



# the AERO 101

By WALT MOONEY . . . Yes, occasionally our "Peanut Bender" runs across some wood that's too big for the 12 plus 1 models, and when he does, we all benefit from his ways of using it to build bigger scale models.

• The Aero 101 was designed by Messieurs Chapeau and Blanchet as a light tandem two-seat sporting biplane for the "Service de L'Aviation Legere et Sportive." It first flew in 1953. It is powered by a 75 hp. Minie 4 DC-32 flat four engine, and is of all wood construction.

For many years it has been on my list of "Biplanes I'd like to model if only I could find a 3-view." Not too long ago, a friend of mine in France was kind enough to get me the information needed. Then the "Flightmasters" decided that biplane Jumbo scale could have as little as 30 inch wing span. Voila! Le inspiration!

The high aspect ratio wings and the simple strut arrangement make the model an ideal Jumbo scale, and keep the overall airplane from being too large to carry all assembled. Hence, this design has all the components permanently attached. As a biplane, it's more complicated than a simple monoplane, but it's still a rather simple, easily-built design.

Structure follows standard procedure for scale models. There are only a few places where a builder might have construction questions, so the basic structure of the various components will be described and basic assembly procedures ignored. However, the struts and wire bracing were done with a technique that is not so common, and that will be covered more thoroughly.

The fuselage is standard; two sides built over the plan, with longerons and uprights. These are removed from the

plan, cemented together at the tailpost, and assembled into a rectangular box with cross braces. Then the formers are added on the upper side, followed by stringers and cowl planking. For rubber motor clearance, cut the upper cross braces away from the area of former relief openings just prior to covering.

The tail, both vertical and horizontal, is standard structure. Note that it is a quarter of an inch thick. The leading and trailing edges must be blocked up above the plan as they are being assembled. The airfoil shapes are sanded into the structures after they are dry and removed from the plan.

The top and bottom wings are built up over the same plan and are identical except for the location of the root ribs and the strut support filler sheet, which is above the main spar on the bottom wing, and below the spar on the top wings. Tilt the root ribs outboard during assembly to provide the correct dihedral. Also, before assembly of the bottom wing to the fuselage, the root rib should be fitted to the slight curvature of the fuselage in plan view. Note also that there is a crosspiece in the fuselage to carry through the wing loads. These are "L, M and N", and a piece of eighth by quarter crosspiece between the longerons at the wing trailing edge.

The windshield frames were laminated from model railroad basswood strips. Wire frames would also be suitable.

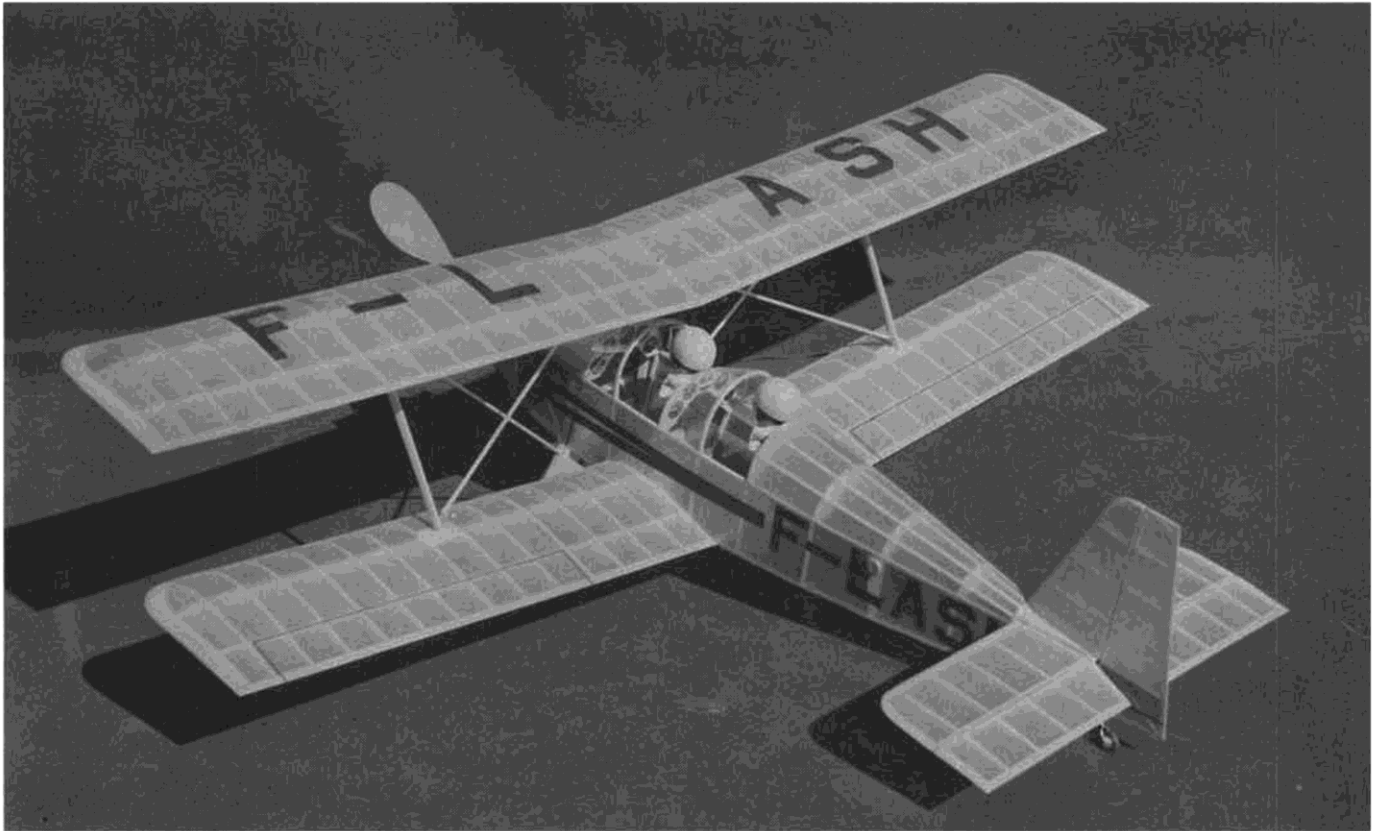
In accordance with my most recent approach to the landing gear, the main landing gear wire is bent to lie just outside the actual scale landing gear leg. It

is attached to the leg, but is free to deflect under impact loads and therefore absorb rather than transmit them into the scale landing gear structure.

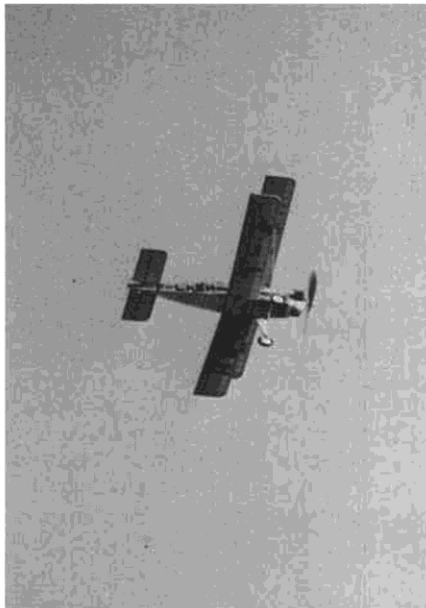
Now assuming your model is ready to rig, let's consider the struts and flying wires. Feel free to use your own preferred system if you don't like mine.

First, music wire is used for all the struts. On the model shown, these wires are surrounded by plastic tubes which simulate the actual sizes. These plastic tubes were obtained from plastic window drapes. The tubes that surround the flight wires are about an eighth of an inch in diameter, and round in cross section. The tubes that surround the interplane strut wires are oval in cross-section and match the size shown. My supply of this tubing was obtained by buying some second-hand plastic roll-up drapes at a local handicapped veterans store. These came in a lot of colors, and you get an awful lot of strut material for your money.

Carefully bend the cabane strut out of two pieces of wire. The most forward strut is one piece. The other four struts are bent up from the other piece. There is a washer soldered at the two top points of the cabane. The top wing is impaled on the points extending above the washers. The center strut is bound to a 3/16 x 3/8 brace under the sheet cowl, forward of the windshield. The bottom of the other legs are bound with thread to the two top longerons. This last sentence proves you better read the instructions before you build the model, because the cabane has to be attached to



The Aero 101 is a pretty biplane from any angle, though we may be a little prejudiced! High aspect ratio wings and minimum strut rigging make it an ideal Jumbo scale project, and minimum span for biplanes is now down to 30 inches.



Mooney builds scale models to fly, and the Aero 101 is no exception.

the fuselage before it is covered with balsa sheet and tissue.

The other struts and wires are bent up to length with hooks at each end to hang on to the fittings. Fittings, as referred to here, are as listed below. For the interplane struts, the fittings are the wire staple shapes that penetrate the strut support filler on the wings, and are cemented to the main spars. In the case of the flying wires, the fittings they hook to are the exposed top corner of the main landing gear wire, the section

of the front cabane strut just forward of the washer, and a small loop bent in each end of the interplane strut wire, which also acts as the hook in the wire fitting. The plastic covering for the wires has to be installed before both hooked ends are formed. Since all the struts have to be tight without deforming the balsa structure, it's best to assemble the lower wings to the fuselage first. Then attach the top wing to the cabane. Then make the interplane struts and hook them in place. Finally, make the flying wires to fit exactly with the wings blocked up to the correct dihedral. This may take you more than one try, it did for me, so have a couple of lengths of wire to spare. Don't try to force an over-tight wire in place, or use a loose, sloppy one.

The front windshield is penetrated by the aft cabane struts. Make a paper pattern and determine where the holes for the wire must be and the slits extending forward from the holes that are necessary to install the windshield.

Jumbo scale requires a pilot. The model shown has two, they are particularly gutless individuals, because they have to clear the rubber motor. Carve them from balsa, or styrofoam, or buy them from the model shop.

The model will fly on six strands of 3/16 rubber, but does better with eight. Nevertheless, I suggest starting with the smaller motor and working up to determine your particular thrust line adjustment requirements. The model in the photo required about an eighth of an



This, and photo at left were taken at Mile Square, Fountain Valley, Ca. during contest.

inch of downthrust.

An eighth of an inch of washout is recommended at each wing tip.

Note also the center-of-gravity location. Ballast your model, if required, to obtain a balance at this point. The model should assume a level attitude when supported at the rear spar of the top wing.

Join the editor of MODEL BUILDER, who thinks biplanes are the best and have fun with a Jumbo Aero 101. Au Revoir.