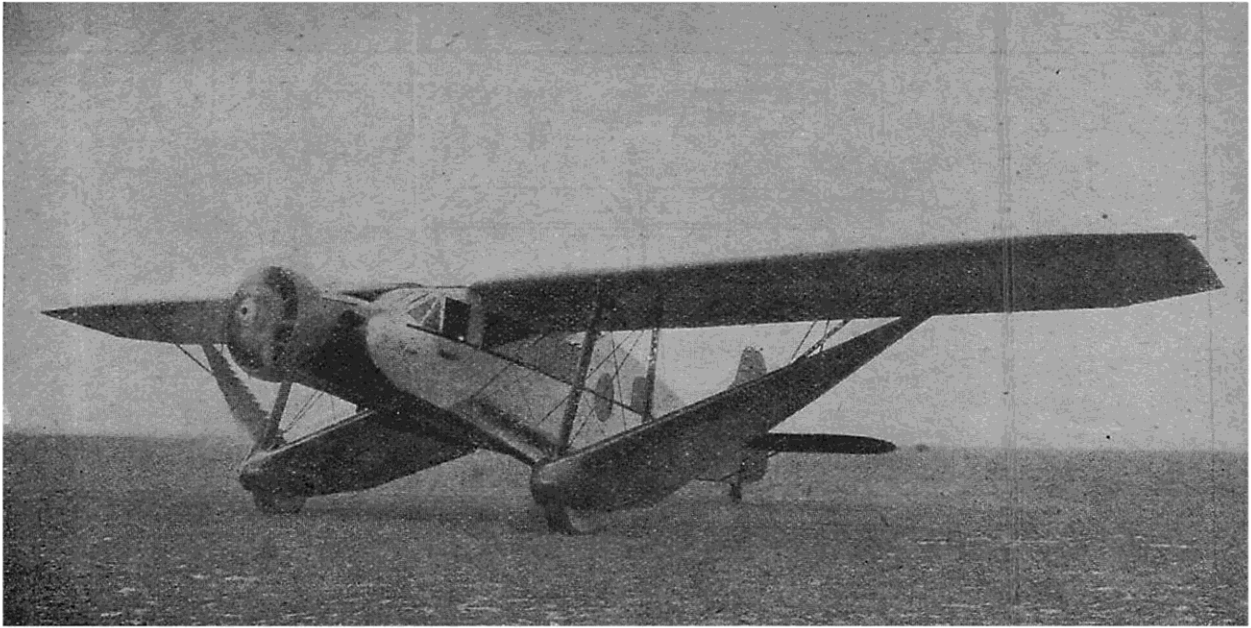




The real thing—a Bellanca "Airbus" 12-Passenger Transport (Wright Cyclone)

How to Build

The Bellanca 12-Passenger "Airbus"

THE Airbus was designed and built by the well-known Bellanca Aircraft Corporation of New Castle, Delaware, during 1930. It is a combination mail and passenger sesquiplane and many new features are incorporated in its design; a compartment in the two lower stub wings for mail, which has an area of sixty cubic feet, and therefore the loading and unloading is accomplished without interfering with the passengers, a pit under each seat for the travelers to keep their baggage, a lower airfoil section, not only serving as a lifting force but also as a landing gear. Either a Curtiss Conqueror, Pratt & Whitney Hornet, or a Wright Cyclone may be installed. The Airbus has a very high rate of climb and is one of the largest single-engined airplanes of today, being capable of carrying twelve passengers with a moderate load.

The model of this great plane is very easy to build. Much time has been taken in the designing of it in order to make it as light as possible and yet very strong and airworthy. The cost in building the entire model is as low as \$1.00. Ambroid is used for all connections. Follow instructions closely and take plenty of time and you will find you have constructed a perfect flying scale model.

Wings

Obtain a piece of balsa wood 4" x 3' x 1/16" for cutting out ribs for all wing sections. Make ribs 1, 2, and 3 first by tracing them on the board and cutting out with a sharp razor blade. After they are made, cut the spars to the right length which are of 1/8" x 1/16" balsa wood. Lay ribs in place over plans and fit the spars in the slots made in ribs. When that is done apply plenty of ambroid to connections. Keep ailerons separate from rest of wing. When ambroid has dried

thoroughly attach dowels and make wing tips. Look over all sections to see that nothing is warped or out of place. Set aside to dry for a while and proceed to make lower wings and pants for wheels.

Make ribs 4, 5, 6, 7, 8, and 9, in like manner as others, using plenty of ambroid, and connect spars and cross braces. Be sure to make two left and two right wings. Install dowels and lay aside to dry.

Next carve out two streamline pants for wheels out of blocks of balsa 3 1/4" x 1" x 2". Use a small chisel, razor blade, rough and smooth sand paper, and then install wheels which may be either purchased or made. Use a piece of stout wire or pin for the axle. When that is completed, make holes for dowels of lower wings. The pants will then be ready for doping which is done later. See that wings fit them perfectly. Go over all wing connections with ambroid and then sandpaper all rough parts. The wings will then be ready for covering.

Tail Units

Cut out ribs in same manner as was done for the wing. Make rudder, fin, stabilizer, and two elevators separately. The horizontal tail tips may be cut out of 1/16" balsa. Cut them in their curved shape so as it will not be necessary to bend them. Fit spars and braces in place as was done with the wings. Apply plenty of ambroid as the tail assembly must be very strong. See Number 6 plan for dimensions.

Next connect with ambroid the two small struts in center of leading edge of stabilizer. These are made of 1/16" balsa. Make small pin hole as shown in drawing. Next ambroid small strut between the two lower ribs of fin. Go over all units (Continued on page 39)

A 2-ft. Flying Model That Should Walk Off With a Prize in Any Contest

By R. C. Morrison

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once more with ambroid and sandpaper ready for papering. Tail units are not hinged together until after covering.

The fuselage will be very easy to make if you follow instructions carefully. Take care that every strut is even and straight as any strut the least bit out of place will make a slight warp in the fuselage.

It is best to begin with the nosing and work to the rear. The fuselage is made in two sections, the bottom part, which is constructed first, being separated from the top by the two center longerons. First cut out nose piece with razor blade and then the side struts. These will be made of $\frac{1}{8}$ " sq. balsa. Make two of each as shown in side views 7 and 8 and then cut notches at tips for longerons to fit. Four longerons are cut to size next out of $\frac{1}{8}$ " x $\frac{1}{16}$ " balsa or spruce. Ambroid all struts in place leaving nose pieces to be put on later.

The longerons may be bent without steaming. Lay the two sides on a flat surface to dry. Meanwhile cut the bottom and top struts and by that time the sides will then be ready for connecting. Put nose piece on first and work slowly towards the tail. Wait for preceding struts to dry before ambroiding next ones. Thread may be used in tying parts in place and can be cut when ambroid hardens. The tail strut will not be put on until top section is joined. The side struts of the top section are then ambroided to the longerons of the lower section just made.

Next put on top longerons and braces. While waiting for them to dry, make motor stick, using $\frac{5}{16}$ " sq. white pine. Ambroid propeller shaft and hook and put a small

The Bellanca "Airbus"



nail in the hook end so that the motor stick may be fastened to tail of fuselage. Lay the stick aside for a time while the fuselage is finished up. Ambroid all windshield struts made of $\frac{1}{16}$ " sq. balsa in place. Also connect ribs, using plenty of ambroid. Cover end of fuselage with a piece of wood made from the same piece used for the ribs. This piece is for connecting tail surfaces to fuselage. Make tail skid and ambroid in place. Wheels may be purchased or made of balsa.

The propeller has three blades which are made separately and ambroided into grooves in a small hub. Because the Bellanca landing gear is so low, the propeller must be short so it will not hit the ground. Therefore, there must be quite a lot of pitch to get the same power as the larger ones. A chisel, razor blade, and smooth and fine sandpaper may be used. Cut the blades out of the rib wood and bend to fit grooves in hub. When the propeller is completed, insert shaft. Connect propeller to motor stick and then put motor stick in the fuselage through hole in nose piece.

All the frames are then ready to be covered, which comes next.

Japanese tissue will be sufficient for covering. Get a strong grade if possible. It is best to cover the wings in strips to avoid wrinkling. Colorless ambroid or dope may be used to attach paper. When all the parts have been covered, dope, using any

colors preferred. The tail surfaces are usually the same color as the wings. Right after dopping place a weight at each end of part to keep it from warping. You will notice that the dope tightens the paper as it dries. Do not put isinglass in windows until plane is assembled. Leave an open space under nosing and tail of fuselage in order to hook and unhook the rubber motor.

First connect tail units together by using paper or wire as shown in drawing. If paper is used, cut slots with razor blade in the $\frac{1}{8}$ " x $\frac{1}{16}$ " pieces where hinge will go and insert paper. The paper must be fairly stiff. Use a little glue to hold them in place. Before putting on left elevator, stick stabilizer through fin. Connect it with a small piece of wire to the trailing edge of fin. This is used as a hinge. The stabilizer will then be adjustable as well as the elevators. Ambroid fin to fuselage.

Next ambroid top and bottom wing stubs to ribs on fuselage. Also ambroid the four wing struts. Attach wheels to wing stubs with plenty of ambroid and when the cement dries, fit dowels of the rest of the wings in place. The upper and lower sections are connected together by a small round clothes clip. The wings will then be portable. Put on ailerons as was done with the tail assembly. Put isinglass in windows and the model will be finished.

When flying the Bellanca Airbus, always have it facing the wind. Adjust the stabilizer and other controls to meet the flying conditions. The model, if built correctly, will take off under its own power and fly a hundred or more feet just like the real plane.