

M photos: Jim Boyd

WWI BRISTOL M1B

From the air above the trenches of France
to model flying fields in New Jersey, this Bristol M1B
monoplane keeps on flying.

by Tony Eck

For some years now I have wanted to design a different aircraft, one that has not been seen around. A large order? That's just the start of it. I also wanted the aircraft to be easy to construct, to have all the qualities that would make it a memorable Stand-Off Scale aircraft and I wanted the machine to be a good size, yet able to fly well with a .40 R/C engine.

One night my wife decided to go out shopping and would I mind? When she left I descended to my home away from home, the cellar, with my daughters, one and three for company. I started looking for my dream ship. It didn't take long. I found it quite unexpectedly when my oldest girl found a Profile of the *Bristol M.1*. She said that "this is the one that I should do because it has all the good points that I want." It just so happened that this was the one I wanted to do anyway, so we all started.

The "*Bristol M.1*" is one of the World War I vintage aircraft. Designated the "*Bristol M1A*" and powered by a 110 horsepower Clerget 92 engine. The prototype of this fighter emerged in July, 1916. It must have been one of the simplest and cleanest aircraft of its day, for Mr. Barrwell had designed the fabric covered fuselage to be fully faired throughout its length, and formers and full length stringers preserved a circular cross-section to a point behind the wing. From there aft, the fairing tapered smoothly to the rudder post.

The wings were attached to the upper longerons, their outer leading edges being given a wide semi-elliptical sweep, back to the tips. This allowed two-thirds of the span of the broad-chord ailerons to run along the extensions of the rear spars.

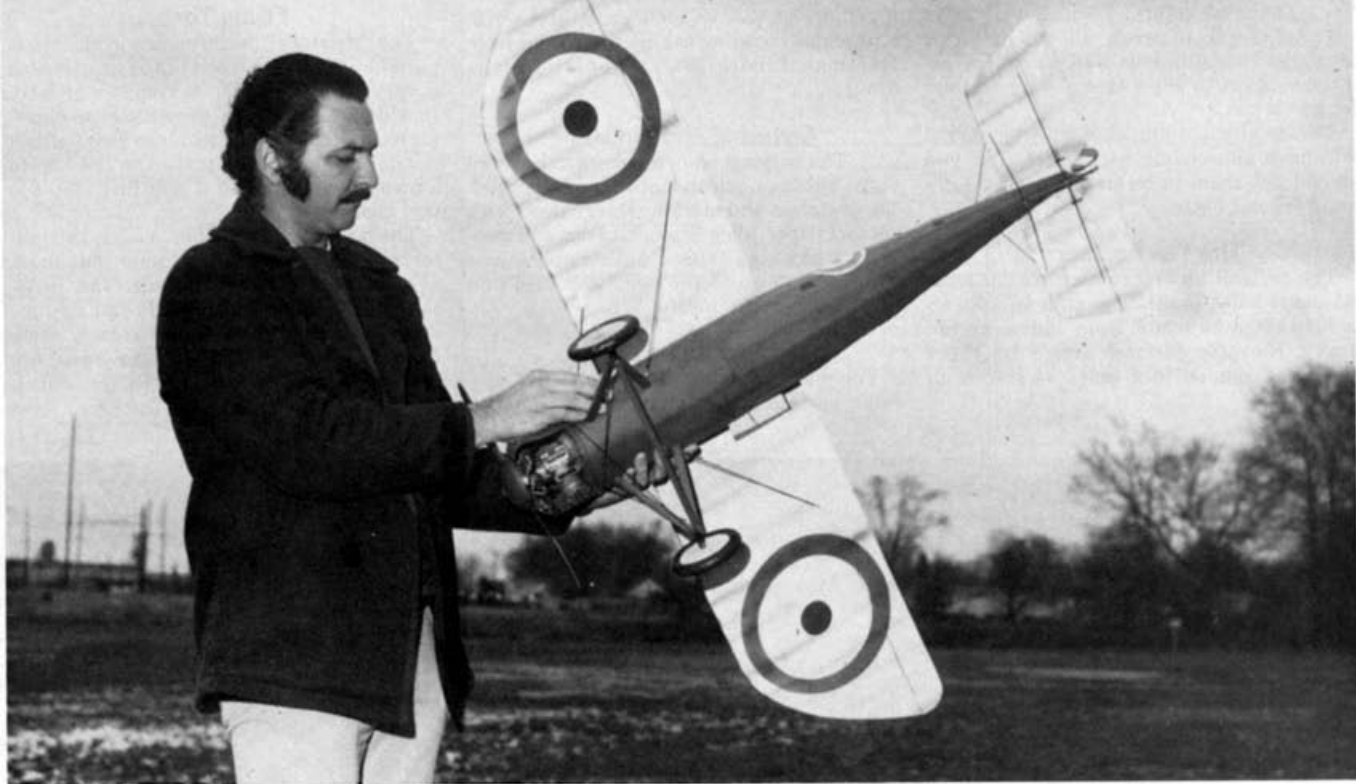
The *M1A*'s first flight took place on the 14th of July, 1916 at Filton. The pilot was

F.P. Raynham, and the speed attained was a phenomenal 132 mph. Despite the lack of official enthusiasm for the "*Bristol*" monoplane, it must have impressed some of its pilots, or at least some of those who saw it fly, for it became the subject of optimistic rumors and eager expectations in R.F.C. fighter squadrons in France.

The model presented here is approximately 1 $\frac{3}{4}$ " to the foot, and a "Stand-Off" replica, rather than an exact miniature of the aircraft. It makes a realistic and sturdy flying machine.

The Bristol's Construction

The fuselage is assembled by first making a box from the fuselage sides, $\frac{3}{16}$ " x $2\frac{5}{8}$ " balsa sheet (hard) and the $\frac{1}{8}$ " balsa floor. Be sure that the sides are 90 degrees to the flooring. After this has dried, glue the assembly to F-2 as shown on the plan.



Target for tonight. The bulls-eye roundels must have invited retribution from the agile Baron. At left: 1916 or '74? Once airborne against the mist and clouds it's hard to remember the age.

Also glue F-7 to the other end of the fuselage box.

The $\frac{1}{8}$ " ply fuselage landing gear doublers are now cemented in position on the outside of the box, on the floor, as indicated on the plan drawing. Epoxy the hardwood landing gear blocks in place at this time. Add formers F-3A, F-4A and F-6A, followed by the balsa wing saddle. F-3 is then epoxied into the structure.

When all this has dried, add the top stringer and the side stringers to further the framework. F-8, F-9 and F-10 are next on the agenda, followed by the remainder of the stringers.

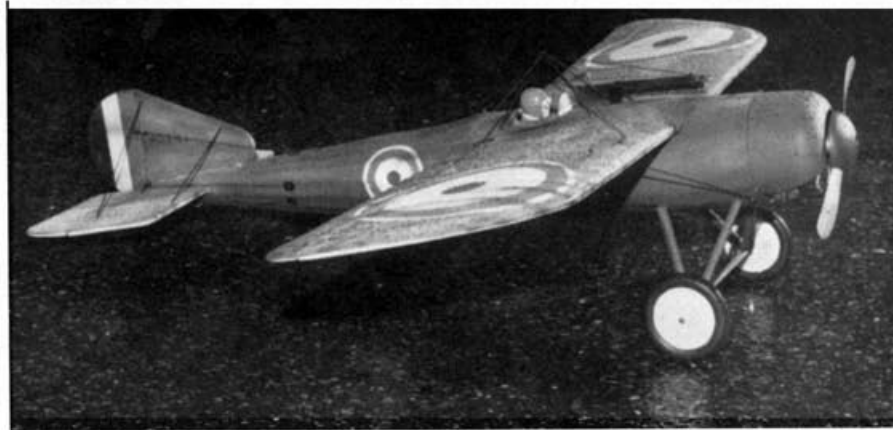
Plank the top from F-2 to F-3 with $\frac{1}{8}$ " x $\frac{1}{8}$ " balsa down to the first stringer on each side. If you would like to cover the front of the fuselage between F-2 and F-4A with $\frac{1}{32}$ " plywood as on the original, you should install the landing gear at this time. The $\frac{1}{32}$ " plywood will add a lot of strength to the fuselage and will improve the appearance and realism in the end result.

Epoxy the F-1 firewall in position at this point in the proceedings and the fuselage will be structurally complete.

I covered the fuselage at this time. It is easier to work with at this stage as the stab and the fin are not yet in the way.

The Wing Structure

The wing is built flat upon the bench, in two halves, and assembly is straightforward, except perhaps for the wing tips. The tips are cut from $\frac{1}{2}$ " sheet balsa (hard). Toward its rear, the wing tip has to be tapered, starting about 2" from the trailing edge. This allows the top trailing edge $\frac{3}{32}$ " x $1\frac{1}{2}$ " balsa sheet to fit over it.



Designing ideas of the day struck out in every direction, but the Bristol visualized the future. Below: Clean in fuselage, efficient wing, an adequate tail. Flight potential is visible in a model.



The two wing halves may now be joined. The center-section will be sheeted on both top and bottom to add strength and durability to the structure. I added $\frac{1}{32}$ " balsa vertical pieces between all the full ribs for extra strength. It is well worth the additional effort to know that a wing will not let go on you.

Decide at this time whether your model will have ailerons or not. I feel that you should put them in to make the model fly and respond better.

The Tail Feathers

The vertical fin and rudder are cut from $\frac{1}{4}$ " sheet balsa (soft). The stab is built up to help keep the model from ending up tail heavy. Elevator surfaces are of $\frac{1}{4}$ " sheet (soft) and sanded to a taper as shown on the plans.

The Cowling

The cowl may be fabricated from blocks and hollowed out in the typical fashion, or if you prefer to save some structural work, a fiberglass cowling can be purchased from Hartman Fiberglass, Argents, Illinois 62501.

Covering and Finishing

The original shown here was covered with Silkspan, clear doped and painted. The insignias and markings were done with contact paper. This is much easier and faster than masking tape. Profile Publications Number 193 gives the color schemes and markings for the *Bristol M1*.

Radio Installation


You will find ample room for almost any radio system in this model and you can

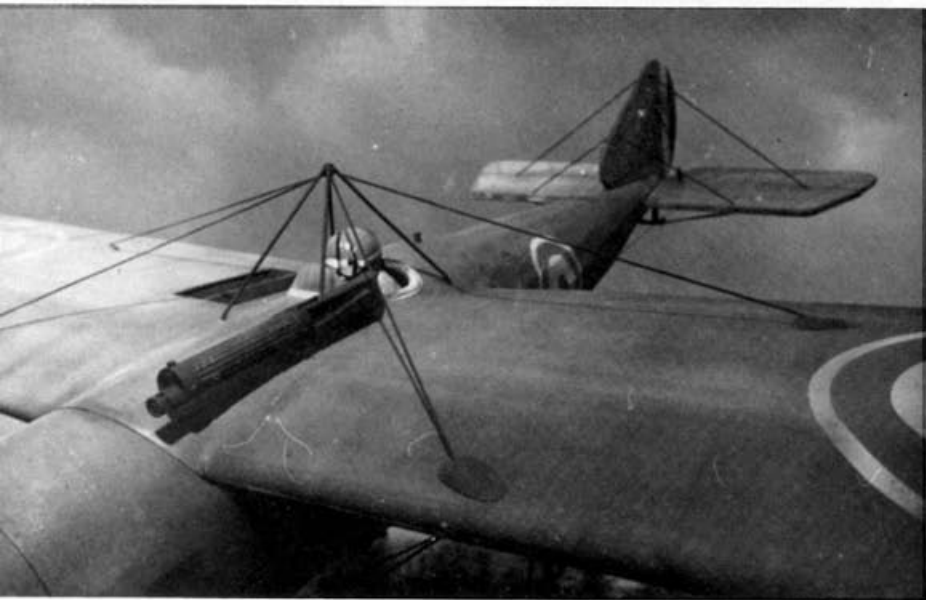
even get a 10 ounce tank in as well. I used the new Heathkit 8 with the small servos.

Flying Time

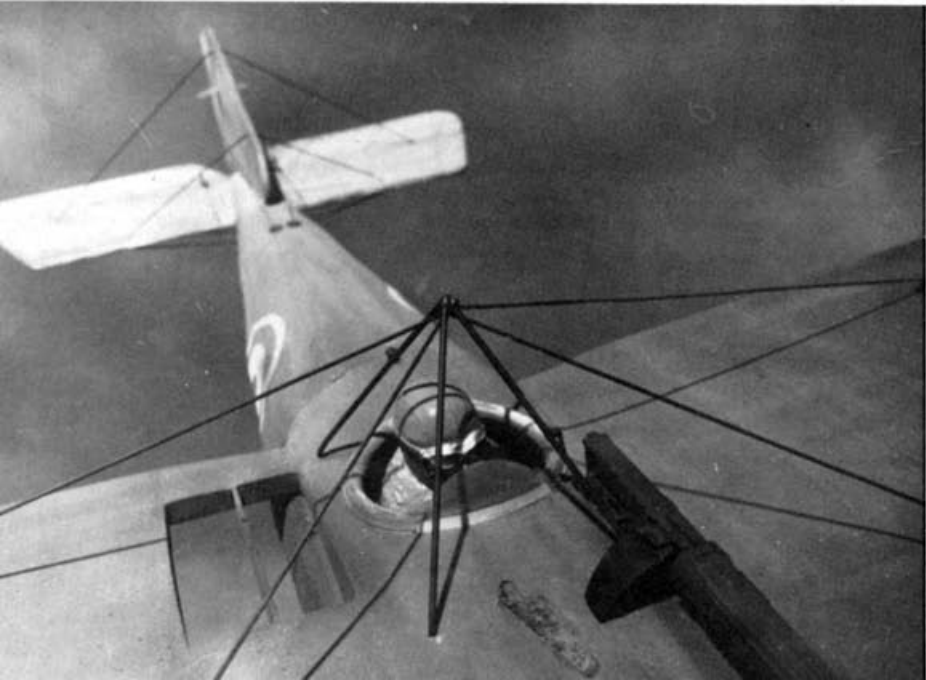
The "*Bristol's*" performance in the air is pure joy. The wide tread of the gear makes it very easy to handle on rougher ground. It will climb out with very little up-elevator and reach a good altitude in short order.

The low speed performance is fine, up to a point, at which time it will just stop flying. Don't overdo!

The lighter your finished model, the better it will perform. Mine came out about 4 $\frac{3}{4}$ lbs. ready to take the air. The "*Bristol*" is a clean looking aircraft and its low-drag lines allow it to fly extremely well. It looks great in the air, and upon the ground. A project well worth the effort. Good luck with it and safe flying. 



No faith, they had no faith. It was a day in which biplane wings collapsed downward on violent landings and upward on sharp pullouts. Landing wires stressed for one and flying wires for the other. Then, suddenly, the monoplane. Where to put the rigging? Tubing mast solved the dilemma.



Buried behind the cold and phony dummy engine, one that provides the life. The cowl design is a natural for such realism. Engine cools well.



Fin and rudder from $\frac{1}{4}$ " sheet, edges rounded. Photos will help you with placement of rigging. Below: Stab, elevators and streamlining seen.

