Control Line Carrier Scale:

F8F-2 Bearcat

A "natural" for Navy's Carrier Event, this U/C nifty can also win for you in flying scale

By S. CALHOUN SMITH

■ Last of the piston-engined Grumman fighters, the Bearcat represented the ultimate in carrier fighters. Using the big R-2800 series Pratt & Whitney 2250 hp engine, the Bearcat's take-off and climb performance was the hottest of any prop fighter. In a demonstration before the public a few years ago the Bearcat was airborne in 115 feet and climbed to 10,000 feet in 100 seconds.

The F8F-2, capable of nearly 500 mph top speed, carried a variety of armament. Four .50 cal. machine guns or four 20-mm cannon were mounted in the wings. Two 1000-lb. bombs and four 5" HVAR Rockets could be carried under the wings. Various size auxiliary tanks could be slung under the fuselage belly for longer range.

Built at the end of World War II, this worthy successor to the Wildcat and Hellcat did not see any action but joined the fleet immediately after the war. The Bearcat has served well, and the few left are used for training at reserve bases. Some were sold to the French Air Force. Air Show fans will best remember the Bearcats used by the famous "Blue Angels" Navy Aerobatic team during 1947-1949.

The stubby fighter makes an excellent scale control-liner. Our model was scaled directly from Grumman drawings, so accuracy is assured. Scale is 1 in. = 1 ft., giving the model 35½" wingspan. The drawings show the model set up for the Navy Carrier Event and this extra gear makes a fairly heavy ship. The original model weighed 45 oz. This may seem high, but the big O&R .60 in the nose hauled it around handily and, most vital, furnished the power needed for good slow flight handling.

The slow flight phase of carrier flying is felt to be the most important, so the model was designed for best efficiency here. The ship is balanced exactly at the 25% chord line, stabilizer and elevator areas are increased slightly and the thick lifting airfoil of the big ship is retained. Line leads are angled back slightly, bellcrank is mounted low in fuselage and outer wing tip is weighted to make sure the model stays out on the end of the lines when flown slowly in any wind. Here again weight helps, because the

model just bores through the wind and flies steady as a rock.

The plans include many scale items that were not on the original model, but could be added if a strictly flying scale job is to be built. There are a few changes that should be made for this type of flying. First of all the big .60 engine would not be needed since battery and ignition system weight would be eliminated if glow plug engine was used. The smallest engine usable would be .29 displacement, with .35-.45 preferred. Tail weight should be kept as low as possible. Built-up 1/16" sheet covered tails and omission of hook gear in tail would solve this problem, so that balance could be retained with lighter engine. Landing gear wire could be 3/32" dia. instead of ⅛" dia. shown. Further lightening could be achieved by using 3/32" skin on fuselage rather than ⅛" shown.

Construction follows standard practice, having Fireball type wings, crutch, former and planked fuselage and solid sheet tails.

Start with the wing since this must be joined to the fuselage before the latter can be completed. Make up the wing skins from 6" wide 1/16" sheet if obtainable. If not, butt-edge-cement 3" wide sheets to needed width. Mark off rib positions on what will become the wing top skin. Cement ribs in place, starting at tips and working toward center section. Make wings in two halves. Bevel one edge of leading edge stock to fit against skin and rib ends snugly, and cement in place.

When dry, bevel the other edge to follow curve of rib ends on lower surface. Cut out ⅛" plywood spars and bend landing gear to shape. Slide gear through spars and bolt with "J" bolts, then slide spars into place in rib slots. This will join wing halves. Add ¼" triangular gussets at spar-rib intersections as shown. This will add considerable strength at these highly stressed points. Add ¼" plywood bellcrank mount along front spar rear. Build up ½" sheet blocks at center section around leading edge. These will be carved later to form air scoop in wing leading edge. Note that ½" sheet on top does not extend all the way to wing center. This block will butt against plywood side in fuselage, so make sure the space between ends of blocks is correct.

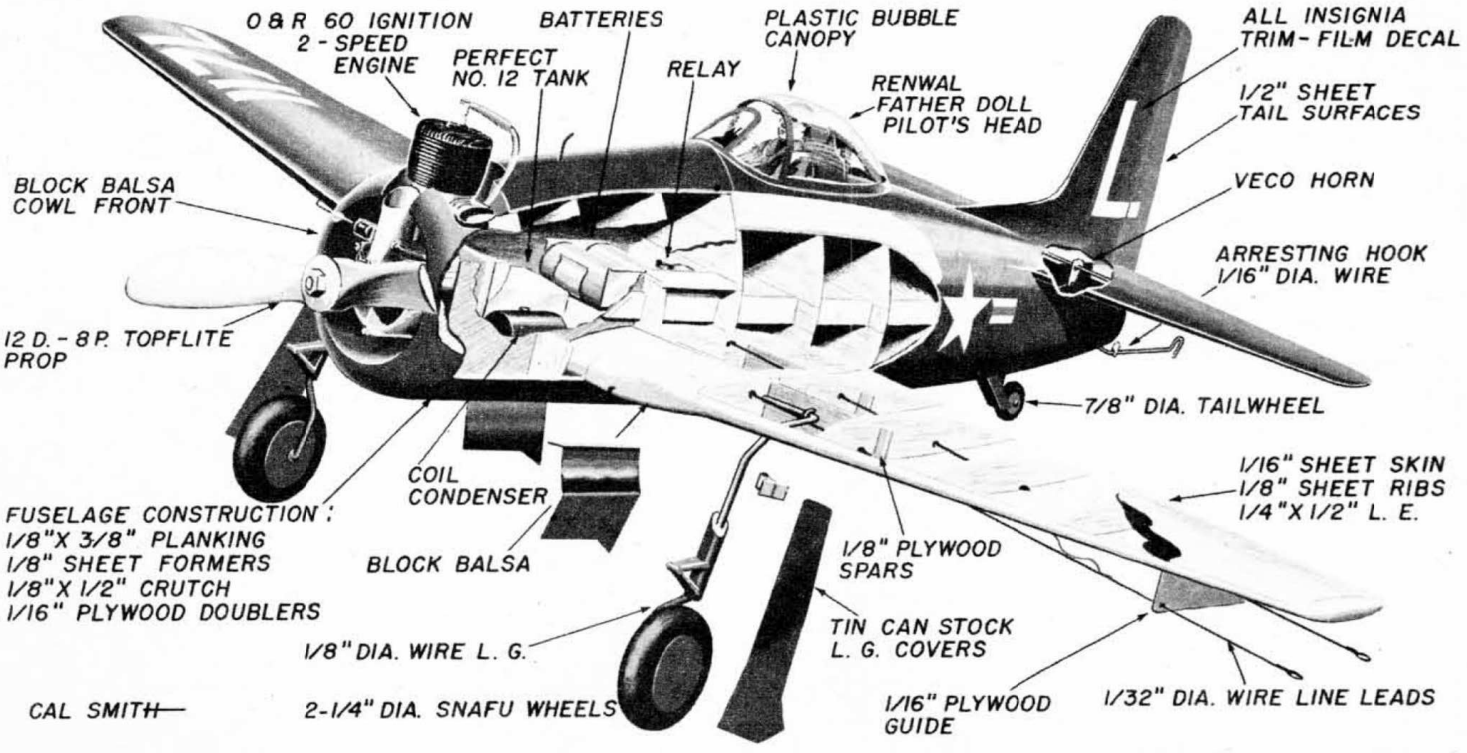
Next, install bellcrank and line leads. Check to see that travel is free through rib holes. Now the bottom wing skin can be added. Notch to clear landing gear wire and punch for line leads. Check wing by sighting spanwise to see that no warps are built in.

Add tip blocks and lay wing aside to dry thoroughly before adding to fuselage later.

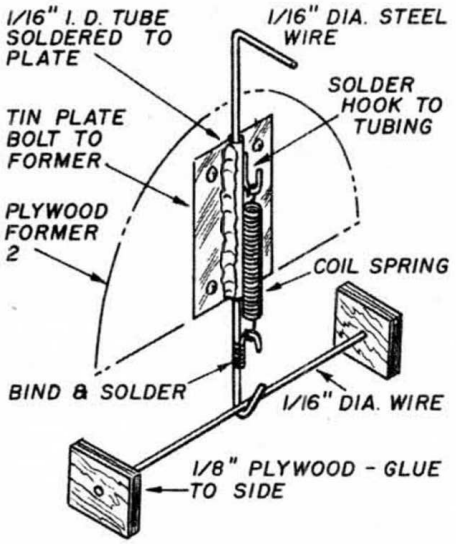
Now fuselage construction is begun. Build ⅛" x ½" crutch over the plan top view. Add cross pieces at stations 5-10 only. While the crutch is drying cut out the formers, firewall and plywood sides. Join the firewall to the plywood with brads and Weldwood glue. Add ¼" triangular hardwood gussets behind firewall. Make sure this unit is dead square and that width is exact so the fit between crutch will be accurate. Add top halves of formers 5-10 to crutch next. Cement ⅛" sheet canopy base in place across former 5 to 6. Cut length accurately for joining to former 4 later.

Now cement about four ⅛" x ⅜" planking strips in place along fuselage top from cockpit back to former 9T. This will hold the structure rigid when removed from board. Add ⅛" x ¼" strips along formers 9-10 to form stabilizer mount.

When crutch assembly and plywood box front section are dry, they can be joined. Use cement liberally and clamp crutch ends along outside surfaces of plywood box. When dry place accurately cut spacers inside box to maintain proper width. These can be



Photographed at the Grumman airport on Long Island, Smith's F8F won plaudits of Bearcat's designers, flyers.



The removable cowl is held to fuselage by a cowl latch of the type used on team racers.

For carrier operations use a .60-size powerplant; for just scale flying without 2-speed, .35-.45 will do the job nicely.

removed later. Now proceed to add side halves of formers 1-4 and top 4 to front top portion of fuselage.

The removable front cowl section is built right on the main fuselage structure. First add the ⅛" strips along the outside edges of the plywood from former 1 to 4. Lay strips of waxed paper over these strips and pin down another ⅛" strip over this, adding top part of formers 1-4 over these strips. Add several planking strips to top for rigidity.

With the top portion of the fuselage construction partially completed, next tackle the bottom section. Add section of formers 5 and 6 below crutch above wing. Lay wing in place, check for fit of leading edge through notches in plywood sides. See that top wing skin and blocks clear plywood sides. Check by viewing spanwise for proper angle of incidence. When everything checks correctly cement wing to crutch and formers and plywood sides.

Make up the arresting hook gear and cement 1/16" plywood mount to bottom of crutch at tail. Now add lower formers from nose to tail. Check carefully 3-6 for proper space off wing bottom, since variation in wing surface may make adjustment necessary. Now add several strips of planking along bottom for strength while handling.

Proceed to finish off interior of fuselage bottom before continuing with planking. Add ⅛" sheet floor at bottom edge of plywood sides from former 1 back to wing leading edge. Fill up any space below leading edge and floor. Install [illegible] through formers

Bend end to fit bellcrank but leave rear end long for bending to horn later. Install Spitfire fuel cut-off timer at former 6. Only alteration needed is 1/32" hole drilled through knob for release wire. Set timer for about one minute. Run 1/32" dia. release wire through formers; leave long at tail end for adjustment later.

Tailwheel mount can be made from ⅛" plywood. Bind tailwheel strut wire to plywood and cement in place at former 9-10.

This completes inside work except for accessory section behind firewall which can be taken care of later. Proceed with the planking job. Add several parallel strips along sides above wing, then work from top toward these strips, adding first one side and then the other, tapering ends to fit snugly. Follow same procedure on bottom. Cut tapers carefully where strips meet wing skin. The removable cowl can be planked later when taken off main structure. Add scrap block over former 4 under canopy front.

Rounded portion of engine cowl front can be made of block if the thickness is available, or built up of ¼" sheet laminations.

Carve off excess cement between planking and then sand entire fuselage smooth. Cut slot in bottom at tail for arresting hook travel. While fuselage planking dries thoroughly the tail surfaces can be made. The stabilizer and elevator are made from medium weight ½" sheet; taper to ¼" thick at tips.