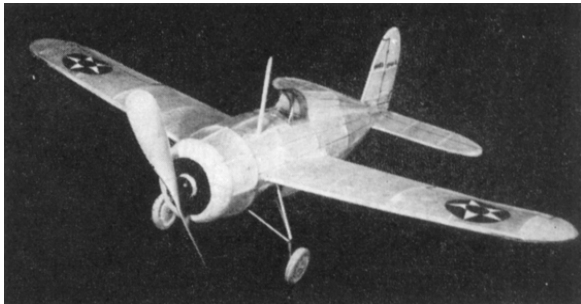


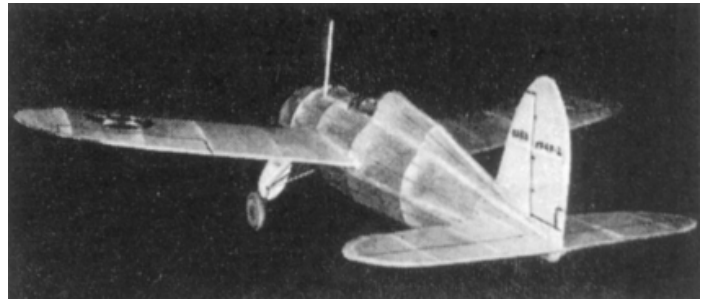
THE GRUMMAN MONO-PURSUIT

Build This Flying Replica of A Modern Navy Fighter

By HERBERT K. WEISS



The completed model is sturdy and a fine flier



Large tail surfaces insure great stability



In full flight it is most realistic

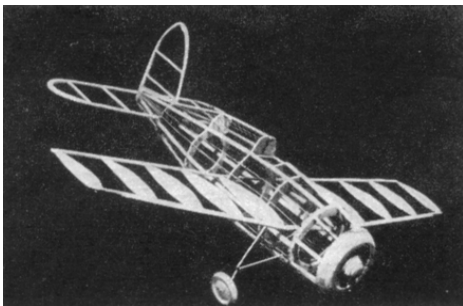
"WELL-FED" is the word for Leroy R. Grumman's series of chunky F4F navy fighters. First of the line of Twin Wasp powered, mid-wing flying-powerhouses to reach the public eye was the XF4F-2, for which plans are here presented. Since the XF4F-2 was put through its paces the design has been carried still farther with the object of improving the stability and performance.

Out of the spin tunnel, in which dynamic models are spun to determine the effects of design changes on recovery characteristics, came the discovery that rectangular wing tips and a squared rudder allowed the XF4F-2 to pull out of a spin in fewer turns. Careful wind tunnel tests indicated the desirability of a huge spinner over the prop hub to complete the fuselage lines. And so, in the

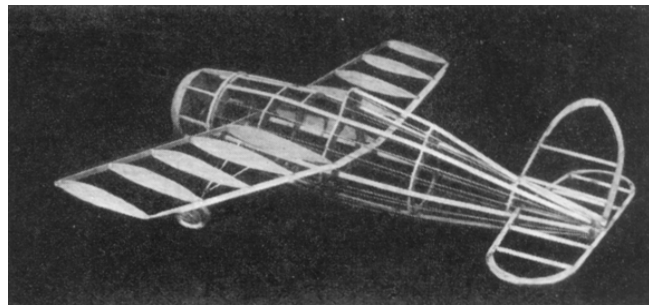
process of development the F4F lost its graceful tip shapes and acquired a "nosey" aspect, so that as the G-36 for export and the F4F-3 in production for the U.S. Navy, the ship resembles less a graceful winged tear-drop than a vicious flying bullet.

With a 1050 hp. Pratt & Whitney Twin Wasp, the export model is rated at 330 m.p.h. top speed, 295 m.p.h. cruising and possesses a normal flight range of 1100 miles.

Worthy of note are the sharp narrowing of the fuselage fairing behind the pilot, to improve vision to the rear on each side; the neat row of belly windows which eliminate tile blind spot which has been a dangerous disadvantage of many mid-winged fighters, and the fully-retracting landing gear.



The completed frame is realistic in detail



The structure is simple and can be quickly and easily built

Our model is of the earlier XF4F-2; the experimental ship with its round wing tips and rudder. Simply built to attain lightness for good performance, this model Grumman has turned in many long stable flights of

average half-minute duration. Modellers desiring to reproduce the latest square-tipped model may easily perform the conversion with the aid of photographs of the latest design.

Wing

Construction is begun with the wing, which is assembled in one piece for strength. Sufficient ribs are shown on the drawing for a scale model. The ribs which are not numbered are made by cutting out two of the next largest and cutting one down slightly to fit. A flying model can dispense with these alternate ribs for lightness.

To obtain a drawing of the left half of the wing, place a sheet of white paper under the plan with a sheet of carbon paper under both, face up. Then trace the drawing, the carbon duplicate will be reversed; that is, opposite to the right half, and may be attached to the right wing panel layout at the center line to give the complete wing layout. Put waxed paper over the plan and assemble the wing frame on it. Cut the leading and trailing edges to airfoil section after assembly. Bend the wing tips from 1/16" square bamboo by holding close to a lighted cigarette. Bamboo tips are preferable to balsa ones on a flying scale model because they absorb landing shocks better. Crack the spar just outside Rib 1 and recement them to give the wing the proper amount of dihedral.

Fuselage

Cut out two halves of each bulkhead and cement the halves together. Bulkheads D, E, F, Fa, G, H, and J are 1/16" sheet balsa, and A, B, C, a, and b are 1/8" sheet balsa. Cement bulkheads F and G to the wing center section as shown and attach the two main 1/8 x 1/16" side stringers.

Add the top and bottom stringers and the two which run along at the cockpit edges. These are also 1/8" x 1/16" balsa. The remaining stringers are 1/32" square bamboo. If the builder wishes primarily a non-flying scale model, these may be replaced by 1/16" square balsa. However, the writer has found that in a flying scale model, the use of bamboo stringers gives the fuselage a surprising amount of resilience and he has yet to see a model employing this type of construction with the familiar accordion-folding nose that so often follows vertical dives.

Tail Surfaces and Cowl

The tail surfaces are of standard construction. The stabilizer is built in one piece for stiffness. Sand the leading and trailing edges to airfoil section after assembly. The cowl is built up in the usual manner from 1/8" and 1/16" thick balsa rings. Cover it with 1/32" sheet balsa.

The cowl on the test model was covered with tissue for lightness, but if the ship finally needs more weight at the nose, the balsa covering is a convenient way of adding it.

Landing Gear

Details of the landing gear attachment are shown on the drawings. The struts are 3/32" aluminum tubing over .028 music wire. The wire going through the long strut is continuous through the 1/8" x 1/16" side stringers and is looped at the center to avoid the rubber motor. The upper set of the short struts contains the wire which, as shown in the detailed drawing, is cemented to bulkheads D and F. To hold it in place, cement two 1/8" x 1/16" braces between the bulkheads and over the wire as shown.

Covering

Cover the model carefully with tissue, using thin longitudinal strips on the fuselage. If a colored model is desired, the authentic navy colors are all silver with the top of the wing chrome yellow.

Spray the model lightly with water and allow it to dry. Tack down, with clear dope, the loose edges of tissue that appear. Then give the whole model a coat of thin clear dope, or if colored tissue has been used, add a coat of thin dope of the same color as the tissue.

Add the stars on top and bottom of each wing tip, paint the wheel wells black and add the control outlines and lettering with India ink. Add fairings, cockpit covering, radio mast and tail wheel.

Propeller

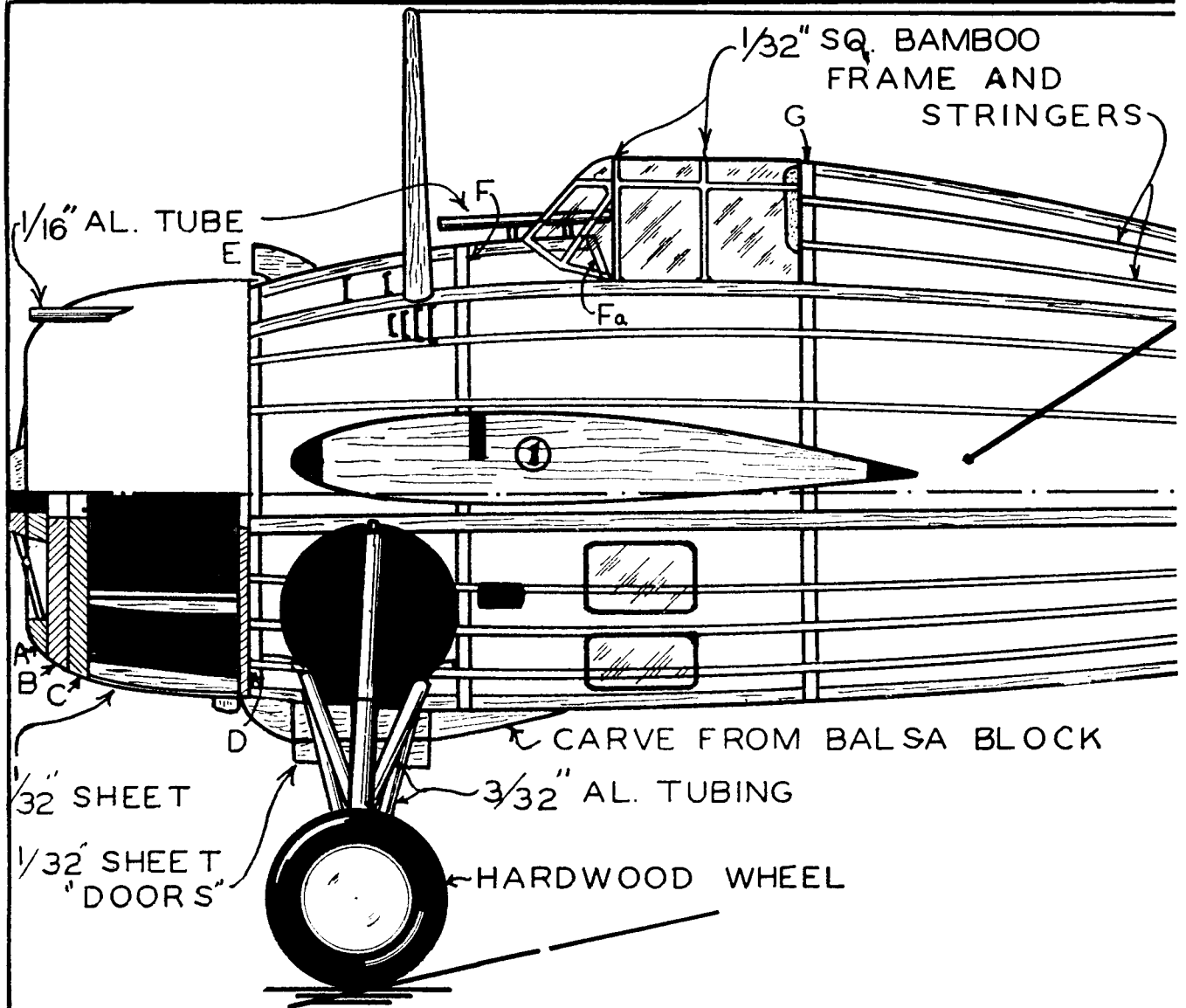
Carve the propeller from a block of medium-hard balsa 6" x 1-1/4" x 1/2". Give it two coats of silver dope, sanding between coats.

Flying

Glide the model, adding weight to the cowl if it stalls. Then try a powered flight. If the model stalls, warp the rudder slightly in the direction in which the model tends to turn. It is better to let the model climb in a spiral than to add down-thrust to prevent stalling. If the model still stalls, warp the trailing edge of the stabilizer down. To correct for spiral diving, apply opposite rudder or warp the inside wing's trailing edge down.

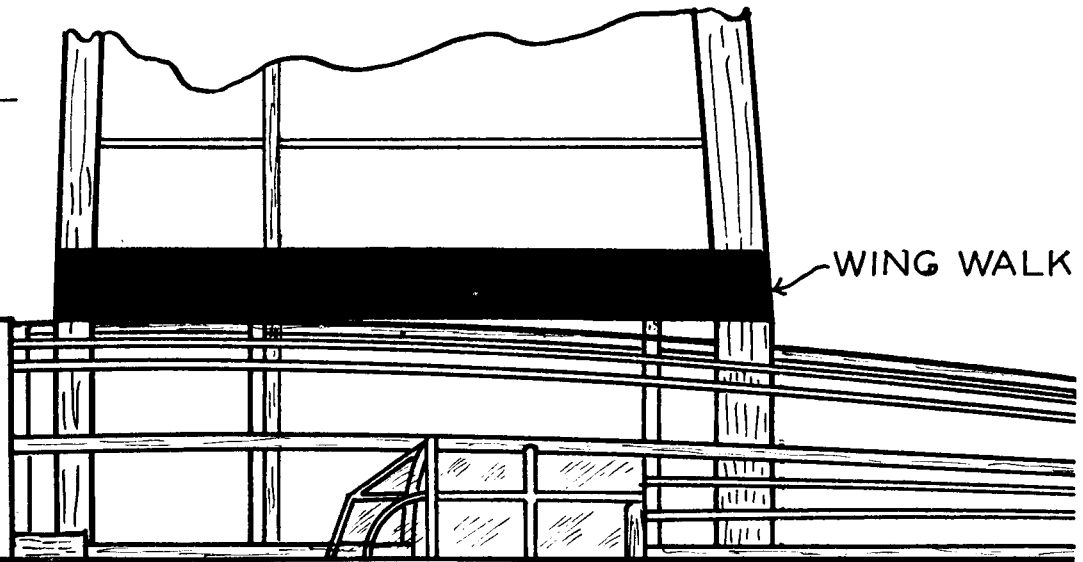
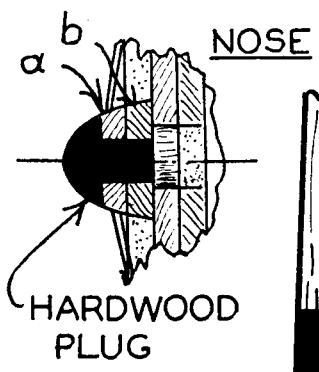
Flight performance depends, of course, on how carefully your model has been built. If you've done a light, true job you'll find it hard to keep your Grumman from flying at least thirty seconds.

***Scanned From September 1940
Model Airplane News***



GRUMMAN XF4F-2

By H.K. Weiss



TAIL STOCK

LE. ~ 1/8" SQ
T.E. ~ 1/16" SHEET
RIBS ~ 1/16" x 1/8"
TIPS ~ 1/16" SHEET

