FRAMING PLAN

CUT AWAY DECK AS SHOWN FOR ACCESS TO BATTERY, MOTOR, ETC.

DECK PLAN

1/16" SHEET

1/16" SQ. RUB RAILS

"ANNIE"
Plate 1
PROFILE

FULL SIZE PLANS FREE! SEE PAGE 44!

0.049" DIA. PIANO WIRE, RUDDER CUT FROM 0.020" ALUMINUM OR 0.030" CELLULOID.

SIDE VIEW OF T2, SHOWING TAPERED BOTTOM

ONE OF EACH PART REQUIRED, UNLESS MARKED OTHERWISE. ALL PARTS IN LAYOUT BELOW OF 1/8" SHEET (EXCEPT S2, WHICH IS 1/16"

PARTS LAYOUT

THE SHADY PORTIONS OF F-1 TO F-5 ARE TRIMMED OFF AFTER HULL COVERING HAS BEEN APPLIED.

DESIGNED AND DRAWN BY PAUL PLECAN
TUGBOAT "ANNIE"
by Paul Plecan

Shiver m' timbers and belay my gab if the "Annie" doesn't make one of the sleekest models afloat.

The top photo gives you a good look at the side view of the "Annie," showing what a realistic appearance she has. Use additional commercial fittings and add more detail if you prefer even greater realism. Note the motor and battery installation in the bottom photo. The cabin is removable offering good accessibility to the power unit. All balsa construction makes the model light and comparatively fast in the water. Props and motors can be experimented with until the most efficient power combination is found.

Tugboat "Annie" is a real performer, even though her length scarcely exceeds 12". Powered by a Dyna-Mite or Hi-Drive electric motor (or an equivalent brand), and with fresh batteries in the cabin, she'll put many of the fancier express cruisers in their place.

While many of the present-day kits for runabouts and "fast cruisers" use mahogany plywood and heavy fittings, we use balsa instead. This puts our boat at a definite advantage, as we build it light, bringing it to the desired waterline by using more or heavier batteries, which in turn gives us more "pep" than a tug is supposed to have. Easily able to carry three of the medium-sized flashlight batteries or a heavy-duty radio "C" battery, "Annie" will keep buzzing around the pond long after the other "fast" jobs have run down.

You can start your tug right now if you have some 1/4" sheet balsa lying around. The "Parts Layout" on the half-size plans herewith is marked off in a 1/2" square grid to facilitate enlarging the various parts to full size, but it will be much easier if you use the free full-size plans offered by Flying Monkeys (see Page 44). While waiting for the full-size plans to arrive, it will not hurt to read this article through to familiarize yourself with the construction procedure.

THE HULL: Our tugboat's hull is made the way the big boats are—upside down. This is done for a very good reason. By working on a flat board, we can line the frames up quickly and easily, but more important, the framework can be worked on most easily with the hull inverted.
**TUGBOAT “ANNIE”**

If you will refer to the “Hull Assembly” steps, you will see how the hull goes together. Come on, let’s get those frames cut out! Frames F1 to F5 are assembled as per step 1 by pinning them down to the top view — we assume you have a nice flat board to work on. Next, we slip the two stringers B3 in place, followed by the 1/8" square stringers (six in all).

**COVERING THE HULL:** With step 2 done, step 3 merely calls for the framework to be covered, or “planked.” While 1/8" sheet can be used, you will get a much stronger and easier job by using 3/16" x 1/4" strips. First pin on strips between where the keel should be and the stringers closest to the keel. The strips should go on about parallel to the stringers and each should fit nice and snug against the strip next to it.

The covering should extend a little beyond the edges of the stringers to allow trimming when the cement has dried fully. While waiting for the cement to dry (give it a half hour or so) you can cut out all the remaining parts in the “Parts Layout.”

Once the center portion has been covered, trim the covering off each side near the stringers to allow the next section to be covered. A close look at the cross-section drawing (3) will show you how. With the second sections done, only the sides remain to be covered. These are the easiest, and can be done with 1/4" sheet (about 1” wide). Allow the cement to dry well at this stage, as handling the hull before the cement is really dry will allow the entire assembly to warp out of shape. Either proceed with cabin construction or allow the pinned-down frame to dry overnight.

**DECKING:** Now we are ready to trim off the “legs” of the frames to allow decking to be applied. (The parts of the frames that are shaded on the plans are cut away.) Decking is a cinch. Just slap on some 1/16" sheet all over the place. Well, maybe we should try to be a little neat, huh? It will be easier if strips are used here, as we did on the bottom covering. Either 3/16" x 1/4" or 1/8" x 1/2" strips will do.

The reason we advise strip-work is that it allows more time to get the strips in place before your cement has dried. In using large sheets, one has to cover quite a bit of framework with cement, then pin down the large sheet in many places to keep it secure. This is no snap to do before the cement has dried.

Well, you have the hull covered. So now the two T2 pieces can be added to the aft and the stem-block added to the front end. When carved to shape to blend in with the lines of the rest of the hull, you’ll see that the main job is done. The deck is now cut away between the B3 stringers (see section sketch), as far aft as the cross-piece in front of F4 and as far forward as shown on the “Framing Plan.” Then the two B1 motor mounts can be cemented in.

**SHAFT INSTALLATION:** Now the important part. Drill a hole through the bottom planking for the shaft to go through. An “Impy” shaft-propeller assembly was used in the original model, cut down slightly. If you want to cut down the shaft length more, to mount the motor back further, we say “Don’t (Please turn to Page 56)”
FRAMING PLAN

DECK PLAN

"ANNIE"
Plate 1
PROFILE

FULL SIZE PLANS FREE! SEE PAGE 44!

PARTS LAYOUT

BOAT MODELS
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TUGBOAT "ANNE" (Continued from Page 52)

"do it." True, there will be more battery space and greater stability with the motor in back, yet from a low point when your boat gets blown out to the middle of a pond and the breeze dies down, you'll be sorry.

With the motor in the position shown, you will note that the shaft housing goes up past the water level, keeping the water from leaking in between the shaft and the tubing around it. Just make it the way it is shown. The original boat "wandered" to the center of a lake once and was out more than an hour in choppy water with waves coming up to the breakwater without taking on any water below deck.

To get back to construction—the fillet piece B2 is optional, but is a great help in aligning the shaft. It fits between the shaft housing and the bottom of the hull.

MOTOR INSTALLATION: Before mounting the motor, solder 6" lengths of hook-up wire to the terminals on the motor. With the hull on its side, slip the motor between the B1 mounts and shim it in place with thin balsa sheeting to line it up with the prop shaft. Tighten the set-screw on the shaft and hook up the motor to a battery to check the r.p.m.'s of the prop while shifting the motor back and forth. You will notice a distinct fluctuation in r.p.m.'s when moving the motor.

Naturally, with motor and prop shaft in good alignment, the rews will increase. So, when the right position is found, add cement between the motor and mounts to keep it lined up. With the motor permanently mounted, take out the prop shaft and dab a little oil on it (the little tubes of lubricant that come with a "must" for this) and slip in place.

Lock the set-screws on the shaft with a fairly tight turn (don't force it; the threads on these little screws won't take much mauling). A single drop of oil on the ends of the motor shaft finishes this part of the hull work.

CABIN CONSTRUCTION: The cabin can be added any way you can gather from one look at the "Cabin As- sembly" sketch. Parts C1 to C10 are cut out of medium 7/8" sheet, then assembled in C9 and 4 are cemented to the under side of C1 first. The C2 pieces go on the sides next, followed by C5 (bottom of C5 and C2 to be flush with each other). C6 goes in between the C2 pieces (bottoms flush). The C7 pieces are added now, followed by C8 and C9. With C10 on top, the assembly is complete.

Now add deck deals. The pine mast is tapered and slipped in place. Balsa won't do for a mast—it will snap off too easily. The funnel is shaped up from balsa, but you can know at this point. It will pay to hollow it out to cut down weight, as we don't want a top-heavy boat.

Now, put the lifeboat and davits in place. Any type boat about 2" long will do, but the usual double-ended shown is most often employed on tugs. A cast-metal cowl vent is easy to get in most hobby shops, being fairly heavy so it will pay to carve one of balsa. Remember, we want a light cabin.

FINAL ASSEMBLY: Let's see now, we never did finish that hull completely. The keel (K1) should fit snugly on the hull after the bottom "corner" of planking has been sanded flat for 7/8" or so. Take your time and get a neat joint. K2 and K3 go on the same way. And don't forget the little gusset piece, K4. A 7/8" square pine reinforcement is fitted to the aft end of K1 and drilled to take in the lake.