

Cedar-Strip Canoe

Part 2: Stripping the canoe with cedar strips

Now the fun really begins - building the cedar hull and covering it with fiberglass. You've done the tedious but necessary groundwork, building the wooden form on which to make the canoe. Now the exciting part begins - the actual canoe building. You'll now be gluing cedar strips together to form the hull, and applying fiberglass to the outside surface.



SHOPPING LIST:

SHOPPING LIST	QUANTITY
9/16" staples	1,000
1/4" staples	1,000
Polyurethane sanding sealer	1 Quart
Polyester resin with catalyst (three 40cc tubes)	2 Gallons
Fiberglass cloth, 60" wide, 6 oz.	13 Yards
Glass micro bubbles	½ Pound
Silica thickener	½ Pound
32 oz. disposable resin mixing cups	12
2" disposable paint brushes	4
7" or 9" disposable paint roller covers	5

CUTTING LIST

KEY	PIECES	SIZE & DESCRIPTION
V	70	¼" X ¾" X 16' (Cedar Hull)
W	1	60" x 20' fiberglass (Outside)

BASIC STRIPPING TECHNIQUE

Cedar strips are stapled to the molds to form the hull, with the edge of each strip glued to the edge of the previous strip with yellow carpenter's glue. Use 9/16-in. staples to attach the strips to the molds, and 1/4-in. staples between the molds to hold the edges of the strips tight to each other as the glue cures. Once the hull is complete, the staples are removed. A little trick I learned long ago to make removing the staples easier, is to lay a narrow strip of fabric on the cedar strips before you place the staple. Staple right through the fabric and the strip at the same time. When the glue is dry and you want to remove the staples, you simply pull on the piece of fabric and the staples pull right out!

Begin by checking again that the molds are in the right position (Photo 14), by holding a cedar strip along the molds in various places all over the canoe. The strip should lie across them without gaps or bulges. Move the molds slightly, trim them with a sander, or build them up with a thin strip until they're perfect.

Now cover the edges of the molds with two layers of masking tape and a **heavy** coat of paste wax. This keeps the glue from sticking to the molds.

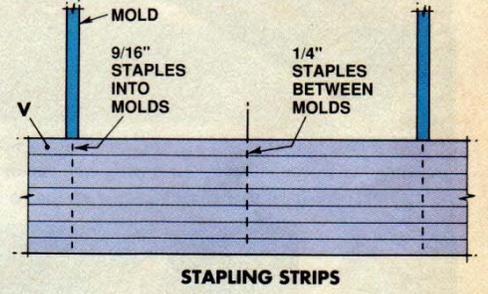
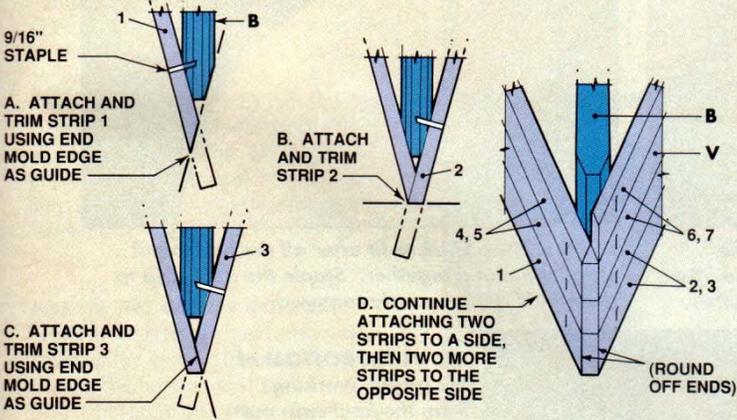
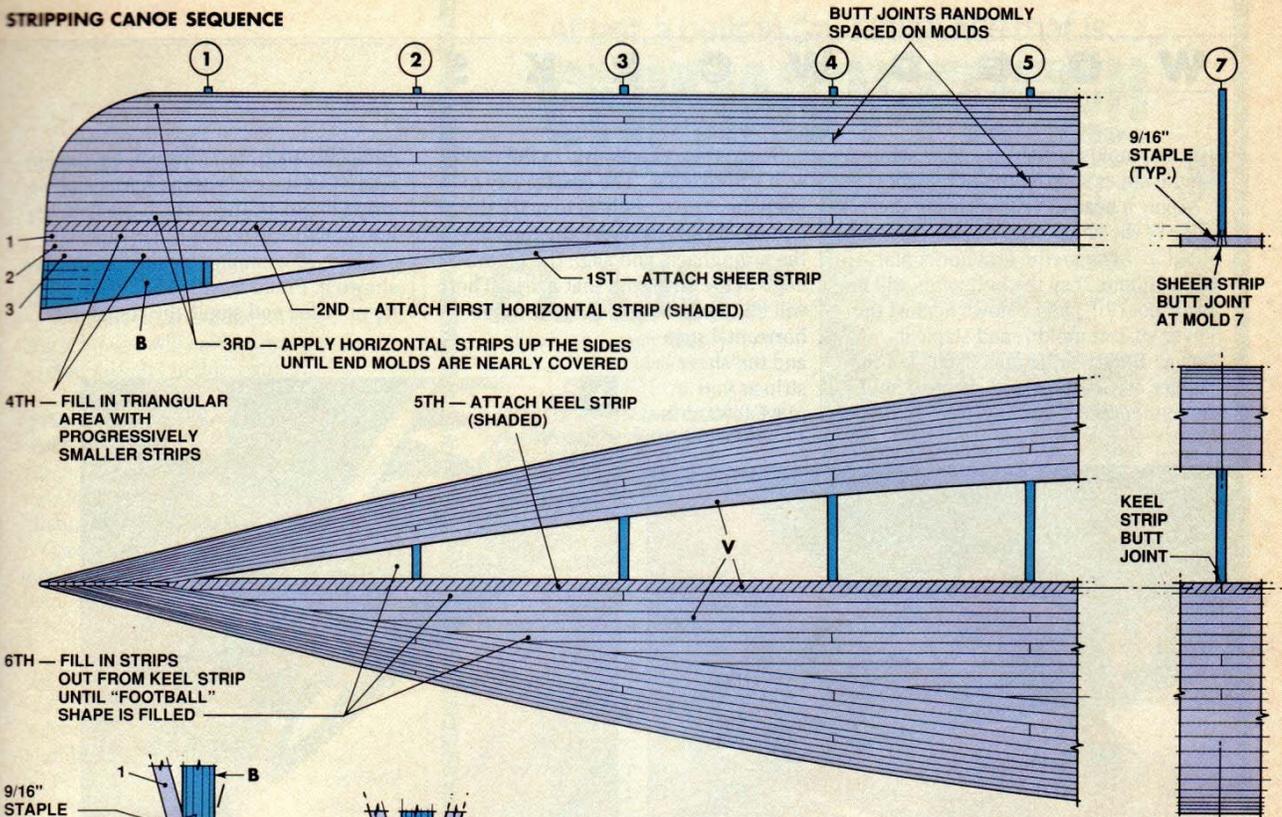
Choose the cedar strips you plan to use. Keep color variations to a minimum by tossing out strips that are too light. Or, if you want to alternate strips from light to dark to give your canoe a personal pattern, you may do that also. Whatever way you choose, to eliminate problems, attach the cedar strips in the order described.

For the sheer strip (Next Photo 1) and all the subsequent horizontal strips, staple first at the center mold (No. 7) then staple out toward the ends. Staple all the tapered strips at their tapered ends first.

Since none of the cedar strips is long enough to cover the entire length of the canoe, you'll need to join the ends of strips together in a butt joint (Photo 3). Keep the positions of the butt joints the same on each side of the canoe so they're mirror images of each other, and stagger the joints up the sides to help conceal them. Apply a small amount of yellow glue to the ends of the strips at each joint.

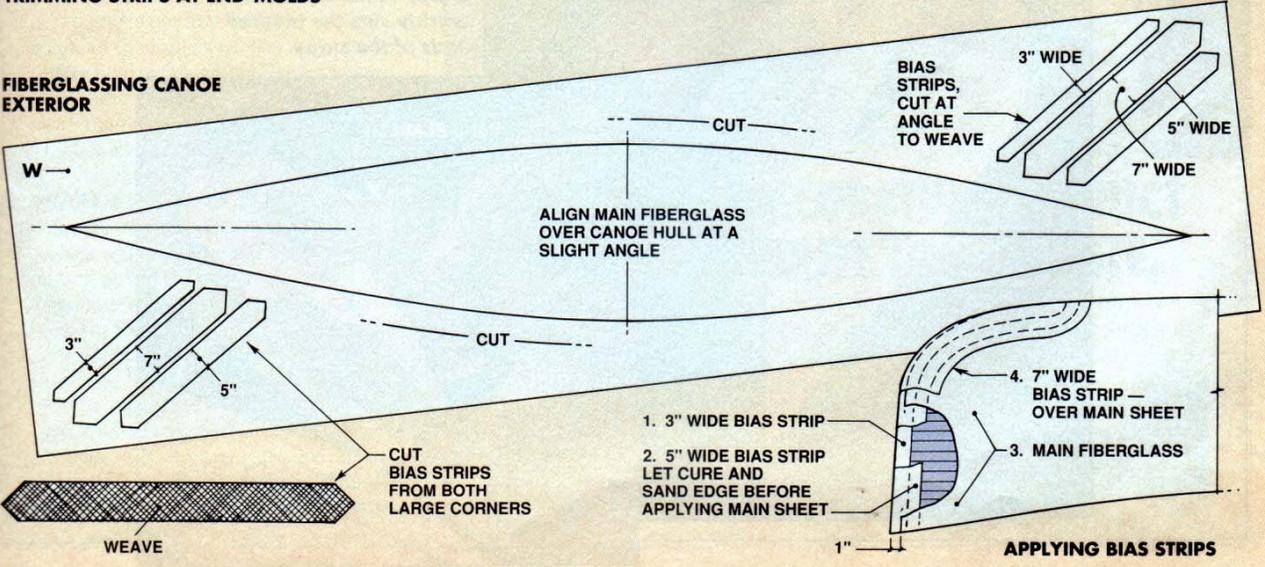
The following page shows the sequence for stripping:

STRIPPING CANOE SEQUENCE



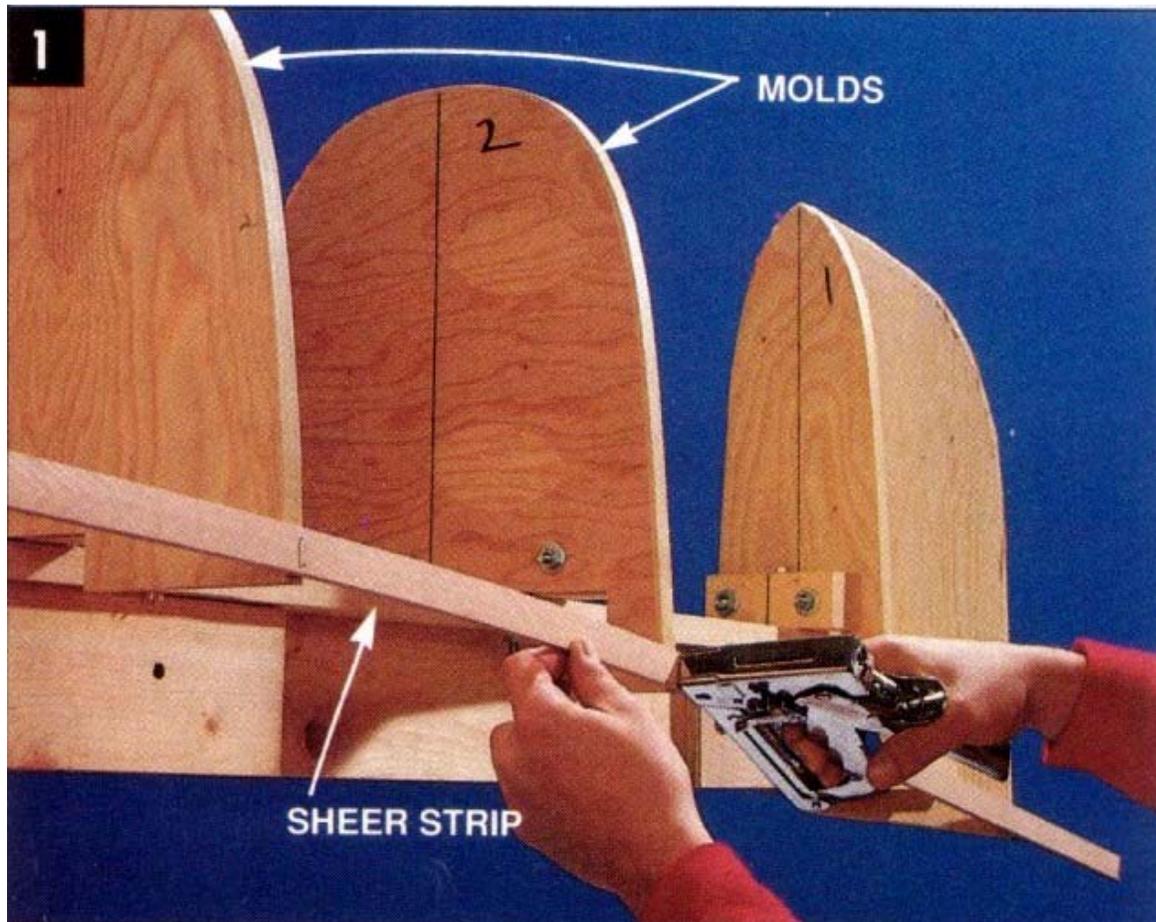
TRIMMING STRIPS AT END MOLDS

FIBERGLASSING CANOE EXTERIOR

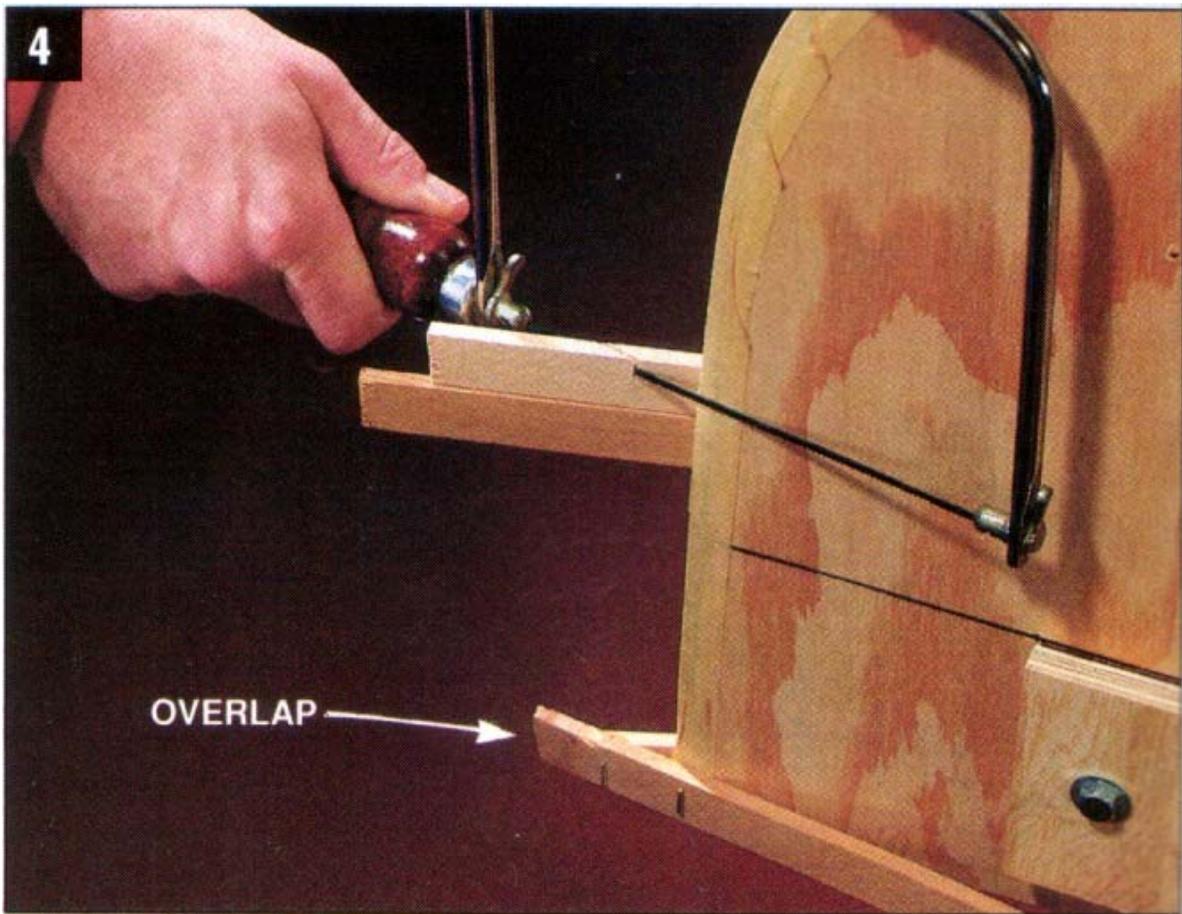


THE SHEER STRIP AND HORIZONTAL STRIPS

Join two strips over mold 7, and staple them along the bottom edges of the molds (Photo 1). This is the sheer strip. Do one side of the canoe first, and then cut off the ends of the strips at the end molds (Photo 4). Now staple the sheer strip on the other side. Remember, if you want to easily remove these staples later, you may want to try my trick with the fabric or canvas strips.



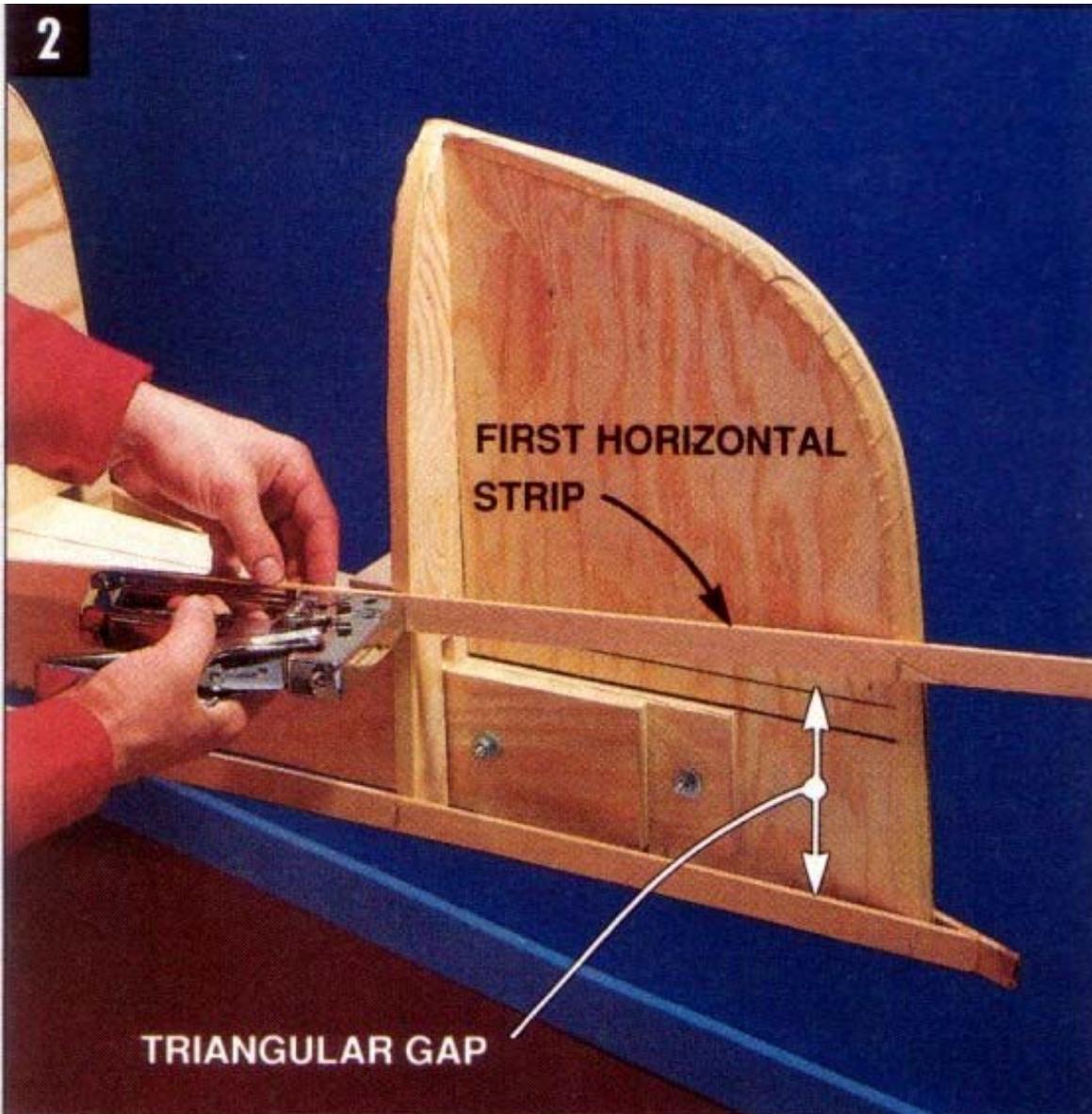
STAPLE THE FIRST CEDAR STRIP to the bottom corner of the molds, bending it smoothly to the ends. This is the "sheer strip."



USE A COPING SAW to trim the ends of the strips. Note how the ends of strips on opposite sides of the canoe overlap. Temporarily laying a strip on the other side will allow you to mark the strips for cutting.

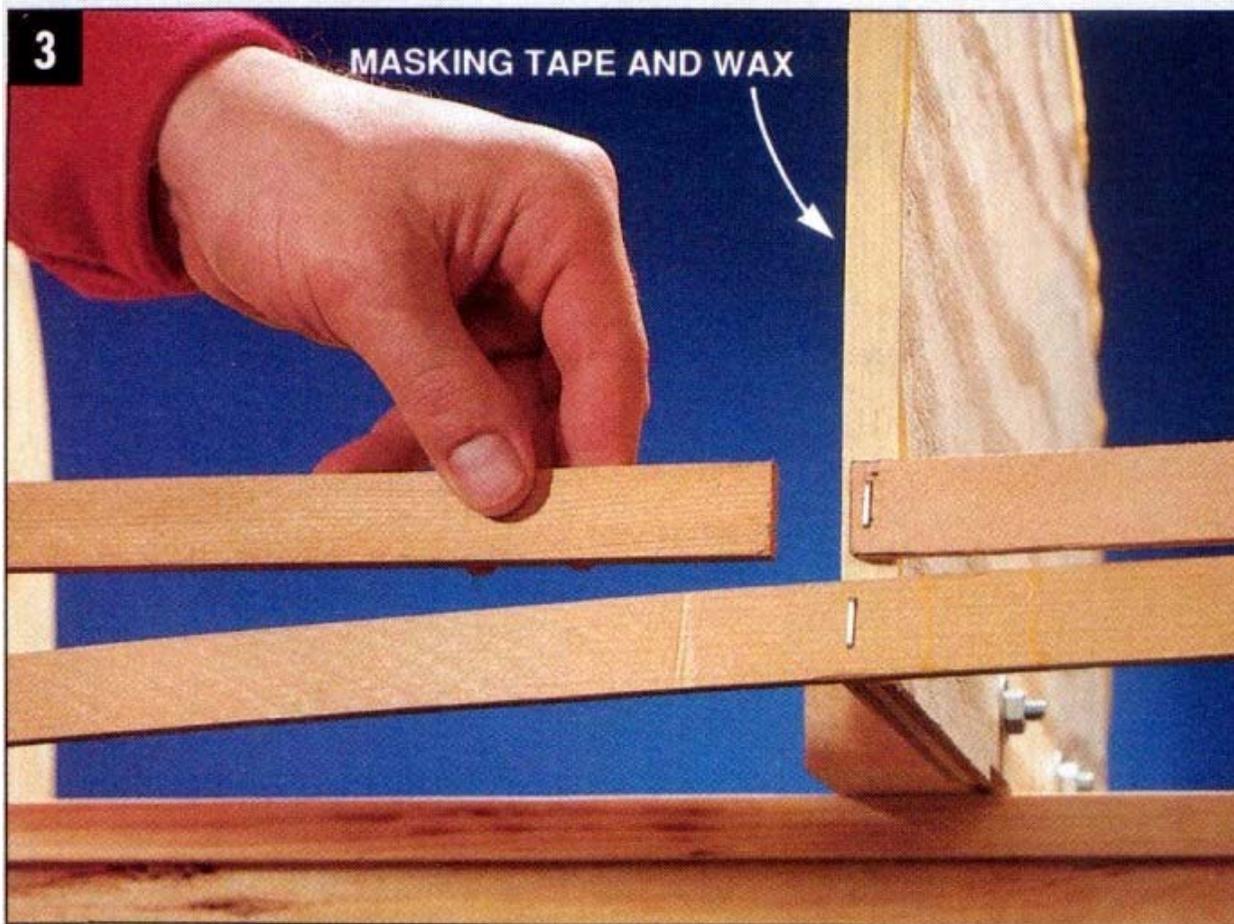
Another saw to use if you don't like coping saws, I don't, is one of the new Japanese saws that cuts on the backstroke. They leave a very fine finish and are very easy to use.

Apply a bead of yellow glue to the edge of the sheer strip from mold 5 to mold 9. Arrange the first horizontal strip (Photo 2) so the butt joints will be over mold 10, push it down against the sheer strip at mold 7, and staple it down. Between the molds, put 1/4-in. staples across the glued strips to hold them together.



STAPLE THE SECOND STRIP horizontally, just above the sheer strip. Strips are edge-glued with regular carpenter's glue and stapled to the molds to hold them in place. Short strips are cut later to fill the triangular gaps.

Staple this second strip to the molds so it's horizontal. The easiest way to keep the strip straight is to mark the end molds $\frac{3}{4}$ in. above the top edge of the strongback, and align the bottom edge of the strip with that mark. There will be triangular gaps between this horizontal strip and the sheer strip as you move toward the ends (Photo 2), but they will be filled in later. Cut the ends of the horizontal strip then attach the first horizontal strip on the other side.



JOIN CEDAR STRIPS end-to-end, always putting the joint over a mold and keeping the joints spread randomly over the surface of the canoe.

Make 10 clamping blocks like the one shown in Photo 5, just a simple piece of wood with a 3/8-in. slot in it. Glue and staple the remaining horizontal strips up the sides (Photo 5), using the clamping blocks to help hold the strips down when necessary. You can add strips continuously, without waiting for the glue on previous strips to dry.

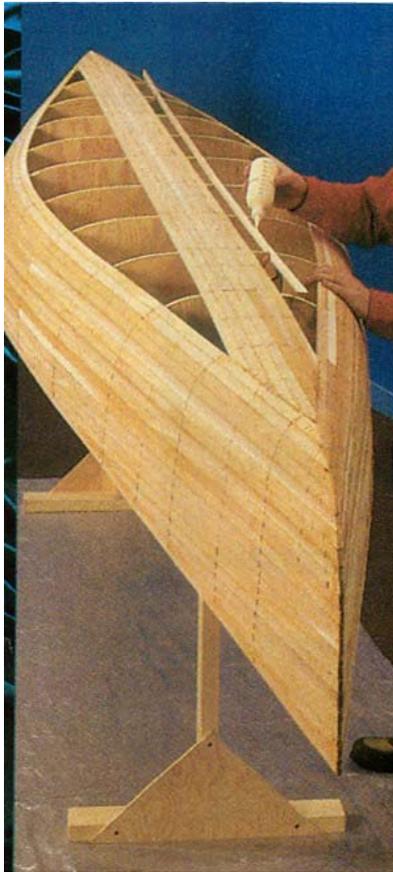
Stop attaching horizontal strips when the next one will cover the top of the end molds and molds 1 and 13.



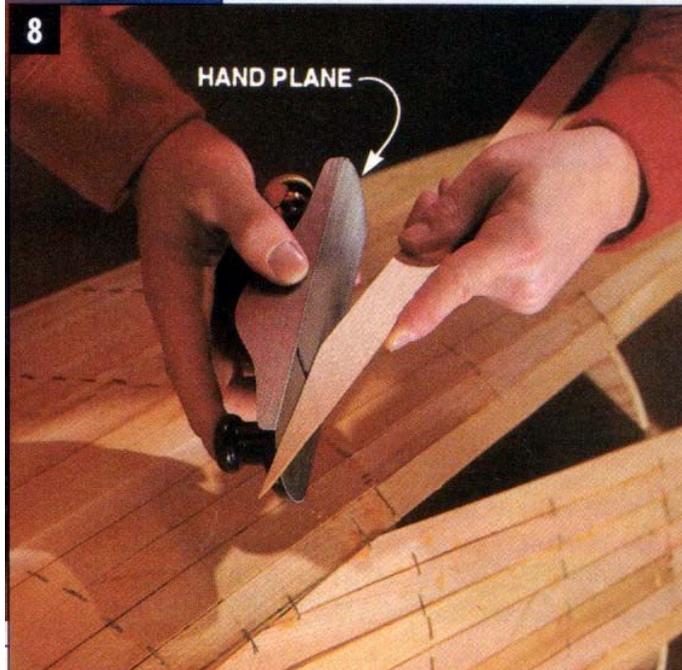
FILL IN THE CANOE BOTTOM

Work down from the keel strip now, tapering the ends of the strips so they fit against the horizontal strips (Photo 7). Glue and staple the strips. For appearance's sake, be careful to cut the tapered edges so they fit tightly on the inside of the hull as well as the outside.

The final strips on both sides are the most difficult to cut. They may be little more than slivers, so make sure they fit well before you glue them.

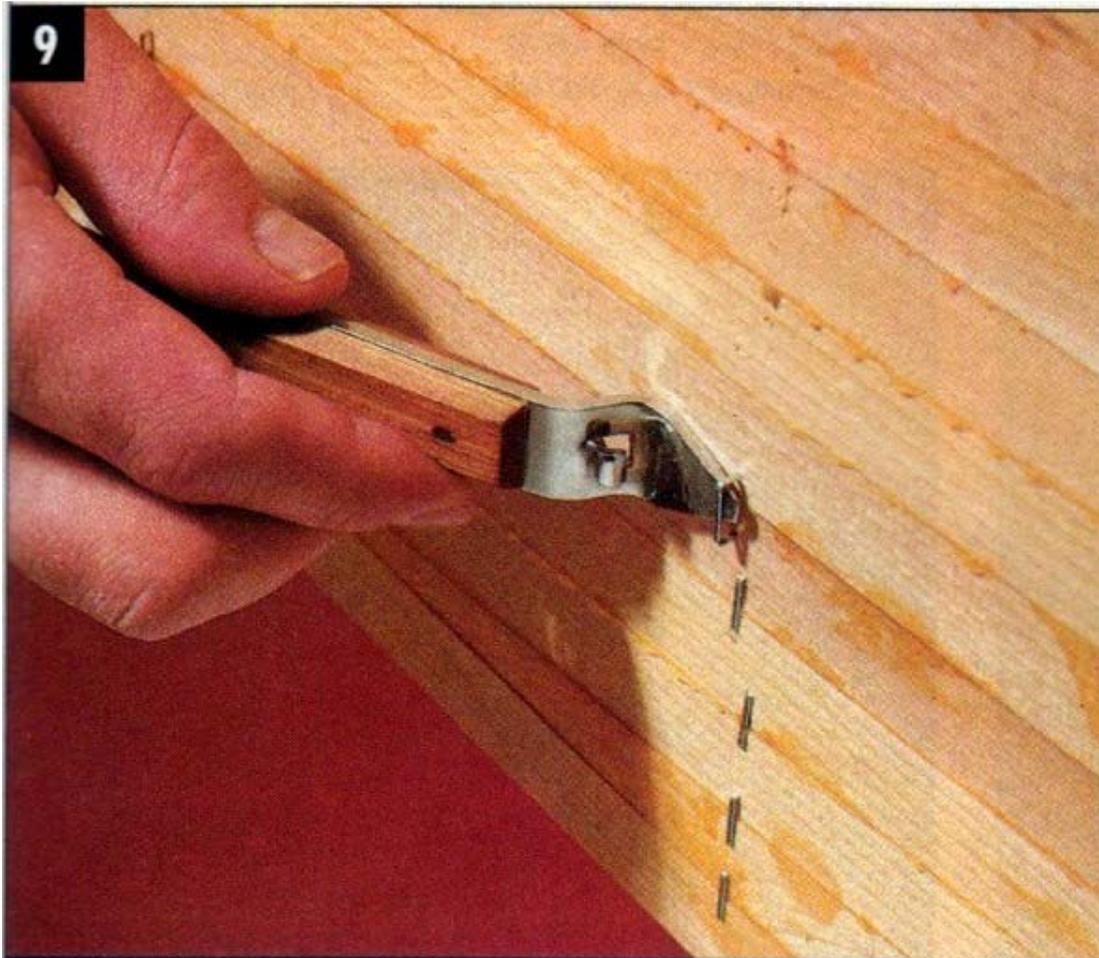


FILL IN THE BOTTOM of the canoe, working from the keel strip outward. A hand plane quickly cuts the tapered ends of the strips.



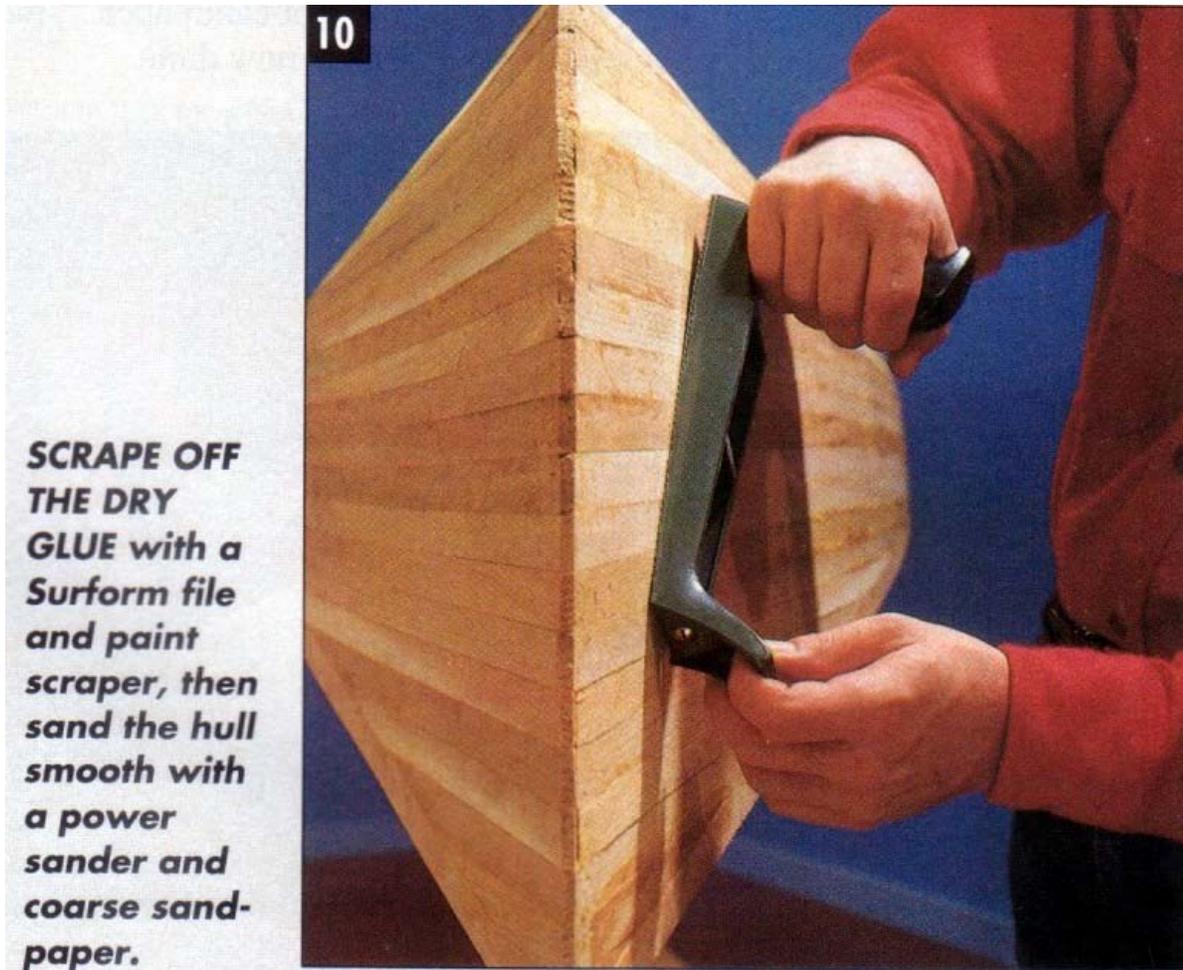
SHAPE AND SAND THE HULL

Once the glue has dried, remove all the staples with a sharpened bottle opener or tack puller (Photo 9). Now, don't you wish you had tried my trick with the fabric or canvas?



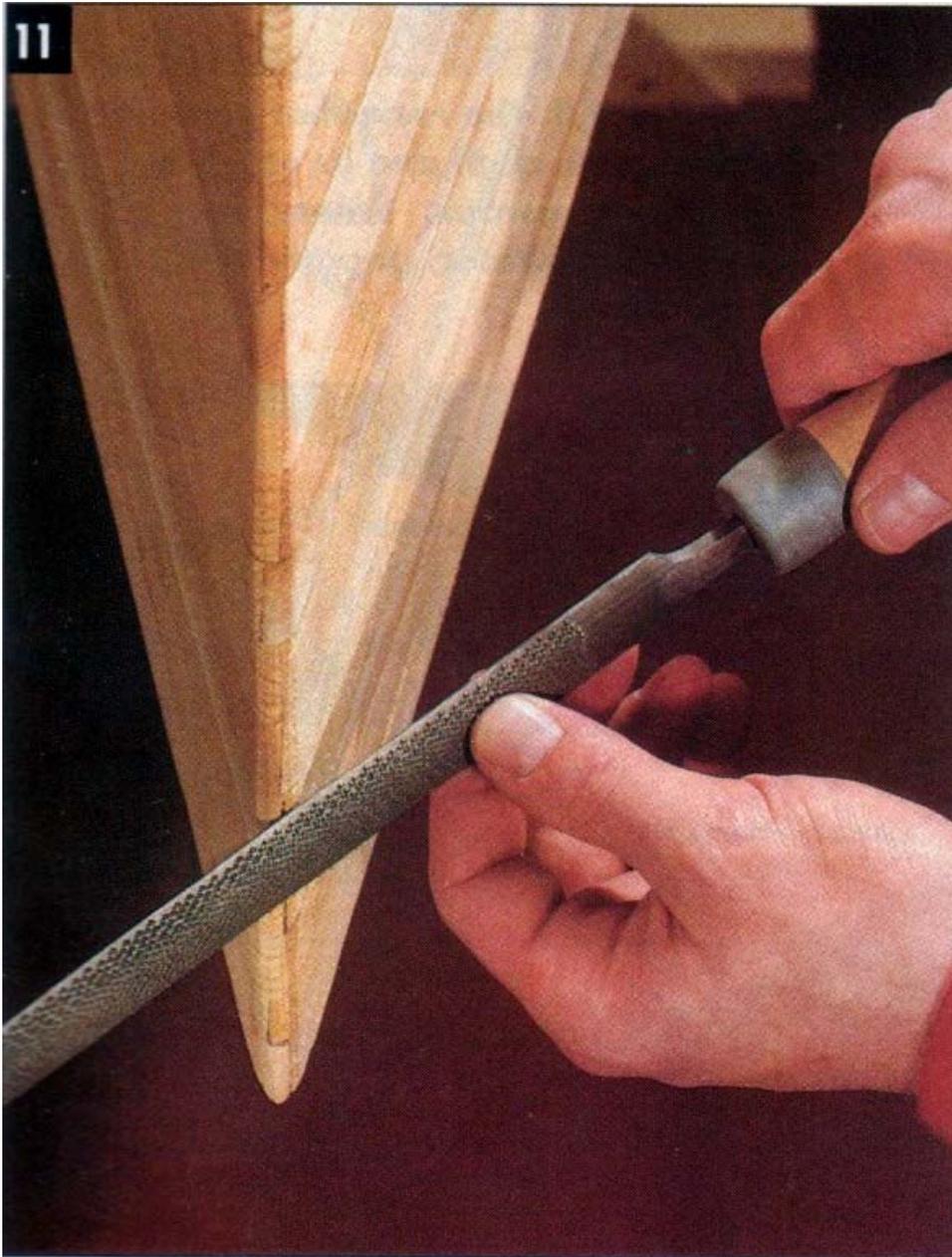
PULL THE STAPLES out when all the strips are in place and the glue is dry. A bottle opener with the tip ground or filed flat is the perfect tool.

Scrape off the dried glue with a paint scraper and a Surform file (Photo 10).



**SCRAPE OFF
THE DRY
GLUE with a
Surform file
and paint
scraper, then
sand the hull
smooth with
a power
sander and
coarse sand-
paper.**

Dab hot water on the hull to help close up the staple holes and lift any dents, then sand the outside of the hull with a finish sander. Start with 40-grit, then work up to 100-grit, making sure there are no flats or depressions in the surface. Round the ends (Photo 11) and sand them, too.



SHAPE THE ENDS of the canoe with a rasp so the edge is about the diameter of a pencil. Sand the entire hull smooth, then coat it with a polyurethane sanding sealer.

Apply one coat of polyurethane sanding sealer to the hull. Lightly sand it after it's dry.

CUT THE FIBERGLASS FOR THE HULL

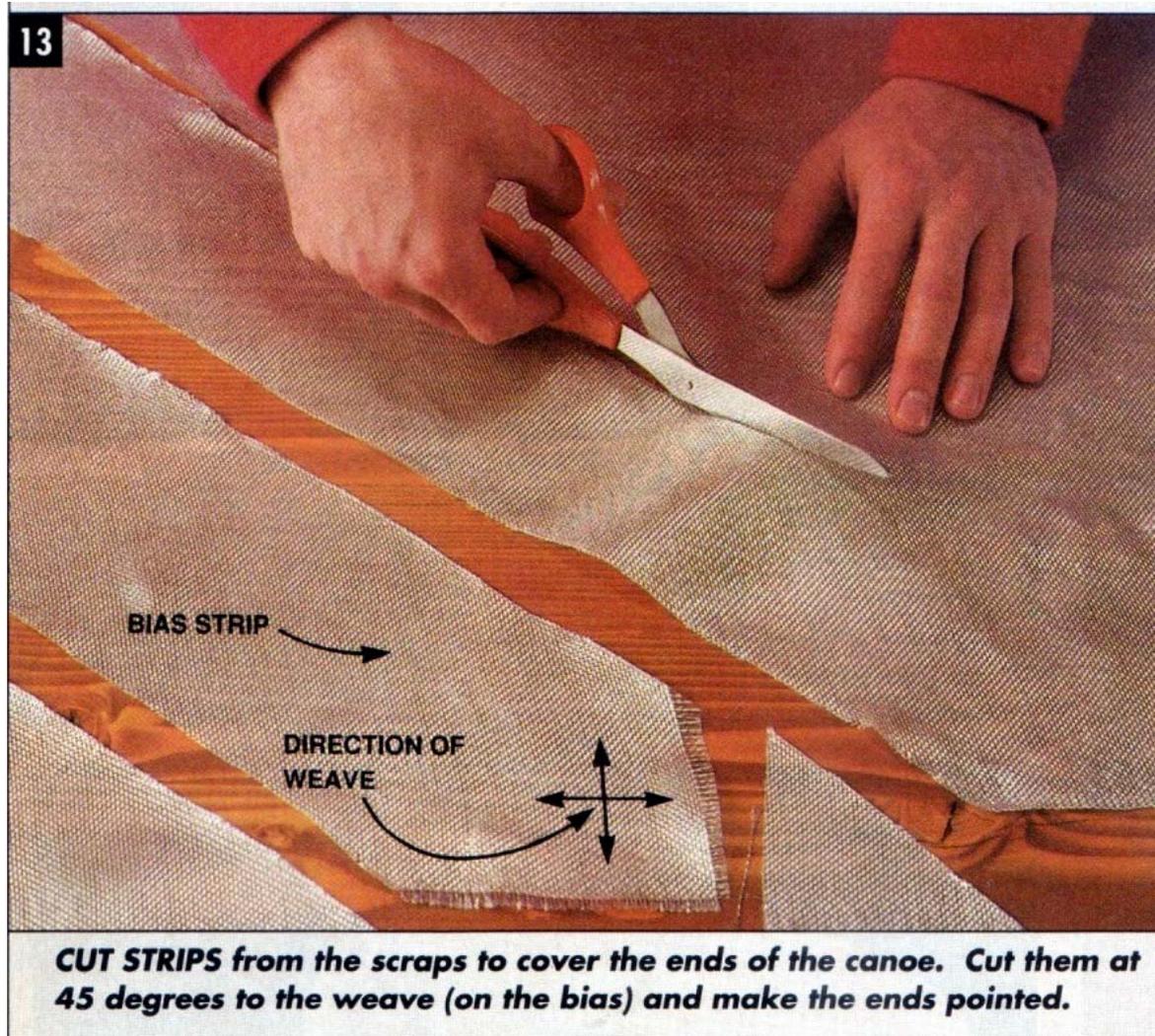
Cut the large sheet of fiberglass cloth to 240 in., drape it over the canoe at as much of an angle as you can, and trim off the excess (Photo 12). Save the cutoff pieces. At the curved ends of the canoe, cut the cloth so it is 1 in. short of the ends (i.e., 1 in. of wood is exposed). When the cloth is cut, roll it back from the ends a few inches without moving the rest of the cloth.



LAY FIBERGLASS cloth over the hull so the weave is at an angle to the keel, then trim off the overhanging pieces. Trim the cloth an inch or so short of the ends of the canoe.

CUT THE BIAS STRIPS

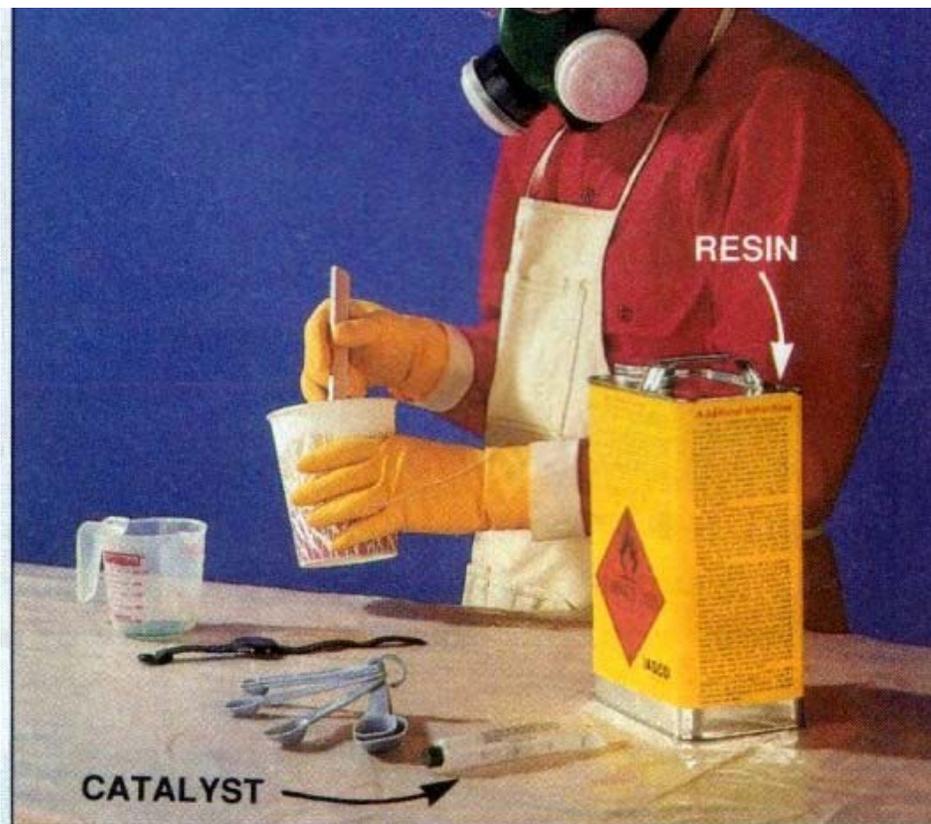
Strips of fiberglass cloth are used to build up a thicker layer on the ends of the canoe for protection. These strips are cut at a 45-degree angle to the weave (cut on the bias) so they lie easily over the curved ends. Cut two 3-in. wide strips, two 5-in. wide strips and two 7-in. wide strips (Photo 13).



MIX THE POLYESTER RESIN AND CATALYST

The polyester resin, which soaks into the glass cloth and glues it to the hull, requires the addition of a catalyst to make it harden. Measure the resin and catalyst by volume, and always work with pint batches so you have plenty of time to apply the catalyzed resin before it starts to set up. Apply the resin when it, the air and the canoe are at about 70 degrees, and don't work in direct sunlight, which would cause the hull to heat up unevenly.

Caution: This stuff is not good to breathe or touch. Wear rubber gloves and a respirator with activated carbon filters. The catalyst can blind you if it gets in your eyes, so wear goggles, too. You'll feel like Darth Vader (Photo 14), but it's worth it.



SAFETY FIRST! The resin that goes on the fiberglass cloth and its catalyst are both dangerous. Wear a carbon-filter respirator, goggles and rubber gloves.

The resin has wax in it to make it sand easily, so shake the can every time you pour from it to make sure the wax is evenly distributed.

Pour 1 pint (16 oz.) of resin in a mixing cup, add 1/2 tablespoon of catalyst, and stir for one minute. You'll have about 20 minutes to work with the catalyzed resin before it starts to set up.

APPLY THE BIAS STRIPS

Hold a 3-in. strip on the end of the canoe and brush on the resin, using a disposable brush (Photo 15). Wear all safety equipment and make sure you have plenty of ventilation - even if you're wearing a respirator, you shouldn't let the fumes accumulate in your house. Apply the 5-in. strips on top of the 3-in. strips while the 3-in. strips are still wet. Allow the catalyzed resin to cure overnight, then sand with 80-grit sandpaper.



START WITH THE END STRIPS, laying down the dry cloth, then applying resin with a disposable brush. These strips (two under and one over the main cloth layer) provide extra strength in this critical area.

APPLY THE FIBERGLASS TO THE HULL

Align the main sheet of fiberglass on the hull, and then have a helper mix resin while you apply it. Pour a 1 pint batch of catalyzed resin into the roller tray and apply it to the fiberglass with a paint roller (Photo 16). Have a spare roller and tray ready, in case the resin sets up in the tray before you use it all.



APPLY CLOTH AND RESIN to the entire hull. Lay the dry cloth on the hull, and apply the resin with a paint roller. Work out from the center in 2-ft. sections. Let it cure, sand and it's done.

Work out all wrinkles in the fiberglass with the paint roller while applying the first coat of resin to the hull. Now apply the 7-in. wide bias strips that cover the ends. Apply a second coat of catalyzed resin to the entire hull immediately after you complete the first coat. Allow the resin to cure for about one hour, and then use a sharp utility knife to carefully cut the overhanging edges flush with the edges of the sheer strips

Let the resin cure overnight, then sand the hull with 80-grit sandpaper in a finish sander to smooth out the surface. Don't sand into the fiberglass cloth,
Apply a third and final coat of catalyzed resin to the hull to give it a smooth finish. Let the resin cure overnight, then sand the hull smooth with 120-grit sandpaper. The outside of the hull is now done.