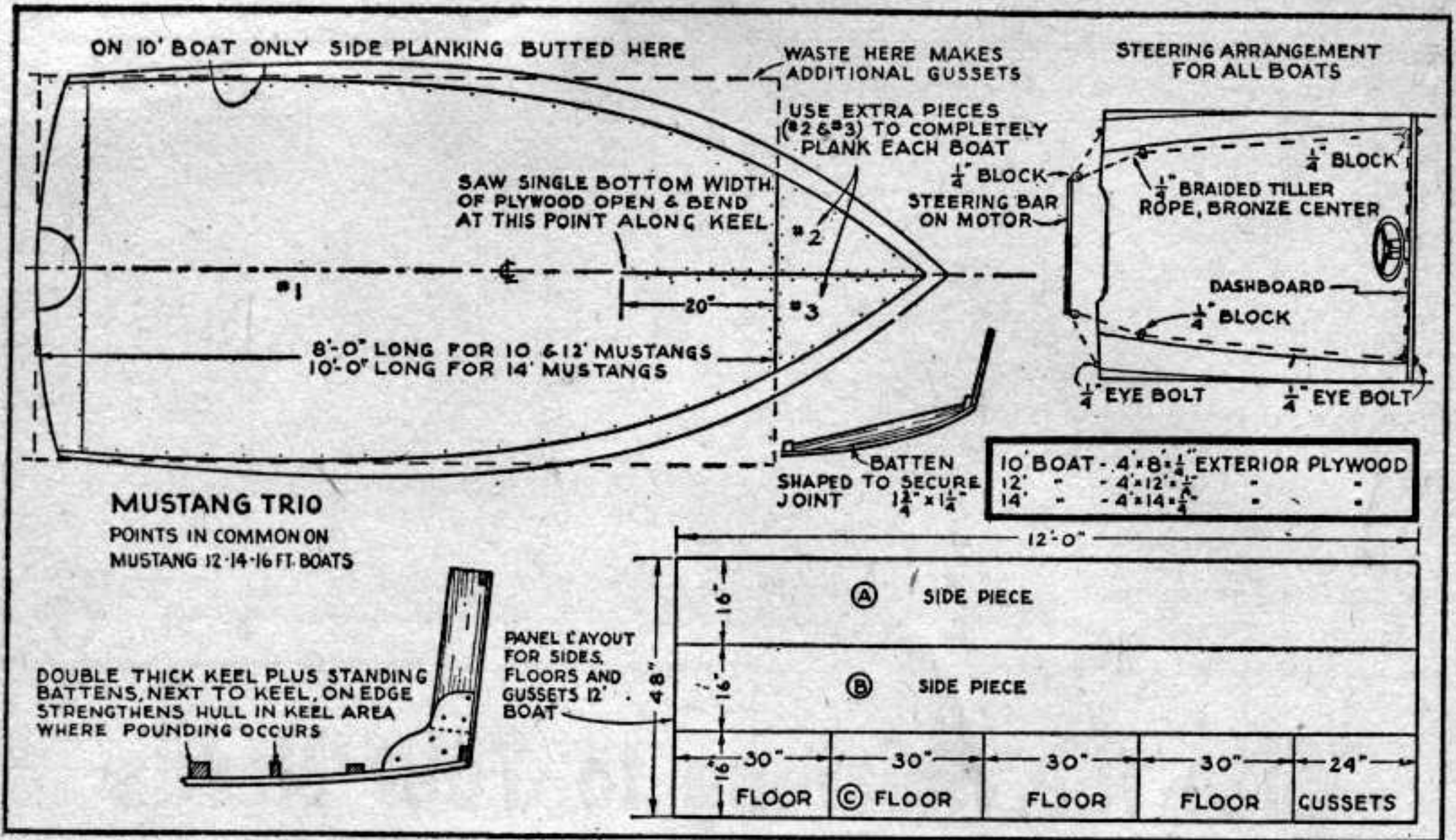
Note the attractive tumble-home, the minimum number of frames, the major portion of the bottom constructed from one standard-size plywood sheet, which is stressed for maximum strength. These boats are designed to really ride on the propeller and a small amount of spray at high speeds. But enough sales talk. Let's get on with the construction of the 10-ft. speedster.

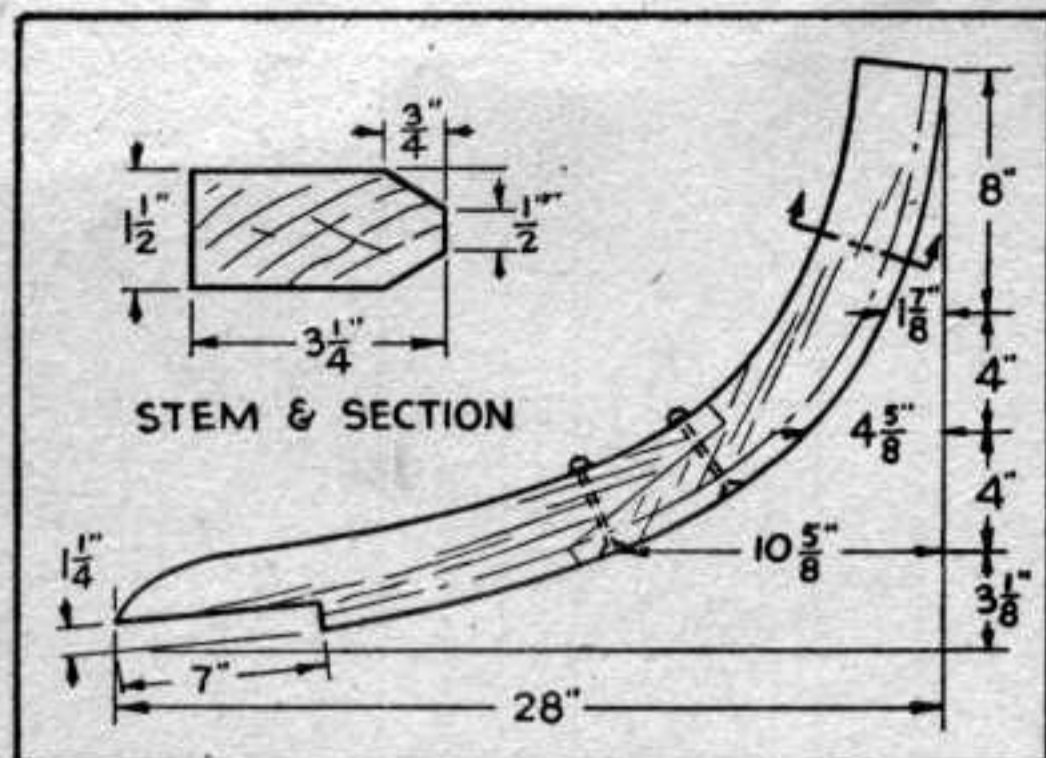
First saw the form on which the hull is built

to shape from a 2 in. x 10 in. x 10 ft. used lumber (yellow pine will do). Mount the cut form on sawhorse at a good working height. Next draw fullsize paper patterns of transom, frames, beams and stem, place these patterns on their respective plywood pieces, prick the outlines through, and saw these plywood parts to shape. Next assemble a framework as shown on the shaped plywood transom,

coat contact surfaces with Weldwood resin glue and screw-fasten plywood transom to frame with 1¼ in. #8 fh screws spaced about 3 in. apart. Reassemble the shaped frame parts on their patterns and then join side and bottom members as shown, with plywood gussets and Weldwood glue, using either ⅞ in. aluminum nails or ¾ in. #6 fh screws, with 6 fastenings to a gusset. After assembling the 2-shaped stem parts on their patterns, fasten them together with Weldwood glue and two ¼ x 3½ in. fh stove bolts.

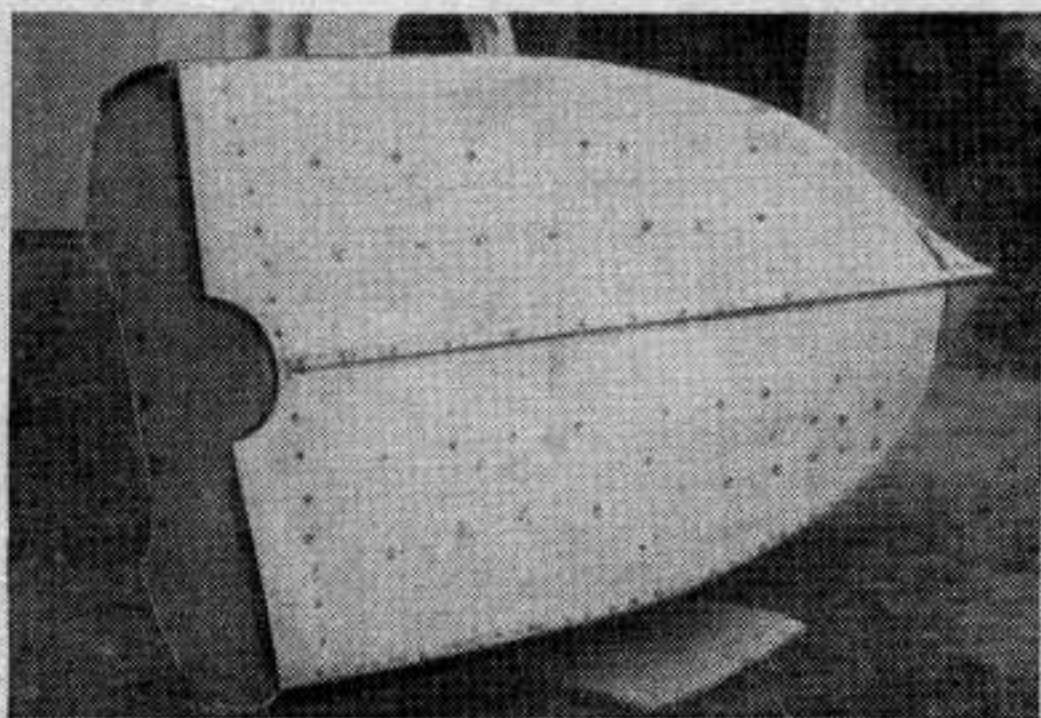
Now notch the transom, frames, and stem for the keel, chines, and clamps and assemble these parts atop the form. To hold the keel to the form and maintain its shape during construction, screw strap iron lugs to the form and keel. After hull is planked, these screws can be removed. Next place keel in notches cut in frames (see special notch in transom for keel)



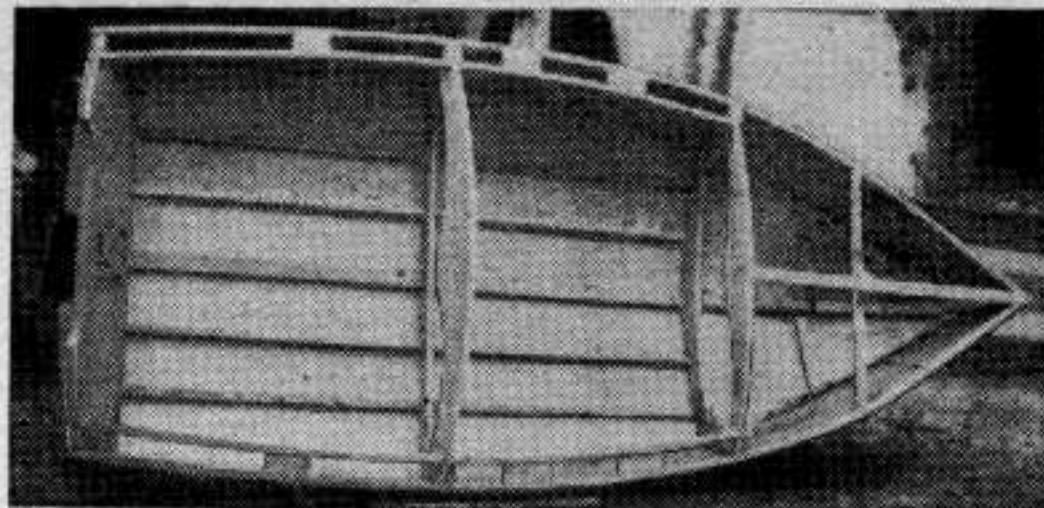


along chines, mark to shape, remove and saw to the shape outlined. Coat transom edges of shaped bottom piece with Kuhl's Bedding composition, and keel, batts and chines with Weldwood glue. Then reclamp shaped bottom piece of plywood in position and fasten at all points with  $\frac{7}{8}$  in. #7 fh screws spaced about 2 in. apart. To properly shape plywood in position during fastening, start at transom center and work out towards the chines, fastening along keel first, then along chines and lastly, along batts and frames. Next shape remainder of bottom plywood fore ends, place a batten in position as shown to secure joint, and glue and screw plywood fore ends in place. Trim plywood edges evenly along chines and stem. To plank the sides, first lay a 4 x 8 ft. plywood sheet in position along sides, mark and cut to shape and provide a butt block as shown for side joints of plywood. Coat chines with Kuhl's Bedding Compo and clamps with Weldwood glue. Then lay side planking in place and fasten to chines with  $\frac{7}{8}$  in. #7 fh screws spaced about 2 in. apart and fasten along clamps with either aluminum nails or screws similar to your chine fastenings.

With hull planked, trim edges of plywood evenly along chines and stem and cover exposed edges of plywood along stem with a  $\frac{1}{2}$  x  $1\frac{1}{4}$  in. piece of hardwood, softened in hot water and screwed in place with  $1\frac{1}{4}$  in. #8 fh screws spaced about 6 in. apart. A continuation of this



When hull planking is completed, remove from form, turn upright and frame deck.



Finish deck, paint, and she's ready for the water.

outer stem band is the outside keel, which is positioned exactly in the center of hull and fastened similarly. Remove hull from form and turn right side up. Then install #1 deck beam and #2 dashboard by bolting them in place with  $\frac{1}{4}$  in. rh stove bolts. To give the dashboard a rakish tilt, bolt in beveled blocks between frame and dashboard securely.

Next, notch deck carlins flush into transom and deck beams and fasten them with one  $1\frac{3}{4}$  in. fh screw to each joint. Screw spacer blocks between clamps and carlins as shown, to prevent collapsing of carlins and to preserve fair lines, with  $1\frac{3}{4}$  in. #8 fh screws. Now install  $1\frac{1}{4}$  in. thick inside transom knee by bolting through keel and transom with  $\frac{1}{4}$  in. carriage bolts. Fasten the 2 outside transom knees, to brace the transom extension at this point, with  $1\frac{1}{4}$  in. #8 fh screws, inserting screws from the plywood side on bottom and transom sides. Fair the framework edges along clamps and carlins evenly and then apply the short forward decking of  $\frac{1}{4}$  in. plywood. This decking may be applied in one piece or in 2 pieces with a joint in the center of deck, but you'll have to notch flush a center batten in stem and #1 beam to reinforce deck. Fasten forward and side decking in place with  $\frac{3}{4}$  in. #6 fh screws spaced about 3 in. apart. Trim edges of plywood evenly along sheer or clamp edge and fasten moldings in place with  $1\frac{1}{2}$  #8 fh screws spaced 8 in. apart. Nail the spray rails through sides into chines with galvanized or aluminum nails; these serve to outline the paint finish since one color is used below and another above this rail. The splash rails (optional) are fastened from inside the hull with  $1\frac{1}{4}$  in. #8 fh screws.

To finish, first apply 2 coats of clear or white Firzite followed by coats of paint or varnish as desired. Fasten floor boards to battens between the frames with  $\frac{7}{8}$  in. #7 fh screws. You can add a steering wheel and lifting handles aft.

● Craft Print No. 154, in enlarged size for building Mustang is available at \$1. SPECIAL QUANTITY DISCOUNT! If you order two or more craft prints (this or any other print), you may deduct 25¢ from the regular price of each print. Hence, for two prints, deduct 50¢; three prints, deduct 75¢, etc. Order by print number. To avoid possible loss of coin or currency in the mails, we suggest you remit by check or money order (no C.O.D.'s or stamps) to Craft Print Dept. 2039, SCIENCE AND MECHANICS, 450 East Ohio Street, Chicago 11, Illinois. See coupon on page 168. Now available, our new illustrated catalog of "196 Do It Yourself Plans," 10¢. Please allow three to four weeks for delivery.

**MATERIALS LIST—10-ft. MUSTANG**

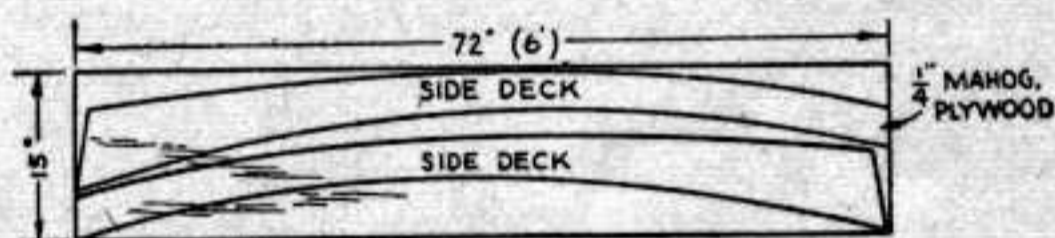
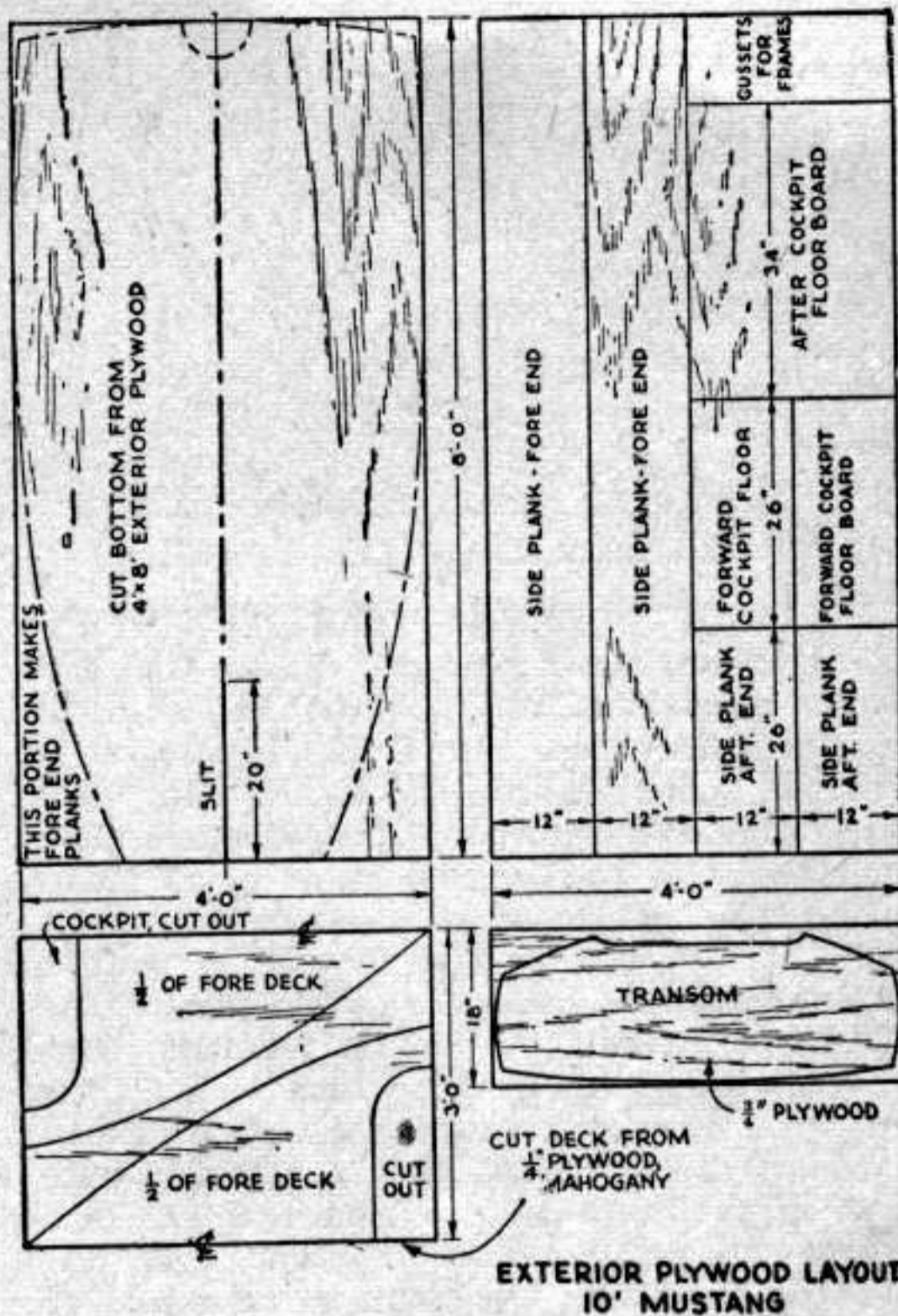
Amt.	Description	For
<b>EXTERIOR PLYWOOD REQUIRED:</b>		
2 pcs.	1/4" x 4' x 8'	Bottom, sides, flooring
1 pc.	1/4" x 15' x 8'	Side deck
1 pc.	1/4" x 36' x 48"	Decking
1 pc.	3/4" x 18' x 48"	Transom
	Waste plywood	Gussets

**OTHER LUMBER REQUIRED (OAK OR YELLOW PINE):**

2 pcs.	3/4" x 1 1/2" x 10'	Chines
2 pcs.	1/2" x 3/4" x 10' 6"	Spray rails
1 pc.	1 1/4" x 1 3/4" x 8'	Keel
1 pc.	1/2" x 1 1/4" x 10'	Outer keel
2 pcs.	1/2" x 1 1/4" x 10' 6"	Clamps
4 pcs.	3/4" x 1 1/4" x 7'	Battens
2 pcs.	3/4" x 1 1/4" x 10' 6"	Moldings
2 pcs.	3/4" x 1" x 8'	Carlins
1 pc.	3/4" x 1 3/4" x 4'	Deck battens
1 pc.	3/4" x 7 3/4" x 10'	Deck beams
1 pc.	3/4" x 5 3/4" x 8'	Frames—bottom
1 pc.	3/4" x 3" x 6'	Frames—sides
1 pc.	3/4" x 5 3/4" x 10'	Transom frame
2 pcs.	3/4" x 3 3/4" x 42"	Splash rails (optional)
1 pc.	1 1/2" x 6" x 3'	Stem
1 pc.	1/2" x 1 1/4" x 8'	Outer stem
1 pc.	2" x 10" x 10'	Form
1 pc.	1 1/4" x 12" x 10"	Transom knees—inside
2 pcs.	7/8" x 10" x 12"	Transom knees—outside

**HARDWARE AND MISCELLANEOUS:**

5 gr.	7/8" #7 fh screws
6 doz.	1 1/4" #8 fh screws
3 doz.	1 1/2" #8 fh screws
1 doz.	1 3/4" #8 fh screws
1/2 doz.	2" #10 fh screws
2	1/4" x 3 1/2" fh stove bolts
4	1/4" x 2" rh stove bolts
2	1/4" x 4 1/2" fh stove bolts
1 pt.	Kuhl's Elastic Bedding Composition
1 pt.	Weldwood resorcinal resin glue
2 qts.	Firzite (clear or white)
	Steering wheel, 18-ft. 1/4" steering rope, 2 lifting handles, bow handle, throttle control, 4 tiller rope pulleys.

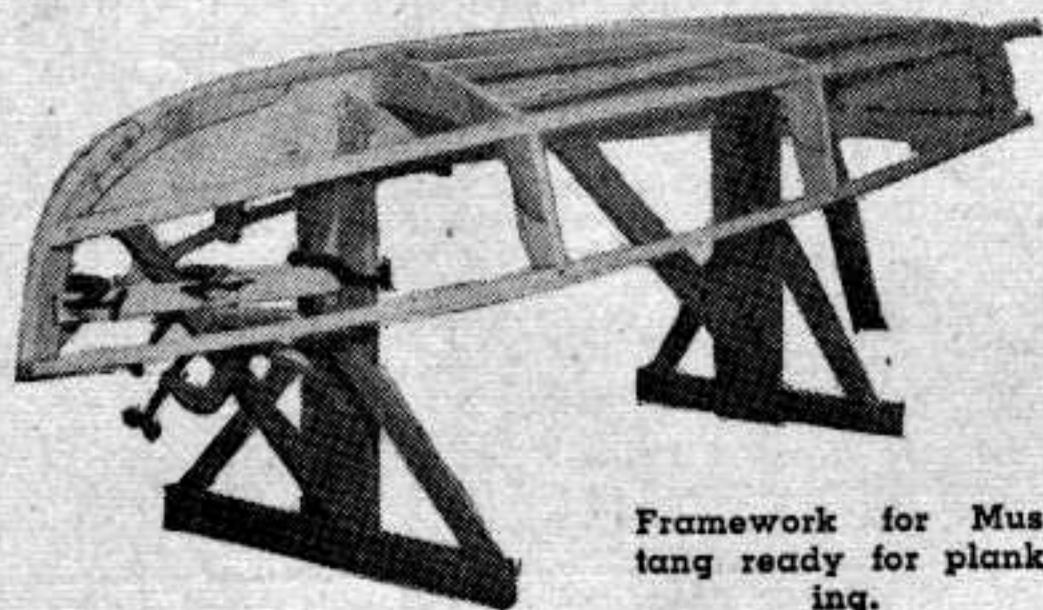


and fasten keel to notches with one 2 in. #10 fh screw to each joint except for the keel and stem notch joint where 2 fastenings are used. Now clamp chines in position in frame notches, leaving about 6 in. of chines to extend aft of transom. Coat transom chine notch well with Kuhl's Elastic Bedding Composition to prevent leaking at this point and fasten chine in place to transom and frame notches with one 1 3/4 in. #8 fh screw to each joint. Bevel ends of chines to fit against stem and fasten as you did the chine to the transom. Next, spring the clamps in place on each side and fasten them to notches with one 1 1/4 in. #8 fh screw to each notch. Bevel ends of clamps to fit stem and then fasten to stem

with 1 1/4 in. #8 fh screws.

For the next step, trim and fair entire framework so plywood to be applied lies evenly at all points. Use a jack plane for fairing along the chines and a wood rasp for fairing stem and chines at the fore end where a plane would be hard to handle. Now notch bottom battens flush into frames and fasten with one 1 3/4 in. #8 fh screw to each joint. Locate battens equidistant between keel and chines. Insert battens nearest keel on edge and lay outer battens flat; this produces unusual strength and allows the floor to be attached later to lie almost level.

With battens notched to frame, trim ends of batts evenly along transom and cover exposed joints with another 3/4 x 2 in. curved bottom frame, bedding this frame down into Kuhl's Bedding Composition. For planking the major portion of the bottom with a single sheet of plywood, first select a 1/4 in. x 4 ft. x 8 ft. plywood piece. Saw a slit back from exact center of fore end for a distance of 20 in. This centerline slit should land directly on the center of the keel. Place plywood in position on bottom of boat's framework and let about 6 in. of plywood overlap transom, being sure it is centered along keel. Now clamp at the transom and



Framework for Mustang ready for planking.



## MUSTANG GROWS UP

For those who want to use a heavier motor or have a little more room, here are the 12 and 14 ft. versions of this design

By WILLIAM D. JACKSON  
Naval Architect

**N**OW, let's see how we would construct 12 and 14 ft. boats, using the same basic design. The 12-ft. *Mustang* may be built as a standard freeboard model or as a low freeboard racer for high-speed, lightweight outboards up to 25 hp. By making further alterations the original 12 ft. *Mustang* may also be lengthened to 14 ft. simply by adding 2 in. to original stem height and increasing heights of side frames as specified, but using the same transom for either length of boat. You will have to add 2 ft. to the form length as shown, but additional bottom reinforcing frames aren't needed since laying the battens on edge makes the keel strong enough to eliminate the need for another frame. When planking the 14-footer use a 4x10 ft. plywood sheet for the bottom, following the same general construction as for the 12 ft. *Mustang*.

To begin construction on the model you select, first draw full-size paper pattern outlines of the stem, #1, #2, and #3 frames, and the transom.

### Craft Print Project No. 155

12 and 14 ft. Mustangs

**Uses:** 12 ft. *Mustang*: Lightweight, speedy outboard runabout. May be built with a lower freeboard and used as a stock racing boat or the standard freeboard model will make a fast boat for general sports use. Designed for outboard motors of 10 to 15 hp, it has a double cockpit and seats.

**Uses:** 14 ft. *Mustang*: Sturdy, medium weight, speedy outboard runabout for general sports use. Designed for outboard motors of 10 or 25 hp, it has a roomy double cockpit. This boat offers excellent speed and maneuverability when it is powered with the larger outboard motors. May be transported by trailer anywhere.

**Length:** 12-footer: 11 ft., 6 in.—14-footer: 13 ft., 6 in.

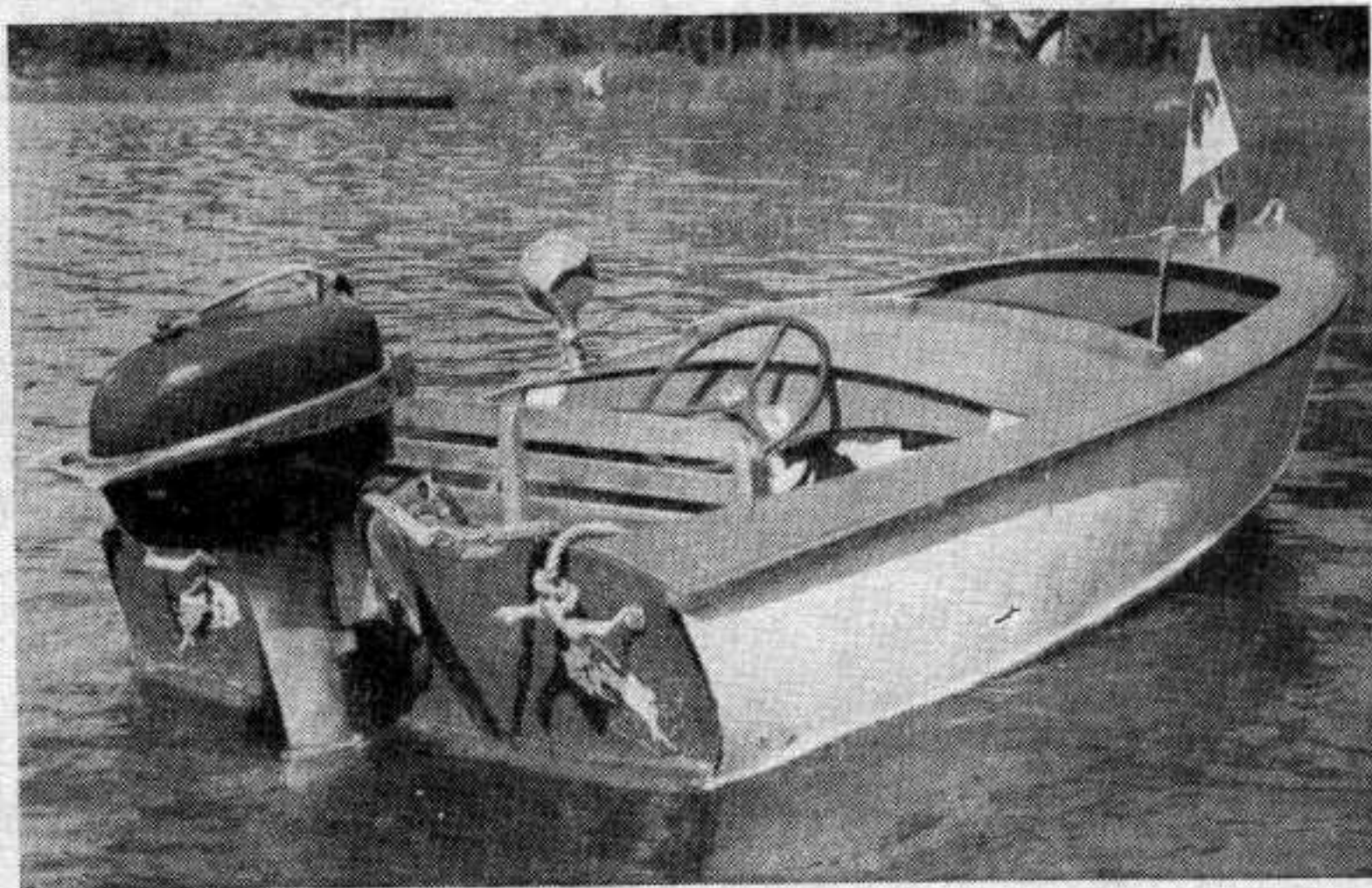
**Beam:** 12-footer: 53½ in.—14-footer: 54 in.

**Depth:** 12-footer: 20 in. (forward)—14-footer: 23 in. (forward)

**Weight Complete:** 12-footers: racer model 125 lb.; runabout 175 lb.—14-footer: 225 lb.

**Seating Capacity:** 12-footer: 3 passengers (4 in a pinch)—14-footer: 4 passengers comfortably.

**Construction:** ¼ in. exterior plywood (¼ and ⅜ in. for 14-footer) over a sturdy stressed framework. Note single 4 ft. width of standard size plywood which planks all but foremost section of bottom. Bottom frames of 12 and 14 ft. *Mustangs* are interchangeable.

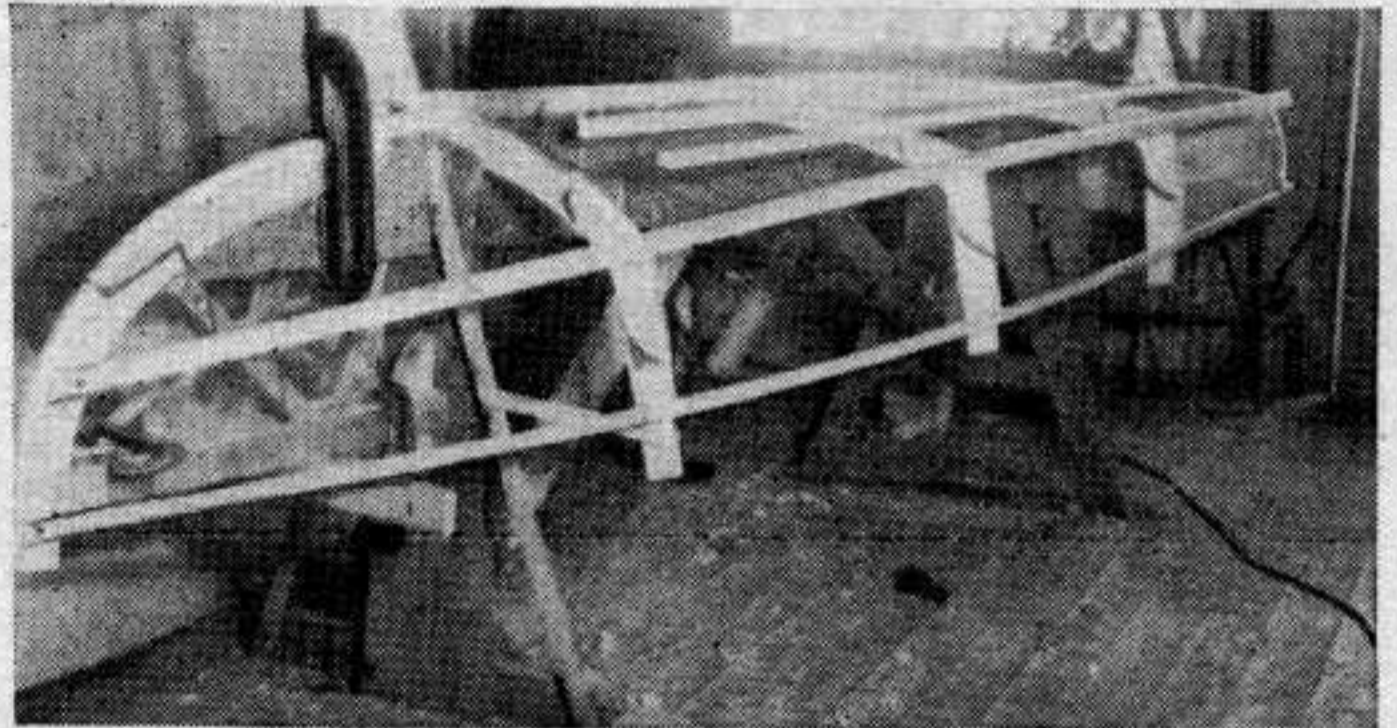


Rear view of the completed 12 ft. *Mustang*.

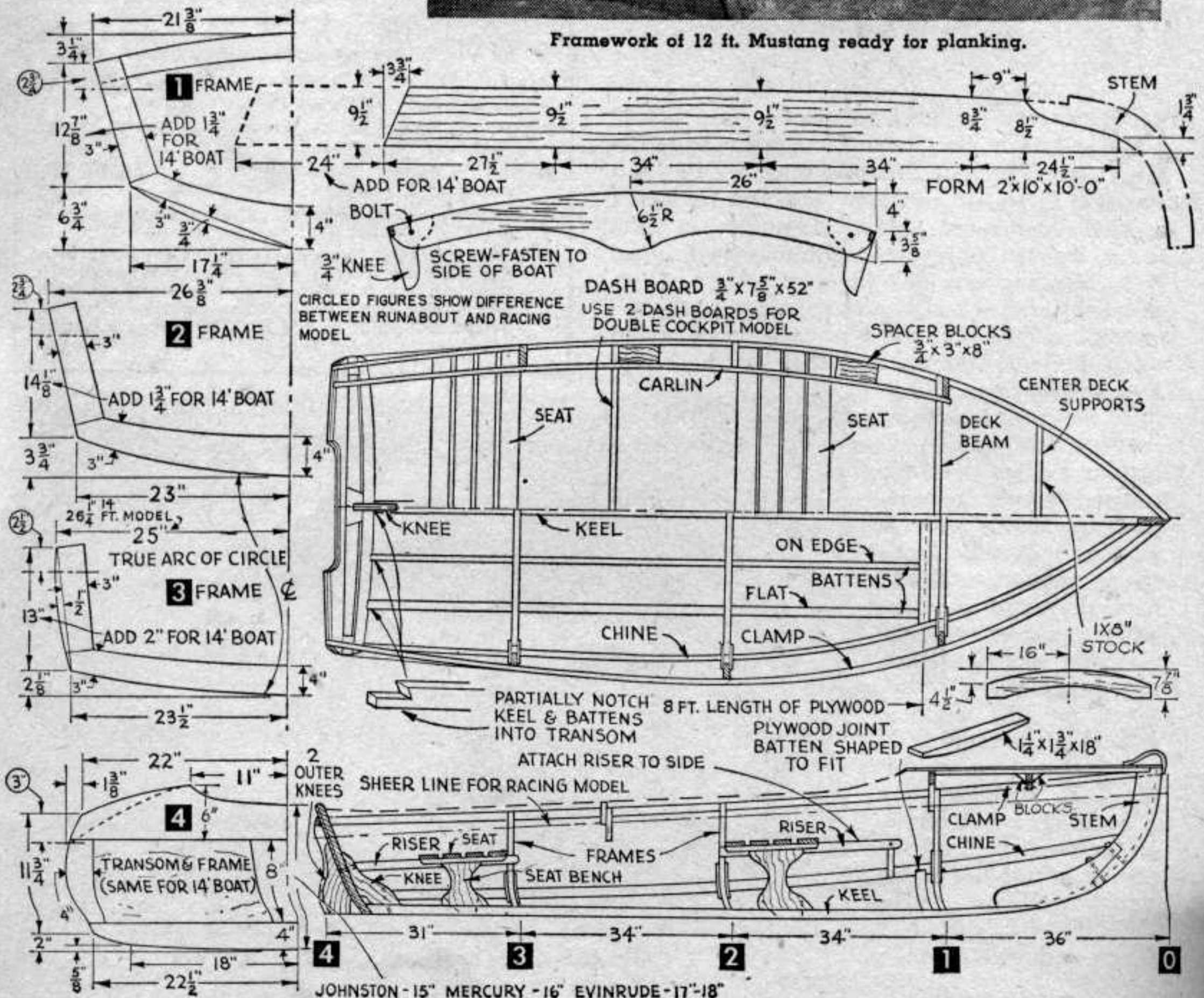
For the racer model, make all as you would for the standard model but mark on frames the lower freeboard heights and attach clamps at their proper heights later. Follow the same procedure for the 14-footer, only here increase the freeboard heights. Next lay the patterns on framing material, prick outlines through, mark and saw to shape. Shape stem and transom in the same way. Fasten stem parts together, to make the joint shown, using two 1/4x4 in. carriage bolts. Join frames together with resorcinol resin glue and nail down gussets with 7/8 in. aluminum nails or 7/8 in. #6 fh screws. Cut the transom to shape from a piece of 1/2 in. plywood and glue and screw-fasten a frame to the transom with 1 1/4 in. #8 fh screws as shown. Now notch the various parts for the keel, chines and clamps; the stem is notched for the keel only.

Cut the building form to shape from a piece of 2x10x10 ft. lumber and mount it on saw horse legs at a working height. Next assemble transom, frames and stem on the building form and run a saw alongside the chines and clamps to make sure notches

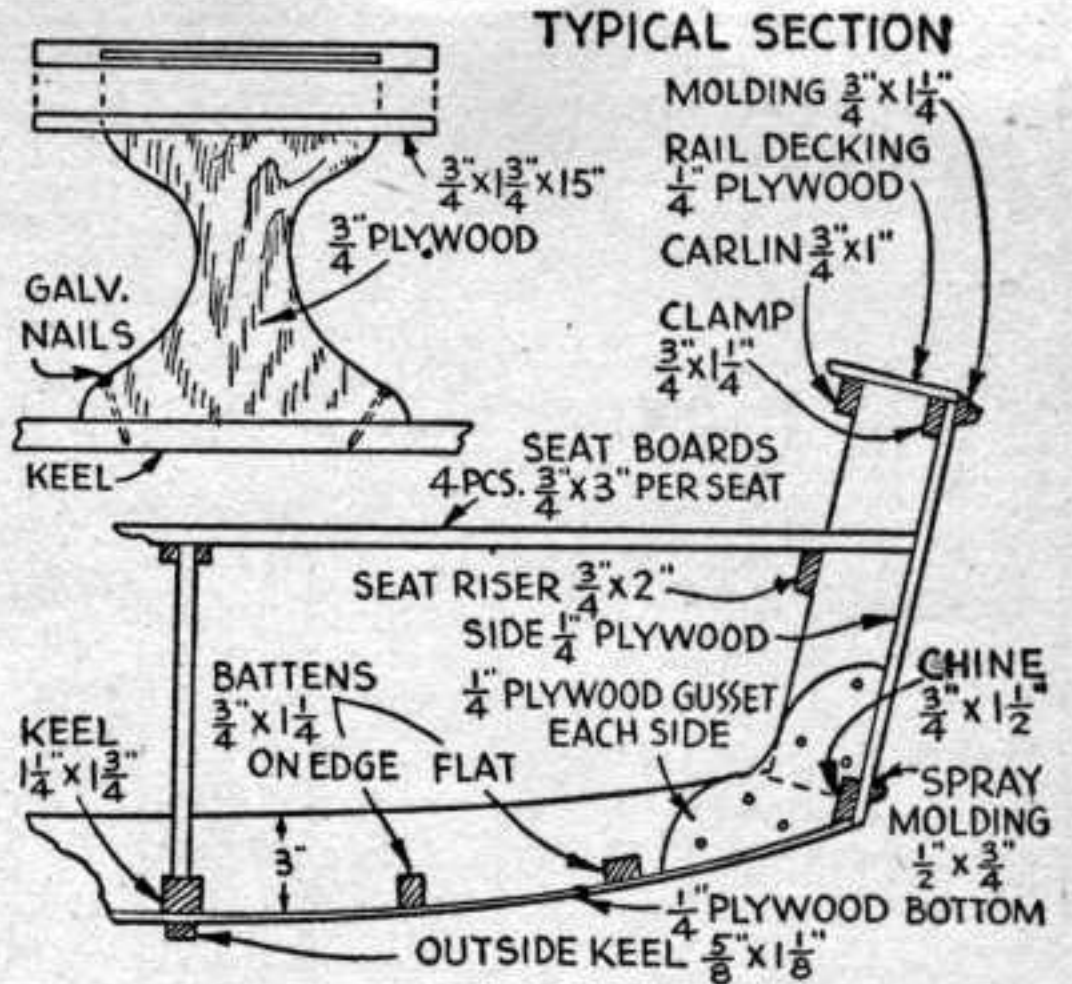
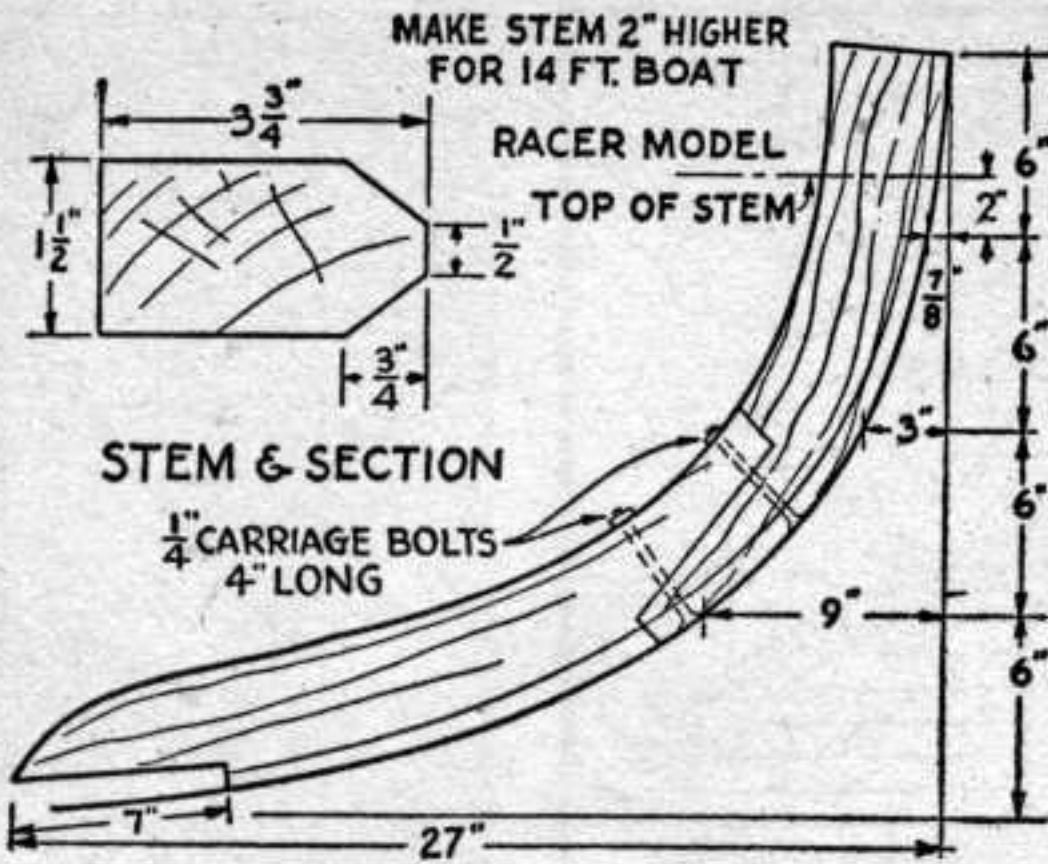
line up with the curve of the chines and the clamps. Clamp or wedge transom and frames in place and hold stem to the form with two 1x4's clamped to stem and form. Attach keel to frame notches and stem with one 2 in. #10 fh screw to each joint. To make sure keel remains closely held to the form during construction, screw-fasten 4 small strap iron pieces to keel and form, alternately spacing them on each side as shown in detailed drawing. Insert screws so you can easily remove them once the hull is planked. The Mustang's heavy keel has a tendency to spring away from the form unless held temporarily in place with iron lugs, and unless the keel follows exact-



Framework of 12 ft. Mustang ready for planking.



JOHNSTON - 15" MERCURY - 16" EVINRUDE - 17"-18"



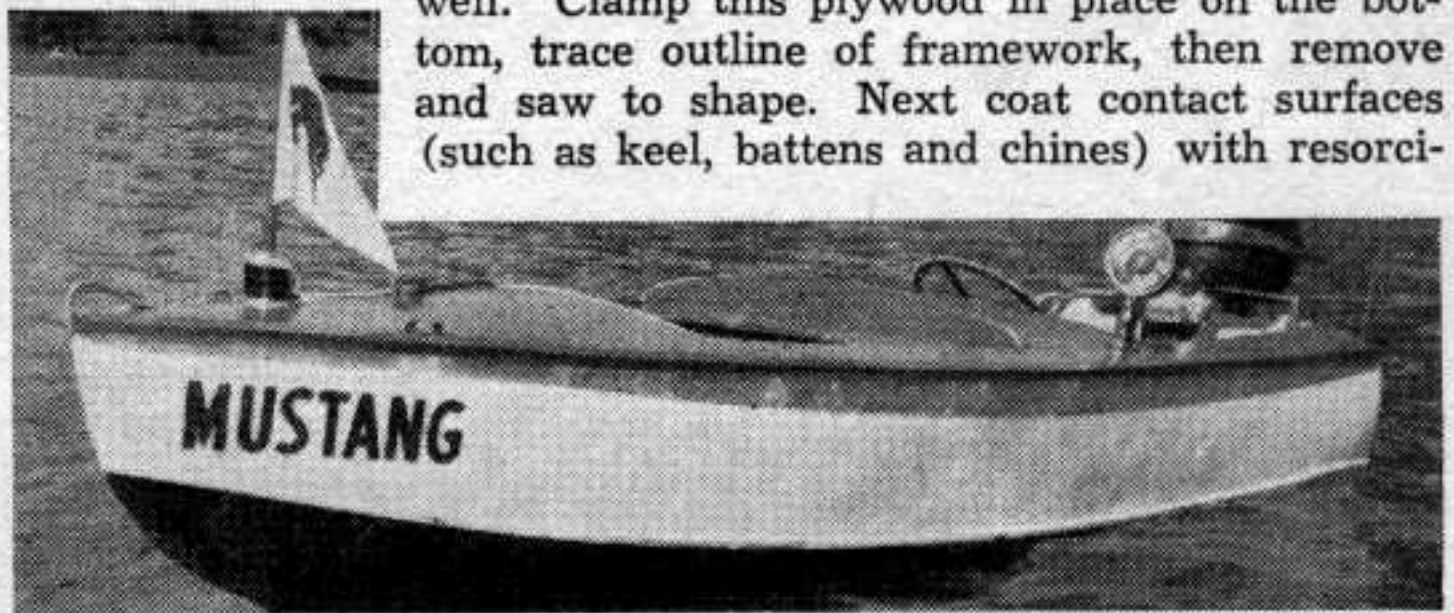
ly the lines of the form, the finished boat may develop an aggravating "gallop" or "porpoise."

Let about 4 in. of the chines extend aft of the transom, and fasten chines in place at each joint with one 1 3/4 in. #8 fh screw. Bevel ends of chines to fit stem and then fasten in place as you did to the transom. Before we fasten the clamps, make your choice between a racer or runabout *Mustang*. For the racer, mark clamp location lower as indicated, renotch and fasten. For the standard runabout model use the original notches, insert clamps in place, and fasten them securely with one 1 3/4 in. #8 fh screw to each joint. Bevel ends of clamps to fit stem and fasten similarly. Now notch the bilge battens flush into the bottom frames, locating battens equi-distant between chines and keel. Let battens extend forward until bottom plywood plank is placed in

position; then mark the fore end of battens and saw off batten ends to meet the plywood joint, being sure to place battens nearest the keel on edge while the battens next to the chine lie flat; this produces the greatest strength where needed and provides an almost flat floor. Trim and fair the entire framework so plywood to be applied lies evenly and smoothly at all points.

To plank the bottom, take a 1/4 in. x 4 x 8 ft. plywood sheet, saw a slit in the fore end as shown and shape the after end for the motor well. Clamp this plywood in place on the bottom, trace outline of framework, then remove and saw to shape. Next coat contact surfaces (such as keel, battens and chines) with resorci-

Here's the Mustang—dolled up and ready to go.



MATERIALS LIST—12 FT. MUSTANG

EXTERIOR PLYWOOD REQUIRED:

- |        |                  |                          |
|--------|------------------|--------------------------|
| *1 pc. | 1/4" x 4' x 12'  | Sides and flooring       |
| *1 pc. | 1/4" x 4' x 8'   | Bottom                   |
| *1 pc. | 30" x 48" x 1/4" | Bottom                   |
| 1 pc.  | 1/2" x 18" x 60" | Transom and seat benches |
| 1 pc.  | 1/4" x 36" x 48" | Decking                  |
| 1 pc.  | 1/4" x 12" x 8'  | Decking                  |

OTHER LUMBER REQUIRED (OAK OR YELLOW PINE):

- |        |                       |                  |
|--------|-----------------------|------------------|
| 2 pcs. | 3/4" x 1 1/2" x 12'   | Chines           |
| 2 pcs. | 3/4" x 1 1/4" x 12'   | Clamps           |
| 1 pc.  | 1 1/4" x 1 3/4" x 10' | Keel             |
| 1 pc.  | 3/4" x 1 1/4" x 10'   | Outer keel       |
| 1 pc.  | 3/4" x 7 3/4" x 6'    | Transom framing  |
| 1 pc.  | 3/4" x 3 3/4" x 4'    | Transom framing  |
| 2 pcs. | 3/4" x 5 3/4" x 8'    | Frames           |
| 1 pc.  | 3/4" x 5 3/4" x 4'    | Deck beams       |
| 4 pcs. | 3/4" x 1 1/4" x 8'    | Bilge battens    |
| 2 pcs. | 3/4" x 1" x 10'       | Carlins          |
| 2 pcs. | 3/4" x 1 1/4" x 12'   | Moldings         |
| 2 pcs. | 1/2" x 3/4" x 12'     | Paint moldings   |
| 1 pc.  | 3/4" x 2" x 3'        | Deck batten-fore |

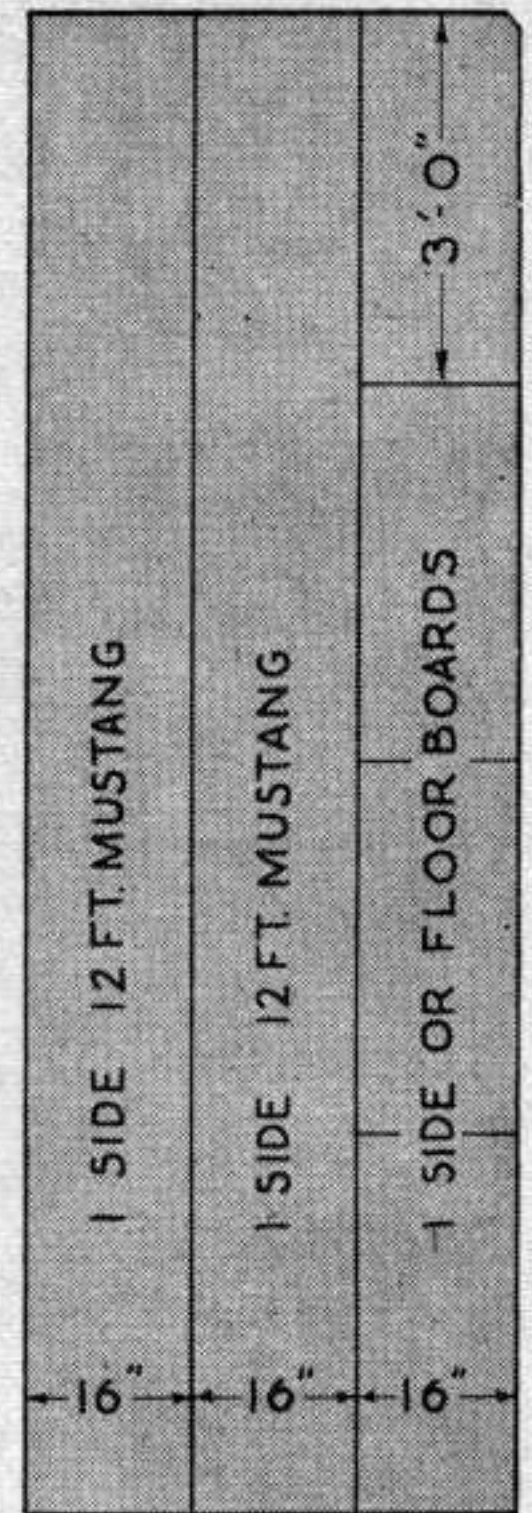
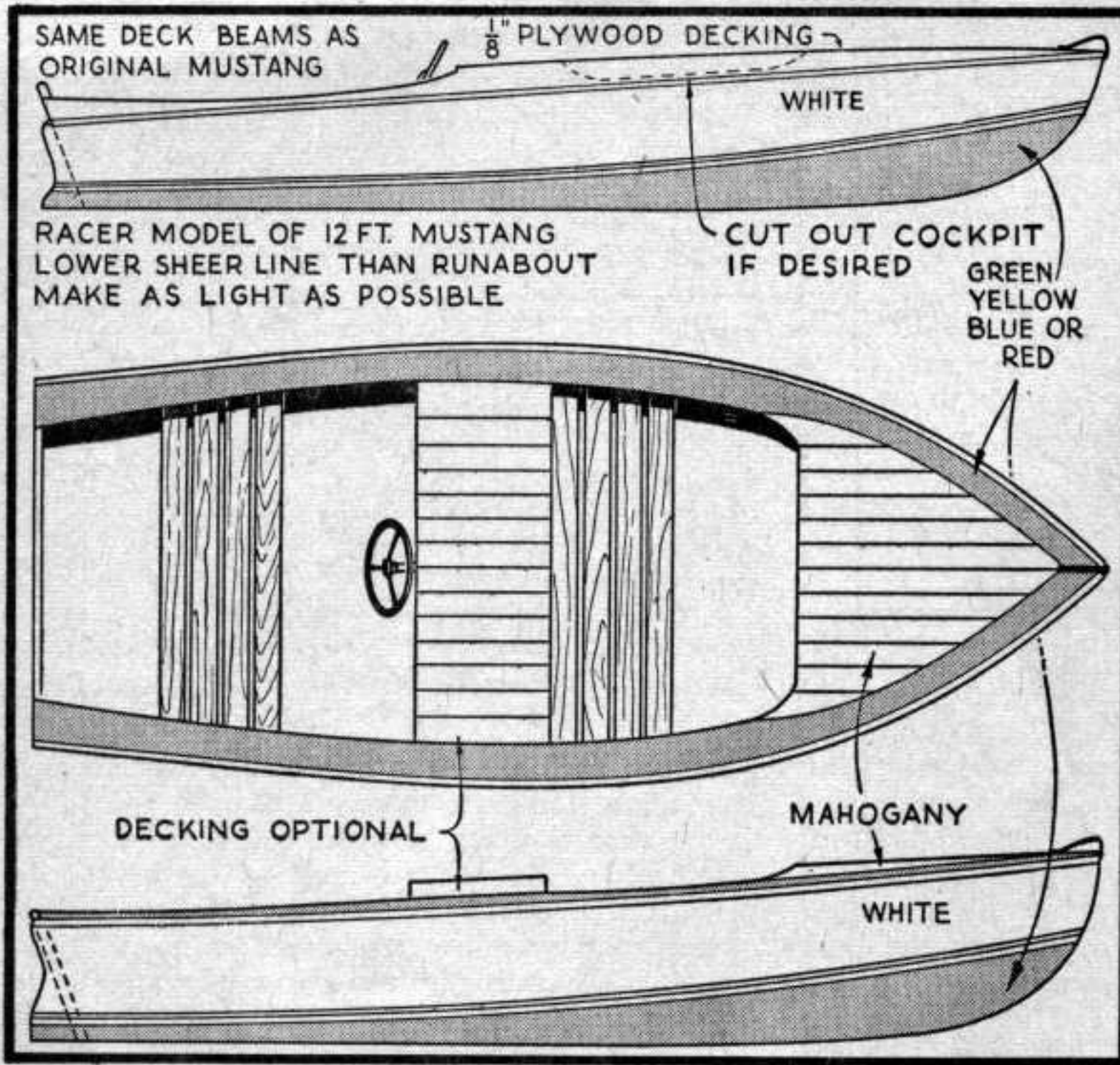
- |        |   |                      |
|--------|---|----------------------|
| 1 pc.  | 1/2" x 1 1/4" x 3'                      | Outside stem piece   |
| 4 pcs. | 3/4" x 2" x 3'                          | Seat risers          |
| 8 pcs. | 3/4" x 3" x 4'                          | Seat boards          |
| 1 pc.  | 1 1/4" x 10" x 12"                      | Transom knee (inner) |
| 1 pc.  | 3/4" x 6" x 18"                         | Transom knee (outer) |
| 1 pc.  | 1 1/2" x 10" x 40"                      | Stem                 |
| 1 pc.  | 2" x 10" x 10' (any com-<br>mon lumber) | Form                 |

FASTENINGS AND MISCELLANEOUS:

- |        |   |
|--------|---|
| 5 gr.  | 7/8" #7 fh screws   |
| 1 gr.  | 1 3/4" #8 fh screws                                       |
| 1 doz. | 2" #10 fh screws  |
| 4      | 1/4" x 4" carriage bolts (2 for stem, 2 for transom knee) |

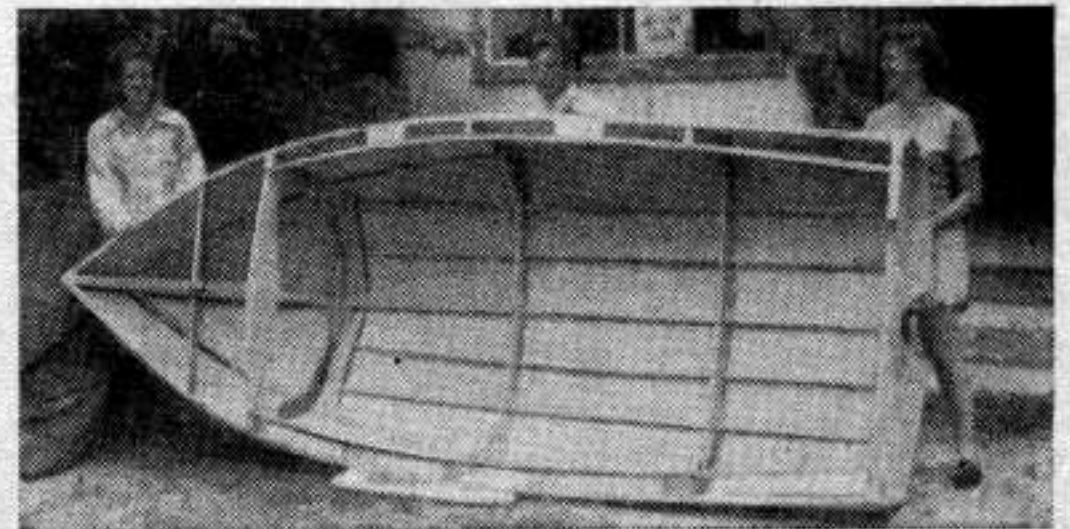
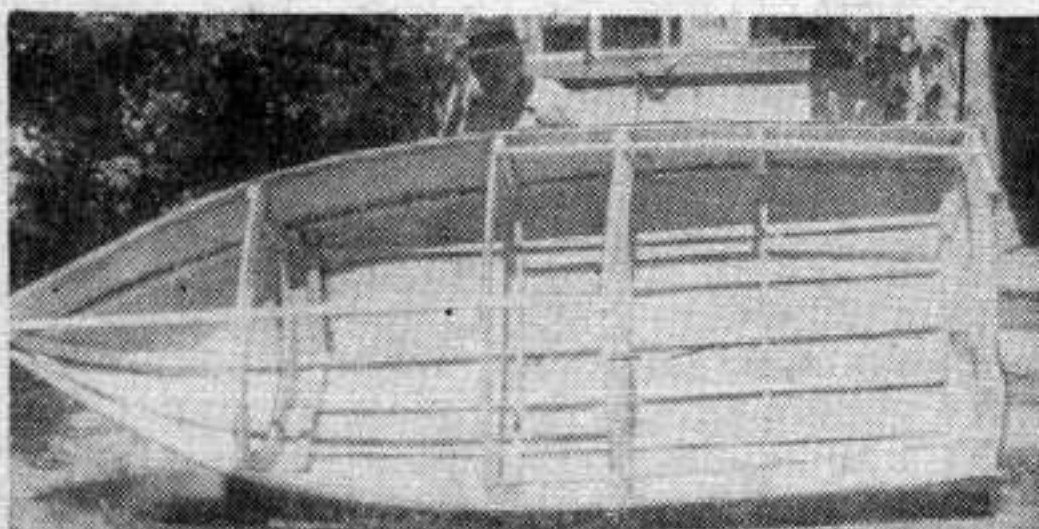
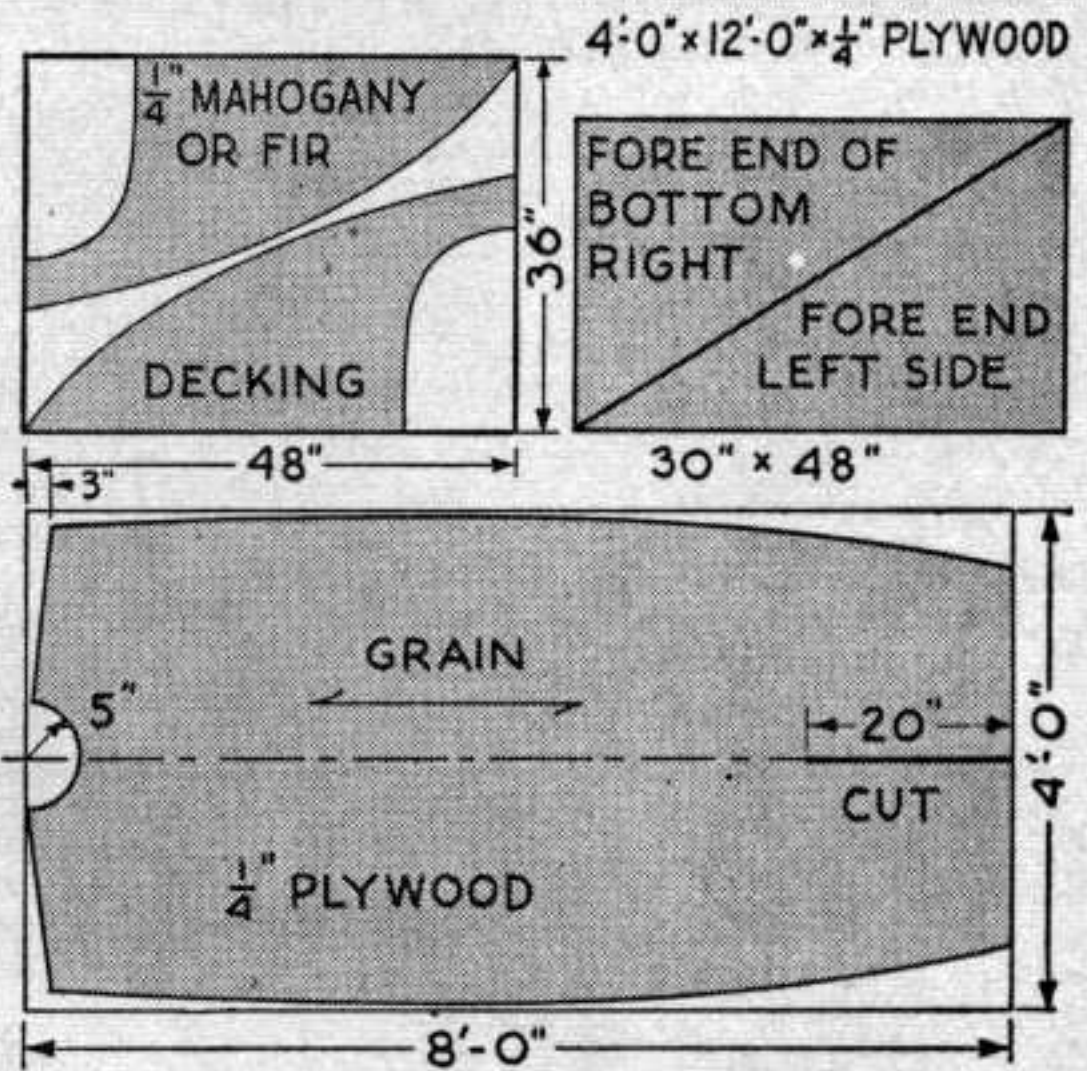
1 pt. Kuhl's elastic bedding composition; 1 pt. Weldwood resorcinol resin glue, 2 qts. clear Firzite. Racing outboard steerer, bow and transom lifting handles, tiller rope pulleys, braided tiller rope, etc., from Perkins Marine Lamp and Hardware Corp., 1943 Pitkin Ave., Brooklyn, N. Y.

\*Sides, flooring and bottom are 3/8" thick for the 14 ft. Mustang.



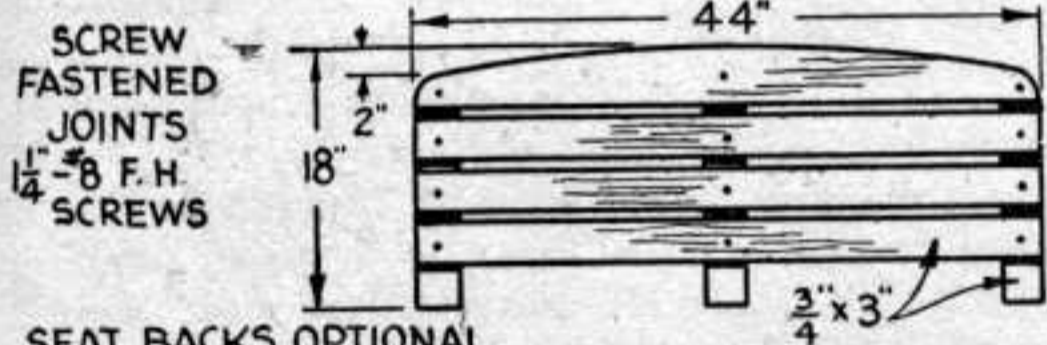
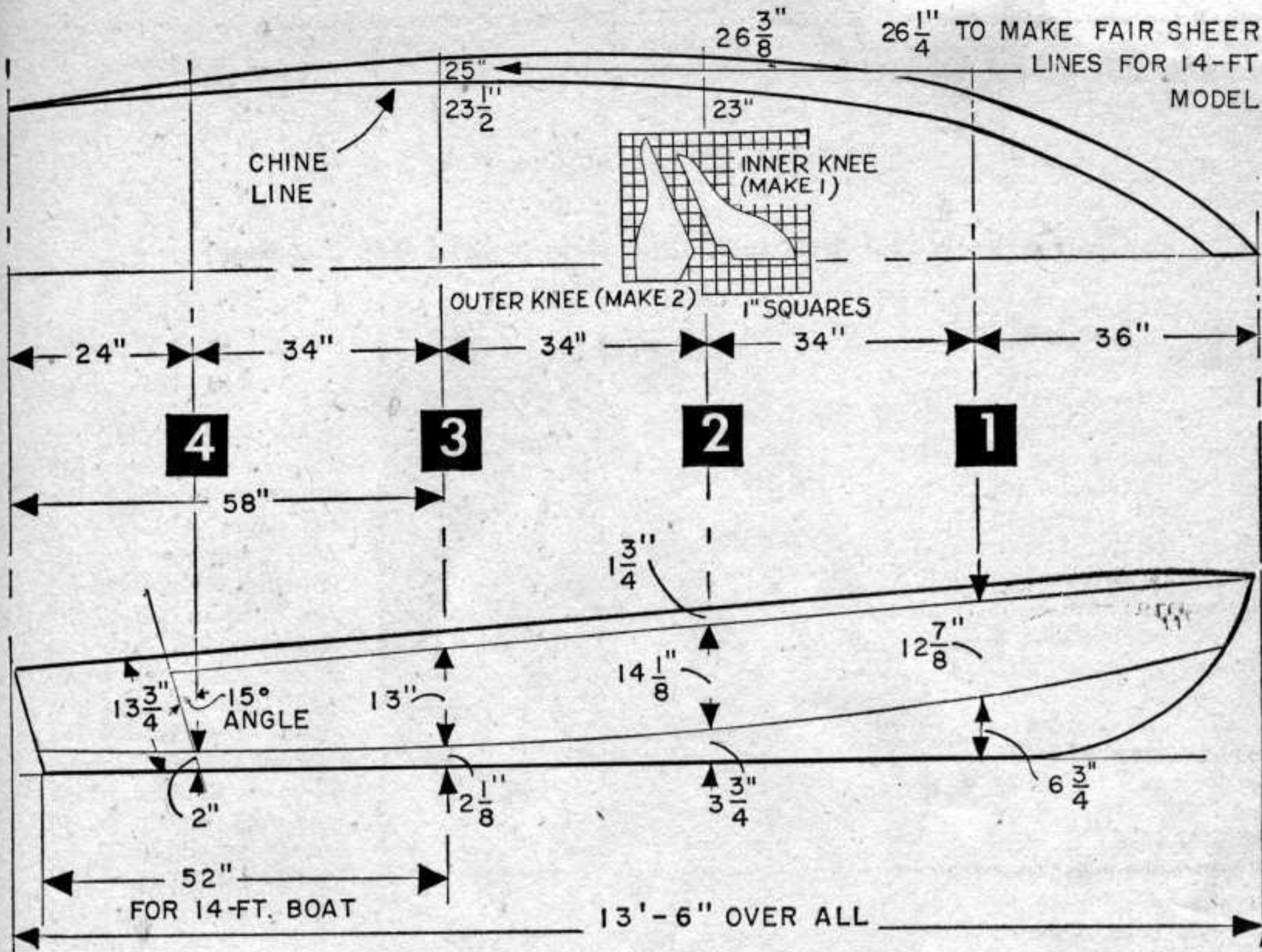
nol resin glue, clamp shaped plywood piece in place and begin fastening along the keel and working outwards towards the chines, using  $\frac{7}{8}$  in. #7 fh screws spaced about 2 in. apart. Trim edges of plywood evenly along chines and continue by sawing 2 fore end planks to shape as shown. Screw a planking batten, shaped to fit curvature of bottom, to fore end of large bottom plank, and then bend and fasten 2 fore end planks in place with  $\frac{7}{8}$  in. #7 fh screws. These planks will bend more readily if you first soften them by pouring hot water over the ends. Finish by trimming edges evenly along chines and stem.

Next plank the sides, using a  $\frac{1}{4}$  in. x 4 x 12 ft. plywood sheet cut in three 16 in. widths as shown. Two widths plank the sides, the third width is used for floor boards. Place a 16 in. width in position along sides and mark and cut to shape. Coat edges of chines with Kuhl's bedding composition and coat frames and clamp with resorcinol resin glue. Then fasten shaped side



Racing hull (left) and runabout hull (right) shown ready for decking.





SEAT BACKS OPTIONAL

FITS FORE COCKPIT MEASURE FOR AFTER COCKPIT

planks in position with 7/8 in. #7 fh screws spaced about 2 1/2 in. apart and trim.

While the boat is still upside down, fasten a 1/2x1 1/4 in. outer stem piece to the stem to cover exposed edges of planking at that point. For added protection along the keel, fasten a 3/4x1 1/4 in. outer keel in place to the bottom. On both outer stem and keel, use 1 1/4 in. #8 fh screws spaced about 6 in. apart.

Remove hull from form, turn right side up and fasten deck beams in place forward and amidships (if a double cockpit job is wanted), using one 1/4x2 in. rh stove bolts to each joint. Where beams don't land on frames, as will be the case amidships, screw-fasten shaped knees to hull sides and bolt beams to knees. After notching a center deck batten in place as shown, install a strut in the foredeck and fasten strut support to center deck batten; this strut holds the sides apart and supports the deck at this point. Carlins to support the side decks are next notched flush into #1 frame and transom and fastened with one 1 3/4 in. #8 fh screw to each

joint. Next screw-fasten scrap wood spacer blocks in place with 1 3/4 in. #8 fh screws; these help preserve a true fair curve to the carlins.

Shape decking to fit, first by laying either fir or mahogany plywood in position and marking and cutting to shape. Curve corners nicely at the beam ends and allow about 3/4 in. of decking to extend over carlins. Fasten decking in place at all points with 7/8 in. #7 fh screws spaced about 3 in. apart. Trim edges of decking evenly along the sheer and screw-fasten moldings in position with 1 3/4 in. #8 fh screws spaced about 8 in. apart. Next, nail or screw the paint moldings in position on each side. After sanding the hull smoothly, paint and varnish it as desired. For the seats, saw a 1x6 into 2 pieces and use four 1x3's to each seat. Fasten seat risers to frames as shown and then screw seat boards to risers with 1 3/4 in. #8 fh screws. Screw plywood seat benches to underside of seats for further reinforcement. For floors, screw-fasten plywood pieces atop keel and battens between frames. Fittings and steering wheel are optional.

● Craft Print No. 155, in enlarged size for building Mustang is available at \$1. SPECIAL QUANTITY DISCOUNT! If you order two or more craft prints (this or any other print), you may deduct 25¢ from the regular price of each print. Hence, for two prints, deduct 50¢; three prints, deduct 75¢, etc. Order by print number. To avoid possible loss of coin or currency in the mails, we suggest you remit by check or money order (no C.O.D.'s or stamps) to Craft Print Dept. 2039, SCIENCE AND MECHANICS, 450 East Ohio Street, Chicago 11, Illinois. See coupon on page 168. Now available, our new illustrated catalog of "196 Do It Yourself Plans," 10¢. Please allow three to four weeks for delivery.

