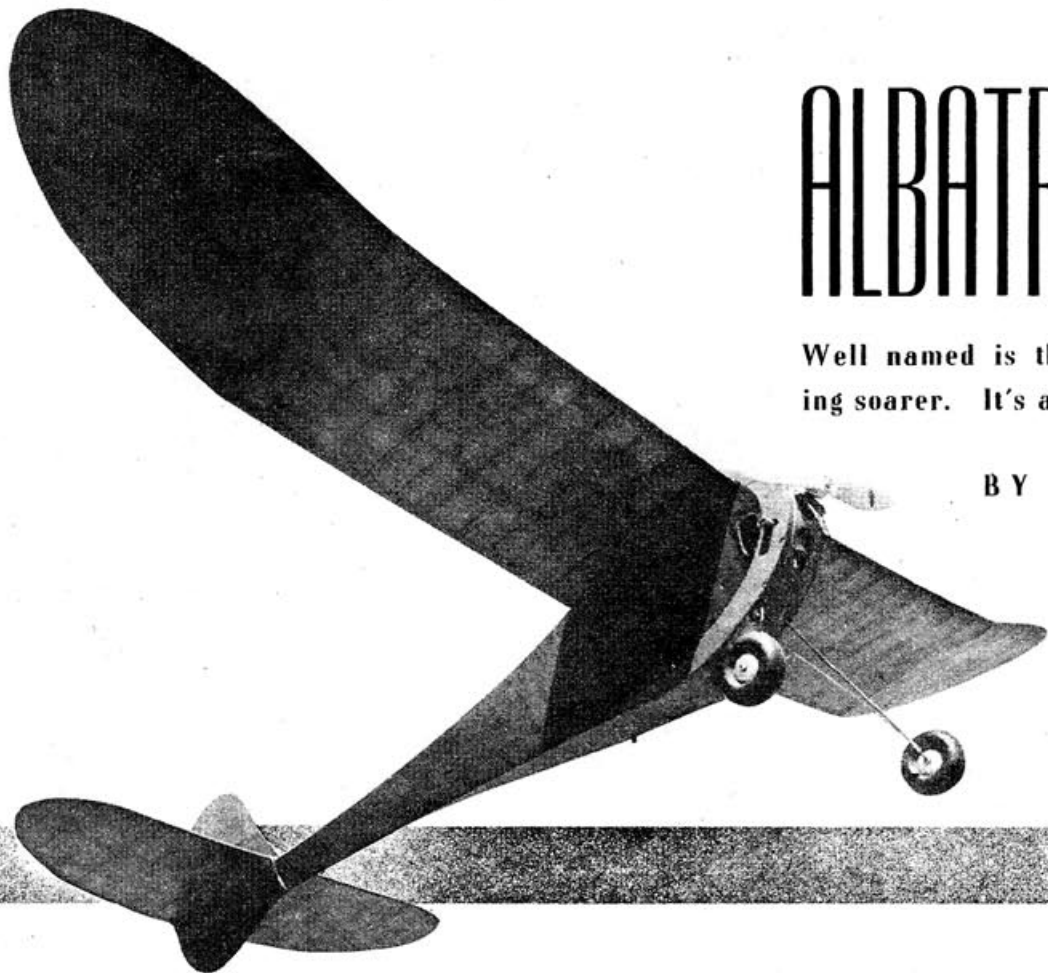


ALBATROSS

Well named is this outstanding soarer. It's a Class C job.

BY GEORGE
REICH



SOARING ability interests me. And does the Albatross soar? Just build it and you'll agree it more than lives up to its name. It seems to have an instinct for thermals as it wheels in its flat, soaring glide.

These are the factors that entered into its design:

Spiral Stability. It will be noted on the side view of the body plan (Plate II) that the center of lateral area is in a low position in respect to the center of gravity. This makes the model extremely stable and, therefore, very consistent.

Efficient Climb. This largely depends on how the model is adjusted, but clean lines and a little streamlining help a great deal. The drag on the body is kept to a minimum by not having any more cross section than is necessary by having a V-shaped body and by cowling in the motor.

Flat, Soaring Glide. High-lift wing section, combined with the proper location of the c. g. produces this to the nth degree. The center of gravity is slightly behind the center of lift of the wing because of the lifting tail. A lifting tail of proper thickness will completely eliminate the use of downthrust. No negative thrust is needed in this design if a Dennyrite is used. However, if an Ohlsson "60" is used, it would be wise to increase thickness of stabilizer to about $1\frac{3}{16}$ ".

Flight Record. The model has a full 4-minute contest average. Longest official flight, 16:29. Longest official average, 6:37. Longest unofficial flight (motor run 23 seconds), one hour. Two first places, two seconds, one third out of seven contests.

CONSTRUCTION

Before starting any construction, study the plans thoroughly and then make full-size drawings.

Start construction of body by making sides. Out of $\frac{3}{16} \times \frac{7}{8}$ "

medium-hard stock, the front part of the side is formed. After this has been laid down and cemented, proceed by completing the outline of the body with $\frac{3}{16}$ "-square hard balsa. The uprights out of the same size are of medium stock and are cemented in place. Then put in the diagonals of $\frac{1}{8} \times \frac{3}{16}$ ". This will have completed one side. Now build another on top of it without any waxed paper between. Be sure to use the same grade of wood for all the longerons, and the same grade for all the uprights.

After both sides have dried take up off plan (both sides will be stuck together) and sand the outline so both sides will be alike. The sides can then be easily separated with a razor blade.

To assemble the body, each side is pinned upside down along the straight portion from Station A to F. Then insert all the cross pieces from A to F and glue. After thoroughly dry take up and finish assembly by gluing in all remaining cross braces, working from Station F to the end of the body. It will be noted that beginning at Station L the body has the form of a V and there are no cross pieces on the bottom. The lower longeron of each side from Station L to the end should be beveled on the inside as shown on the cross section detail of Station L on Plate II. After all the cross braces have been cemented in, put in diagonals on top and bottom.

The motor mount is cut out of a good grade of birch plywood, size $\frac{1}{4}$ " flat. Before installing, give three coats of clear dope to make it oilproof. The $\frac{1}{8}$ " flat firewall is next glued in place and also doped. Then fill in the nose and cut holes for cooling.

The isometric drawing on Plate I shows clearly how to install wing supports and wing attachment dowels.

The stabilizer is supported by a length of bamboo $4\frac{1}{2}$ " long which is now cemented in place. Also the $\frac{1}{8} \times \frac{3}{4}$ " dowel at the extreme rear of the body is glued in and anchored with a triangle of $\frac{1}{8}$ " sheet balsa as shown.

The landing gear may be made next as per drawing. After this is completed and the four fittings made, drill holes in the firewall and bolt landing gear to the same.

Albatross

Countersink the nuts slightly on the back of firewall and cement. Then remove landing gear as the firewall and inside of nose are to be color-doped later on.

Make coil rack and battery box as shown on Plate I. The coil rack is cemented to bottom cross braces at Stations B and C and wrapped with thread. The coil is held onto the rack with rubber bands. The battery box is so constructed as to have the battery slide in rather snugly.

After the framework is complete, sand all over to take out any bumps and round all sharp corners. Apply another coat of cement to all joints at this time.

For the entire wiring system, use a well-insulated, oilproof, stranded wire such as used for high-tension leads. Do a good soldering job where wires are connected and wrap with tape.

See Plate I for a picture of the lower cowl. It is built up of $\frac{5}{16} \times \frac{3}{4}$ " soft balsa and of $\frac{5}{16}$ " square. The nose is used as a form when building this cowl. First notch the nose in three places as shown and then fit the $\frac{5}{16}$ " square strips in notches. Then in between these squares and the inside of the nose fit in the wider widths of $\frac{5}{16}$ " flat and cement. This cowl runs from the motor mount to the bottom of the firewall. After this portion has been filled in, then sand to the curve of the nose and remove cowl with the use of a razor blade. Finish cowl by making hole in the center for cooling. Make this hole big enough so all the fins of the motor will be exposed. To allow the warm air to escape, a louver of .006 aluminum is cemented to the lower end of cowl and a hole cut under the louver. Clear-dope the cowl, inside and out, and also the inside of the nose from the firewall forward.

Before covering the body, the sub-rudder should be cemented in its place. Its construction is the same as the rudder, which can also be built at this time. Start by making the outline out of $\frac{1}{8}$ " flat medium for leading edge and $\frac{3}{32}$ " flat for trailing edge. The base of rudder is cut out of $\frac{1}{8}$ " flat to shape shown. Next cut ribs of $\frac{3}{32}$ " flat and cut spars of medium grade to proper length. Then put ribs on spars and cement this unit between outline of rudder. While drying, the tab can be made according to the plan. After rudder framework has dried, shape leading and trailing edges and put in tab, the hinge of which is wrapped around and cemented to rear spar. After the sub-rudder has been sanded, glue in tail skid. Work can now be continued on the body.

The sub-rudder may be cemented in place and covering may begin. Covering material, of course, is left to the individual. However, if bamboo paper is used (this is recommended) use thick clear dope for applying it. If the color scheme of the original model is followed (dark-blue rudder and body with red wing, stabilizer and nose) use dark blue for body. After water-stretched and one coat of clear dope has been applied, sand lightly with fine sandpaper.

Clear-dope once more and sand, then apply two coats of dark-blue pigmented dope. Don't use the dope too thick or you'll have trouble spreading it. Dope up to the color line as shown on Plate II. Forward of this line is doped red as is the motor mount and inside the nose. The entire bottom of the fuselage is colored red also.

The landing gear can now be bolted to the firewall and the motor installed. Put in about three degrees right thrust and no downthrust.

Now for the tail. Since the rudder framework is already made, we'll start on the stabilizer. Cut out the trailing edge and tips of $\frac{1}{8}$ " flat medium-hard. After this part of the outline is down on the plan, put in spars out of hard stock and cement in ribs over these spars. Now finish construction by cementing in the leading edge.

After framework has been sanded, cover with red bamboo tissue and water-stretch, apply two coats of clear dope, and two coats of red dope. Take care not to put on any more coats than just mentioned, as warpage is likely to occur.

Cover the rudder using same procedure as on the stabilizer, only use dark-blue tissue and dope. The rudder is cemented to stabilizer along the center stabilizer rib which is of $\frac{1}{4}$ " flat. Use plenty of cement and offset rudder a trifle for a right circle.

Start construction of the wing by cutting out all ribs as shown on Plate III. Next lay down the trailing edge and do the same with the tips. The spars are now cut to the proper length. The front spar will have to be blocked up $\frac{3}{16}$ ", the center spar $\frac{3}{8}$ ", and the rear spar $\frac{3}{16}$ ". Now cement in the ribs and then the leading edge.

After thoroughly dry, cut at the center and put a $2\frac{1}{2}$ " block under each thirteenth rib, counting from the center. Then recement. In a similar manner the tip dihedral is put in. While this is being left to dry, make the reinforcement plates of $\frac{1}{16}$ " sheet basswood as detailed on Plate III. Use plenty of cement when cementing these in. Now the wing is sanded and covered with red bamboo tissue. Clear-dope and color-dope with two coats of each.

Put the wing in place on the body and proceed to make the top cowl. This is carved out of a $6 \times 3\frac{1}{2} \times 2\frac{1}{2}$ " soft block. On the $6 \times 2\frac{1}{2}$ " plane, cut out the side view, then shape top and front. Cut a small hole for needle valve and then sand all over to a smooth finish, clear-dope, and red-color-dope.

FLYING

You've probably seen it happen time and time again—a new, never-before-flown model crashes on its initial flight. Reason—nine times out of ten it's the flier. He was too hasty, couldn't wait until he opened her up, or he didn't have the motor running properly, or didn't give the model a going-over before he flew it, or any one of a number of other things. Now this isn't mentioned to discour-

age anyone, but rather to remind the builder that the ship is the result of two or three weeks' work and should be handled in a sensible manner.

Before starting out for the flying field, wait for good weather. It's usually ideal after sundown. Check all surfaces for possible warps. If there are any, remove them with a little steam. Assemble the model by attaching the wing with about five feet of $\frac{3}{16}$ " flat rubber, slightly lubed, divided into two separate loops. The tail is held in place with two separate loops of $\frac{3}{16}$ " flat each about a five-inch loop. After all is assembled, glide the model. When doing this, don't run with the model for a quarter of a mile and then heave it, as the model will gain altitude, lose speed, stall and crash. The proper way is to grip the model below the c. g., along the lower part of the body, take one step forward and release the model, a little nose down, with suffi-

cient force so the ship will travel at about its normal gliding speed. If the model stalls or dives, correct this by increasing or decreasing the wing incidence. The stabilizer angle should be 0 degree.

Now we're ready for a little power flight. First see that your rudder is offset a trifle to counteract torque and also to give it a right circle in the glide. Set the timer for about seven seconds and then get the motor running at about half throttle. Don't launch the model as soon as you get the motor running, but wait a half minute or so until it runs smooth and steady. Then with the same procedure as gliding, launch model (always against the direction of the wind). Notice two things: how it circles under power and how it circles in the glide. The ideal way to have the model fly is to have it climb spirally, to the left (with torque) at about a 60 to 65-degree angle, and glide op-

posite in a 150 to 200-foot circle. When adjusted this way the model will lose practically no altitude after the power quits. Of course, at half throttle the model won't climb in this manner. However, this can be attained by revving the motor a little more on succeeding flights and by changing the thrust setting. After the proper circle in the glide has been achieved by the use of the rudder tab, leave the setting alone and adjust the power part of the flight with right or left thrust only. If the model circles tighter and tighter with torque as flights proceed, then a little more right thrust is needed.

Take your time in adjusting the model. And it's advisable not to enter it in competition until you've flown it enough to really know it and know exactly what it will do. And after that you'll get a lot of satisfaction out of having a well-adjusted, good-flying gas job.