The Falcon

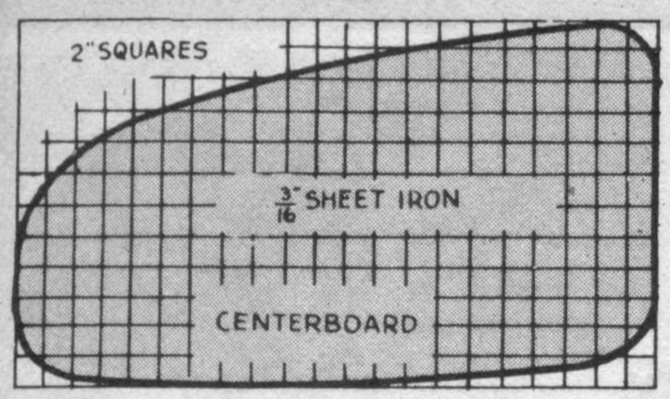
This frisky 14-ft. centerboard sailboat can breeze past the competition — its speed little affected by 2 or 4 passengers



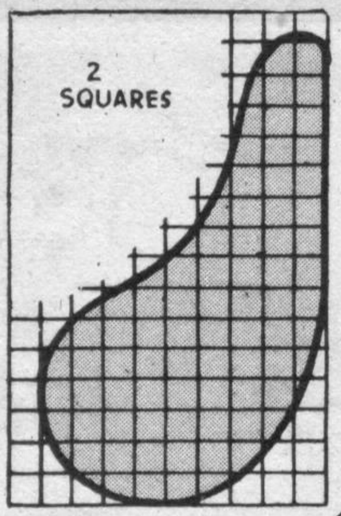
Craft Print Project No. 30

FALCON is a small, speedy, sporty sailboat which handles well. Our tests on the original *Falcon* showed that she could easily out-distance boats of comparable size such as the one design class Snipe and Comet sailers. And she will pace neck and neck with 18 footers with considerably greater sail spread.

In gathering materials for the construction of this boat, if at all possible choose white oak for all framing members. To contruct, first draw full size paper patterns of stem, frames and transom. Then assemble frames directly on the paper patterns. Bolt side and bottom members of frames together with two ¼ x 2-in. carriage bolts. Glue bottom members with resin glue and screw fasten with six 1¾-in. #10 *fh* screws to floor frame. You may make mold frame #3 of any common pine lumber as it serves only to give shape to the boat during construction, and is removed after hull is planked. The use of plywood makes hull sufficiently strong even after this frame is removed. Next, using 1¼-in. #10 *fh* screws, screw fasten a ¾ x 2½-in. oak frame to transom #5, which is a piece of ½-in. thick waterproof mahogany plywood. Lay the stem pattern on the stem material, prick



NOTE: CENTERBOARD MUST BE INDIVIDUALLY FITTED TO WELL BY USING CARDBOARD PATTERN. AFTER FITTING, COAT C.B. WITH BRONZE BOTTOM PAINT OR GALVANIZE



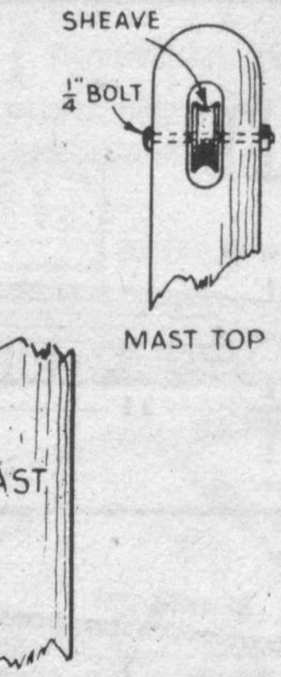
RUDDER
3/4" PLYWOOD



TILLER
1" OAK
STEAM BENT
OR STRAIGHT

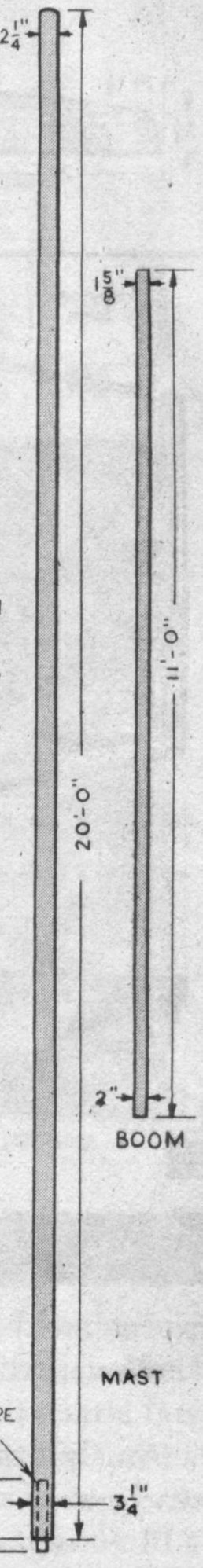
TO FIT RUDDER SECURE WITH 2
1/4" x 4 1/4"
CARRIAGE BOLTS

BOW SPRIT 1 1/4" THICK
OAK, ASH, WALNUT OR
MAHOGANY



MAST CROSS SECTION

BOOM SECTION



BOOM

MAST

USES: As a general purpose sailboat it is fast and maneuverable and ideal for bay, lake and river sailing. It points closely and easily outdistances comparable one design class boats. For those who want the very latest and best in small sailing craft.

LENGTH: 14 ft. BEAM: 6 ft. overall.

WEIGHT COMPLETE: 475 lbs.

SAIL AREA: 118 sq. ft.

SEATING CAPACITY: 4 persons. The speed of this boat seems little affected by whether two or four passengers are aboard, which is unusual for most small sailboats.

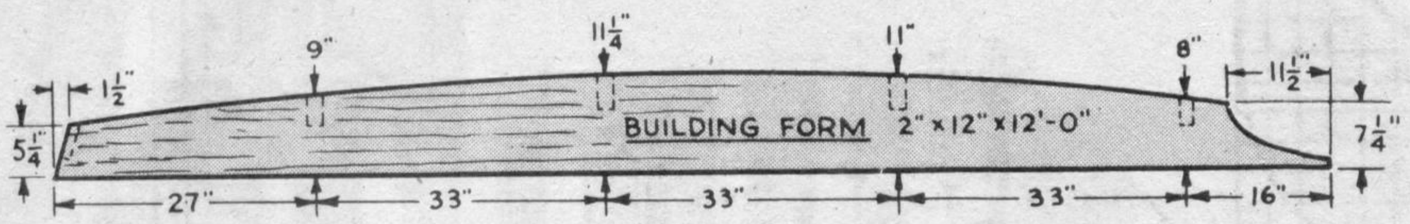
CONSTRUCTION: Waterproof exterior plywood (3/8 in.) over a longitudinally stressed framework. The semi V-bottom design of this boat was scientifically worked out using the same techniques of design used for schooners or large sailers.

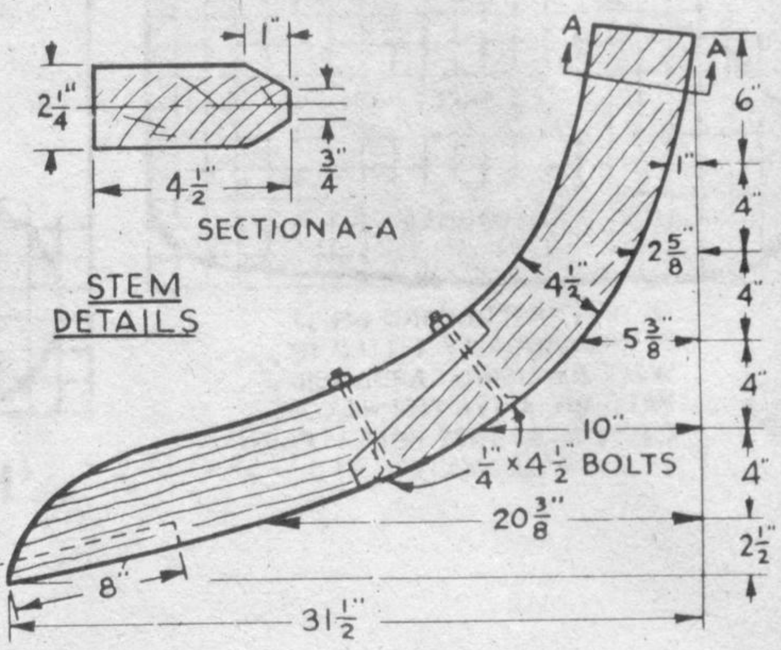
the outline through and then saw stem to shape. Trim stem joints to insure close, even, wood-to-wood contact, and fasten joint with two ¼ x 4½-in. carriage bolts whose heads are imbedded in fore side of stem, which must be beveled later.

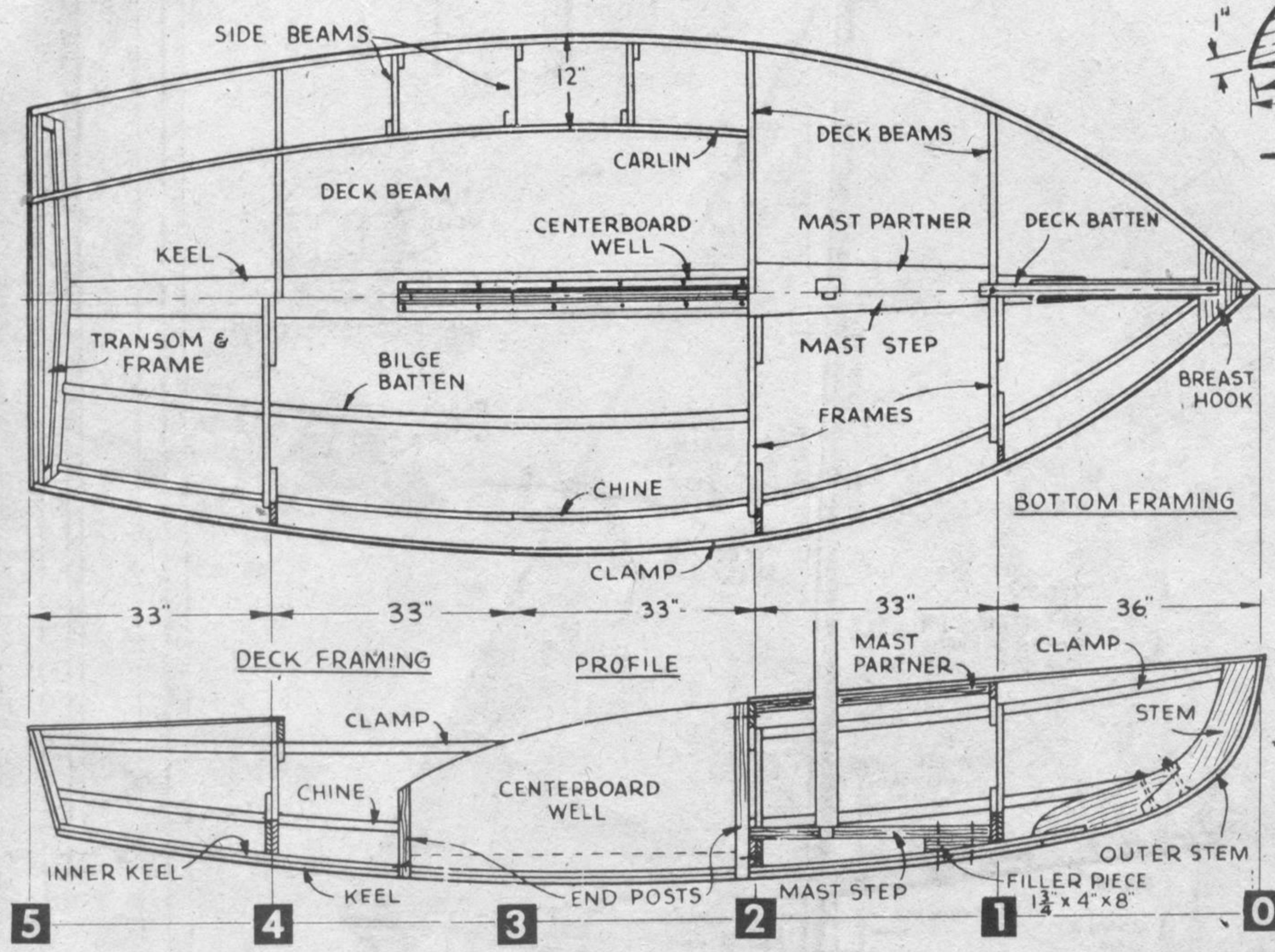
Next saw the form to shape as indicated and mount it on legs similar to a saw horse at a convenient working height. Then notch form out to receive the frames. Now notch all frames for the keel, chines and clamps and locate frames in their respective positions atop the form. Before mounting the stem on the form, notch it for the keel, bevel its edges (see drawing), and mount it with wood strips clamped on sides of stem and form.

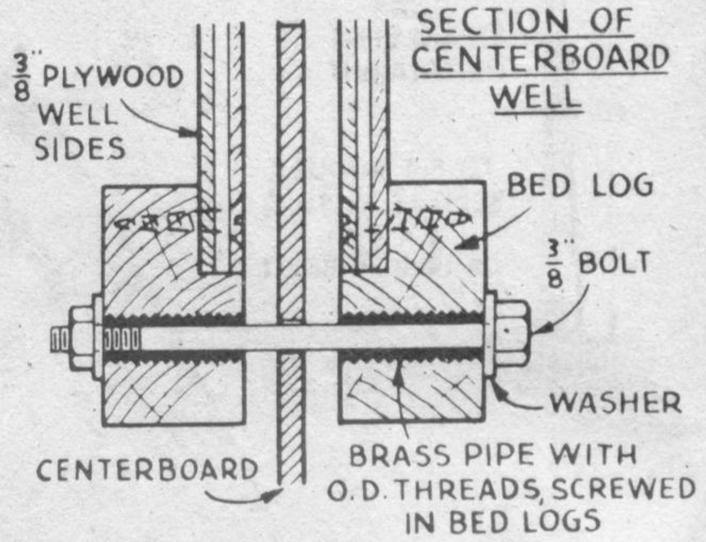
The next step is to taper the inner keel (keelson) and attach it to frame notches and stem notch using two 2-in. #10 *fh* screws to each

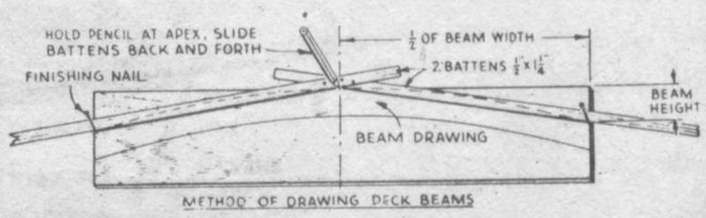
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joint except mold frame #3. With inner keel secured, spring chines in place and attach them to both sides simultaneously (to avoid wringing framework out of shape) using one 2-in. #10 *fh* screw to each joint; bevel chine ends to fit stem and fasten similarly. Next attach clamps in place as you attached the chines, using one 1¾-in. #10 *fh* screw to each joint. Now notch bilge battens flush into frames as shown, locating and fastening battens midway between chines and keelson with one 2-in. #10 *fh* screw to all frames except the mold frame #3. Chines and clamps may be temporarily secured to mold frame #3 with small angle irons, to be later removed so that this frame can be lifted free. You are now ready to trim and fair the entire framework so that planking will lie evenly at

MATERIAL LIST—FALCON

LUMBER REQUIRED

(White oak recommended for all framing members)

Parts	Pieces	Finished Sizes
Bilge batten	2	¾" x 1¾" x 8'
Keel (Inner)	1	1⅛" x 6" x 12'
Keel (outer)	1	¾" x 3" x 12'
Chines	2	¾" x 2" x 14'
Clamps	2	¾" x 1¾" x 15'
Moldings	2	¾" x 1¼" x 15'
Transom frame	1	¾" x 2½" x 10'
Frames	3	¾" x 4" x 8'
Mold frame #3	1	¾" x 4" x 8'
Centerboard case:		
Bed logs	2	1¼" x 4" x 4'
End posts	1	¾" x 1¾" x 4'
Outside framing	1	¾" x 2" x 10'
Outside framing	1	¾" x 1¼" x 8'
Deck beams	3	¾" x 6" x 6'
Coamings	2	½" x 4" x 6'
	2	½" x 4" x 4'
Stem	1	2¼" x 8" x 4'
Mast step	1	1¾" x 6" x 3'
Mast partner	1	1¼" x 8" x 3'
Cockpit carlins	2	¾" x 1¾" x 6'
Breast hook	1	1½" x 8" x 2'
Form	1	2" x 12" x 12'
Mast:		
Sides	2	1⅛" x 3" x 20'
Ends	2	1⅛" x 1⅛" x 20'
Boom:		
Sides	2	¾" x 2" x 12'
Ends	2	⅝" x ¾" x 12'

(Fir—sold in lumber yards as ladder stock.)

EXTERIOR (For Marine Use) PLYWOOD REQUIRED

(Use fir; gum, or birch type plywood for sides, bottom and decking; mahogany preferred for transom though fir may be used.)

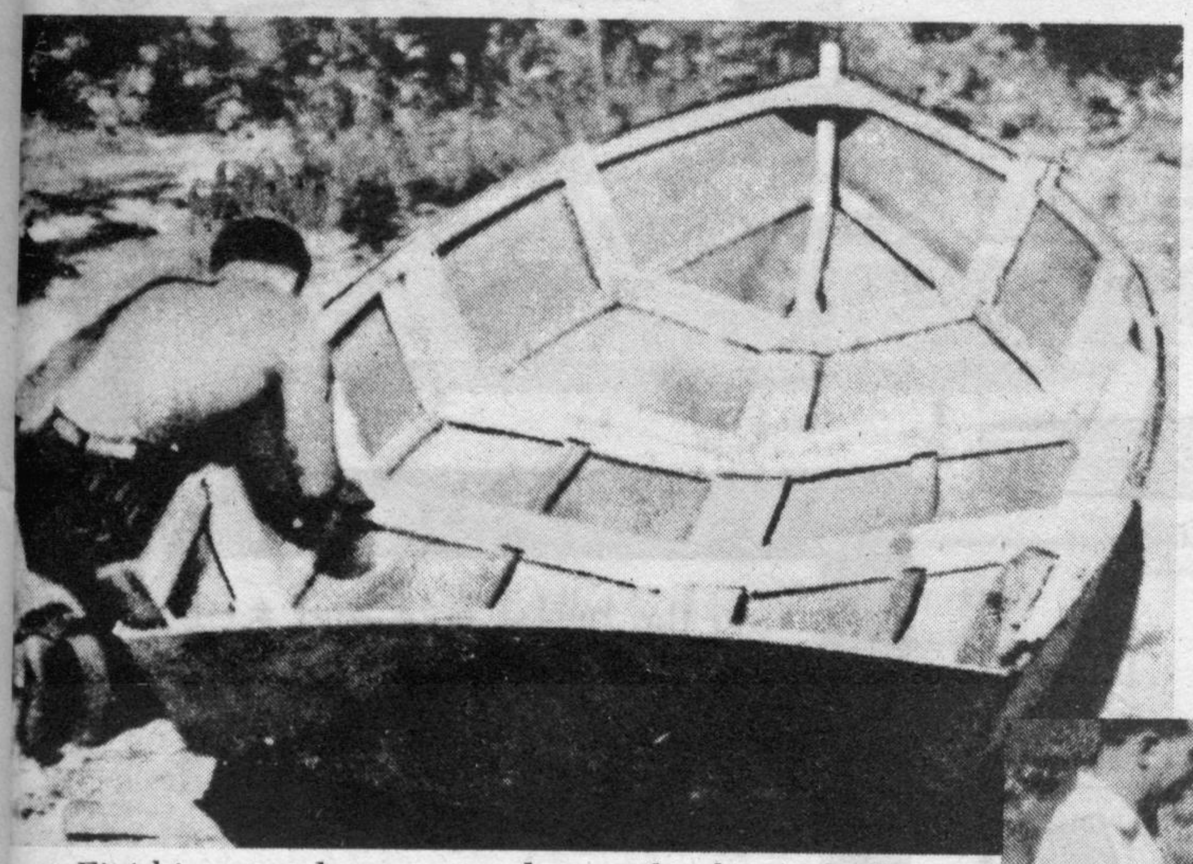
Sides	1	⅜" x 4'	x 16'
Bottom	2	⅜" x 4'	x 9'
	1	⅜" x 4'	x 6'
Decking	3	⅜" x 4'	x 8'
Transom	1	½" x 15"	x 52"

(Waste makes centerboard case and flooring.)

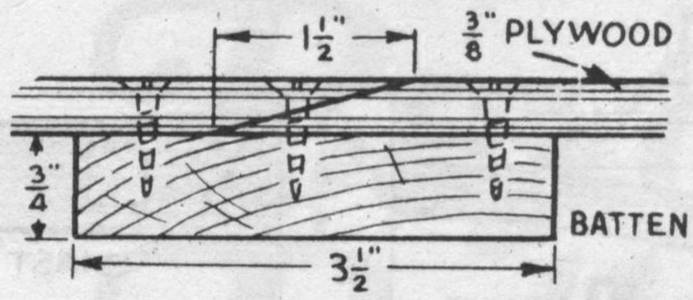
FASTENINGS

3 Gross 1 in. #10 fh screws.
6 Gross 1¼" #10 fh screws.
4 Doz. 1¾" #10 fh screws.
4 Doz. 2" #10 fh screws.
(brass or galvanized for salt water and cadmium plated for fresh water.)

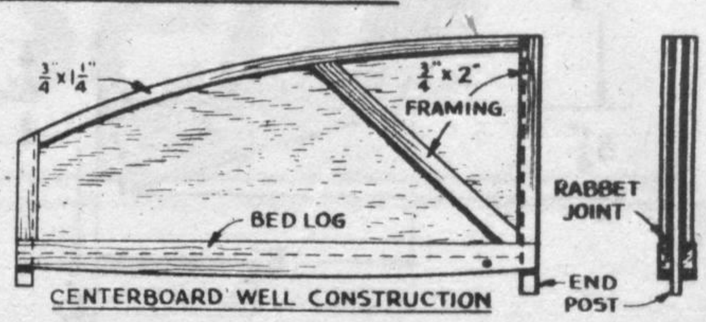
2 Doz. ¼" x 2" galvanized carriage bolts.
1 Doz. ¼" x 6" galvanized carriage bolts.
1 Pt. Resin glue.
1 Qt. Aviation glue (Ferdinand's).
1 Gal. Canvas cement (Ferdinand's).
10 Yds. 36" width 6-oz. canvas.
½ Lb. 5/16" copper tacks.



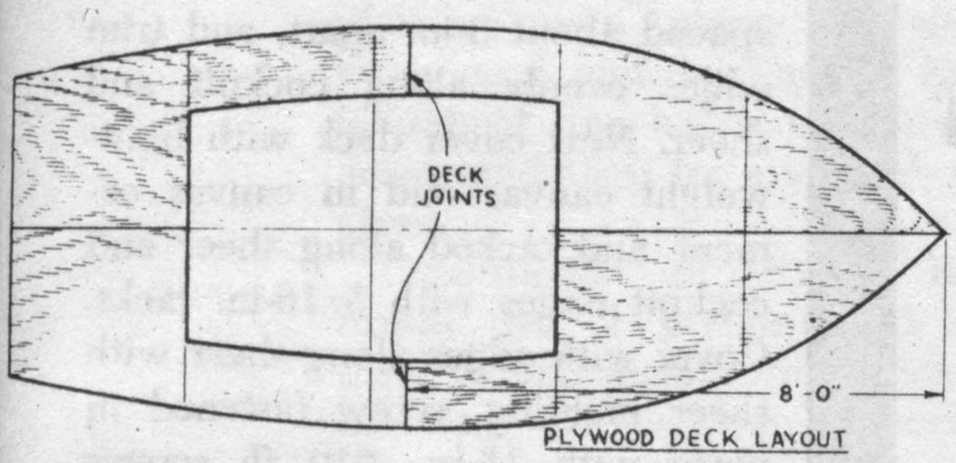
Finishing touches are made on the boat as the completed hull is readied for deck framing.



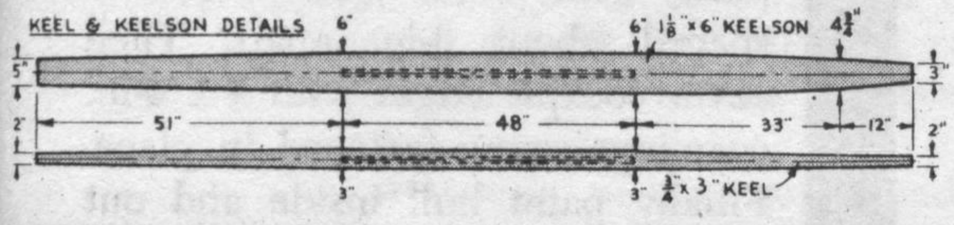
SECTION OF PLYWOOD BUTT JOINT

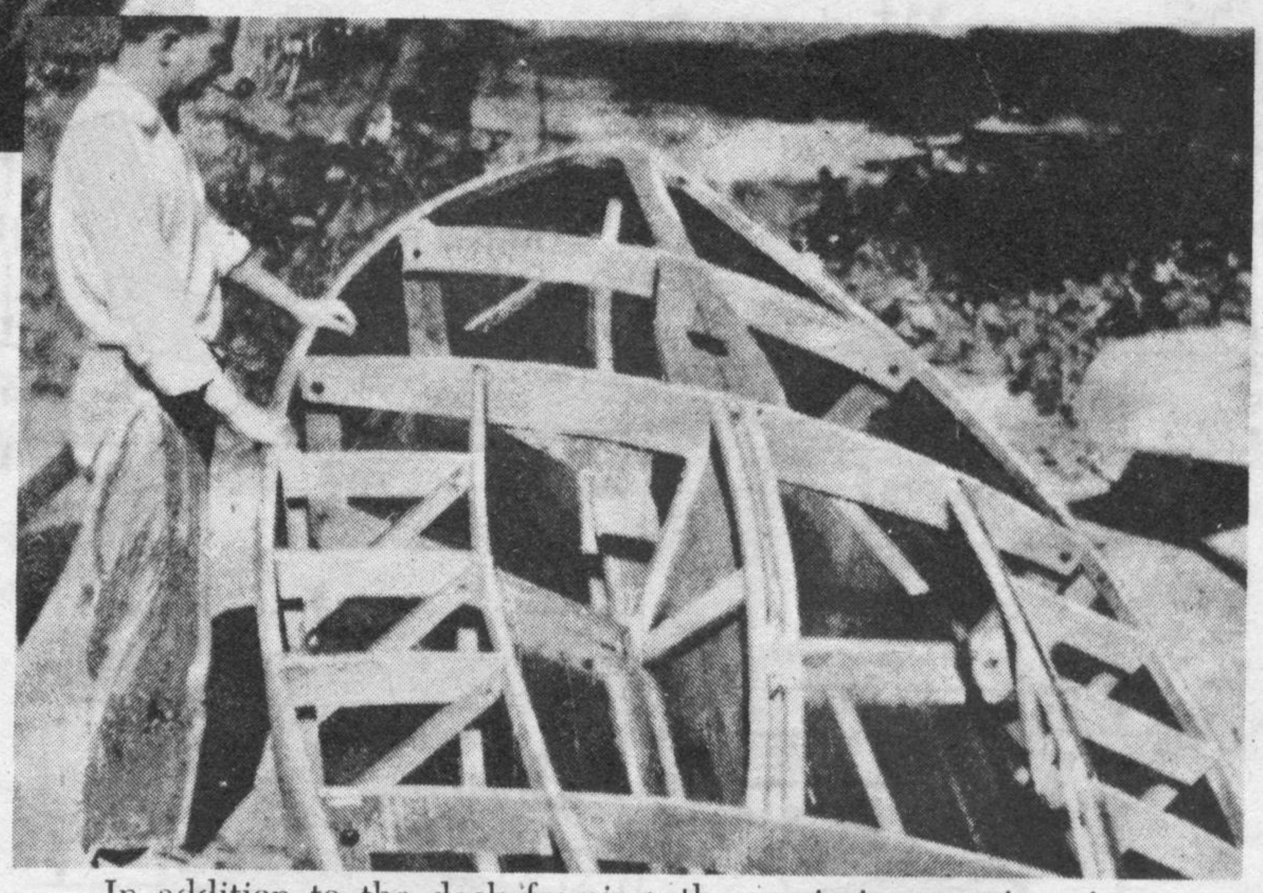


CENTERBOARD WELL CONSTRUCTION



PLYWOOD DECK LAYOUT





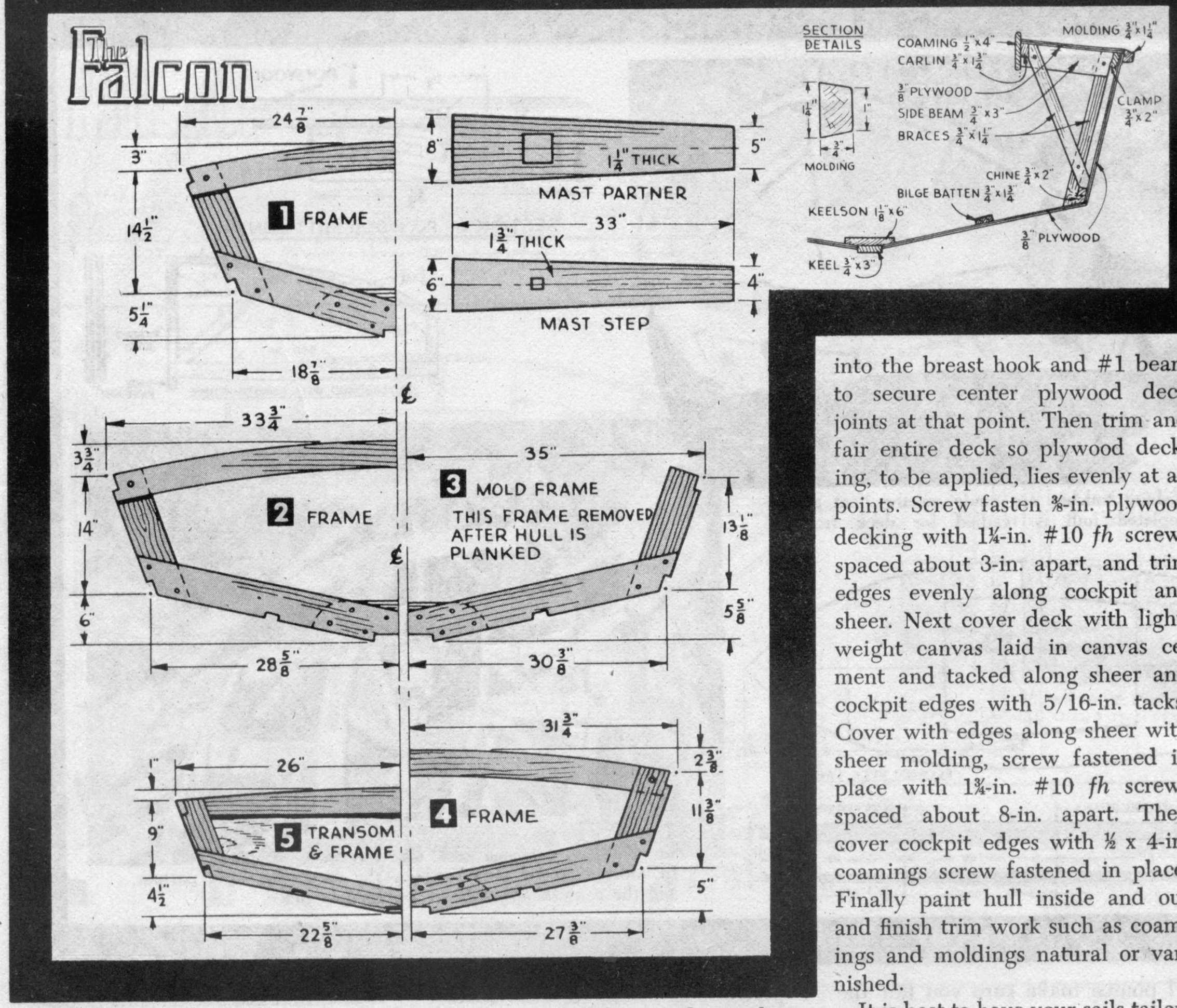
In addition to the deck framing—the mast step, mast partner, and the centerboard well are fastened in place.

all points; make sure you fair the keel so that outer keel fits evenly. Then screw fasten outer keel in place with 1½-in. #10 *fh* screws spaced about 8-in. apart. Next screw fasten the breast hook solidly to clamps and stem.

Cover the sides, bottom and deck with ⅜-in. thick, resin bonded, waterproof (exterior) plywood. Drill lead holes for all fastenings and soap threads of screws for easy entry and to prevent breakage. Coat all contact surfaces with a good aviation glue, and lay cloth strips on glued area and recoat; excess glue is removed with turpentine. Plank sides first by clamping a plywood sheet in position, and marking and cutting it to shape. If full length plywood is not available, use a 1⅛ x 6 in. butt block to back up the plywood joints, bevel ends of plywood as indicated, coat contact surfaces with resin glue, and fasten with closely spaced screws. Attach the side planking with 1-in. #10 *fh* screws along the chines, transom, clamp and stem, spacing them about 2½-in. apart. Trim edges of plywood evenly along chines and prepare to attach bottom planking; fasten bottom planking as you did the sides using 1¼-in. #10 *fh* screws.

With bottom and side planking finished, cover exposed edges of plywood at the stem with ¾ x 1½-in. outer stem piece which is softened in hot water and screw fastened in place. This outer stem piece is later beveled to conform to sweep of sides and bottom planking. Next turn the hull right side up, trim edges of plywood evenly along the clamps, and remove the #3 mold frame. Bolt the deck beams in place with ¼ x 2-in. carriage bolts, using one bolt to each joint, and then secure the mast partner, with 2-in. #10 *fh* screws. Mast step is bolted through to keels as shown.

To make the center board well, saw two bed logs to size, and rabbet upper inside edges of logs to receive the ⅜-in. plywood sides. The bottom side of the log which fits against the keel is now shaped to fit the keel exactly. With the logs in place, drill holes 8-in. apart for the ¼-in. bolts which will secure the logs to the keel later. Saw plywood sides to shape, coat bed log rabbet with aviation glue and fasten plywood sides into the rabbet with 1-in. #10 *fh* screws. Next screw fasten the outer frames to the two plywood sides for additional reinforcement. Now trim hull upside



down, and mark carefully the well slot which is ¾-in. wide and 48-in. long and extends from #2 frame aft. Then cut the centerboard well slot with a key hole or an electric hand saw and turn right side up again. Coat ends of fore end post with aviation glue, insert post in slot, bolt to deck beam and screw fasten to the floor frame with a long screw. Then insert after end post in slot and screw fasten it firmly to keel. Now set well sides in place temporarily, trimming and fitting where necessary. Mark upon well sides location of fore and aft end posts, remove well sides, and, making a cardboard pattern of the centerboard, fit it to well sides. Using a pin to locate the bolt hole, move the pattern up and down until everything fits and works smoothly with no binding at any point. This cardboard pattern may now be used as a template to cut the metal board which will then fit; this preliminary fitting also indicates the exact spot for the bolt upon which board is hinged. (A satisfactory bearing for this purpose is shown in drawings.) To secure well sides in place, coat contact surfaces well with aviation glue and heavy cloth, clamp well sides place and screw fasten them to end posts while bed logs are bolted through keels with ¼ x 6-in. carriage bolts.

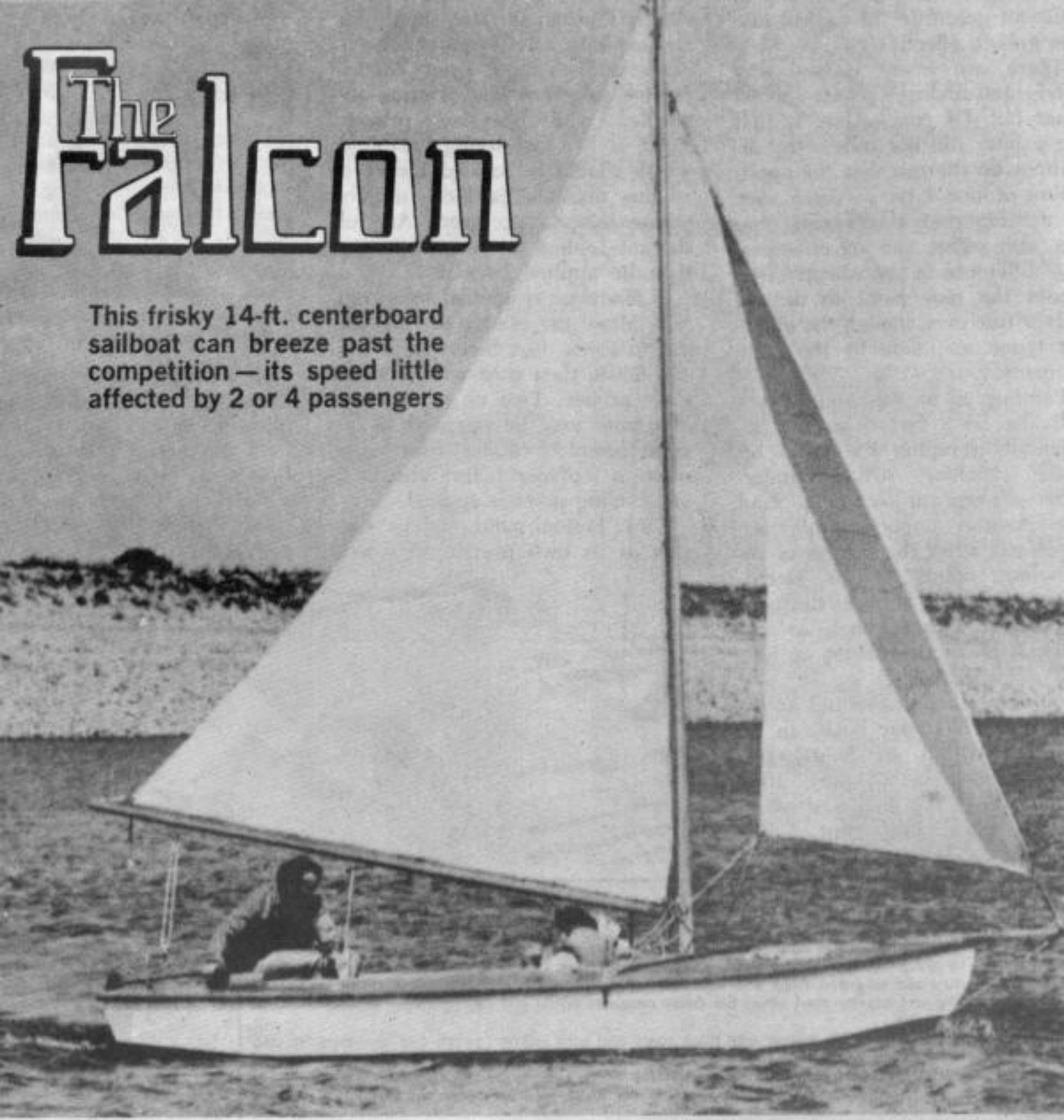
The carlins for the cockpit, cockpit beams and braces are now cut to fit and screw fastened in place. A ¾ x 2-in. batten is notched flush into the breast hook and #1 beam to secure center plywood deck joints at that point. Then trim and fair entire deck so plywood decking, to be applied, lies evenly at all points. Screw fasten ⅜-in. plywood decking with 1¼-in. #10 *fh* screws spaced about 3-in. apart, and trim edges evenly along cockpit and sheer. Next cover deck with lightweight canvas laid in canvas cement and tacked along sheer and cockpit edges with 5/16-in. tacks. Cover with edges along sheer with sheer molding, screw fastened in place with 1¾-in. #10 *fh* screws spaced about 8-in. apart. Then cover cockpit edges with ½ x 4-in. coamings screw fastened in place. Finally paint hull inside and out and finish trim work such as coamings and moldings natural or varnished.

It is best to have your sails tailor-made. The sails for *Falcon* were designed and especially made for this boat by Alan-Clarke, 220 Rte. 25A, Northport, New York 11768. This firm is prepared to supply a set of sails for *Falcon*. Details of the rudder and tiller are self-explanatory, while construction of spars presents no special problems. Use plenty of resin glue and clamp with clamps or even wood strips wired together until glue sets. A complete list of fittings for the finished rigging accompanies this article. ■

To obtain enlarged plan for building Falcon, Craft Print No. 30, see handy order form on last page of this issue.

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This frisky 14-ft. centerboard sailboat can breeze past the competition — its speed little affected by 2 or 4 passengers



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