



BLUEBOTTLE

A QUICK-BUILD TWO CHANNEL 1/2A SPORT BIPLANE

By Jack Headley

The original concept for this model was a two channel monoplane but, as the design progressed, it began to look rather heavy and clunky, so another wing was added to lower the wing loading, and help the radio box shape. I'm not sure that the clunky looks entirely disappeared!

The name was a result of a paucity of paint in the Headley supply cupboard. The only thing remaining

was a small quantity of blue Super Poxy, left over from another project. So --- blue it became, and Bluebottle its name.

The project was to be strictly a sport model, with a stock reed valve Cox .049, regular fuels and props, and easy to fly. All in all it turned out that way. So, if you're into this sort of thing --- flying for pleasure, with leisure, or flying with leisure, for pleasure --- read on.

CONSTRUCTION

The model consists of two main items, the balsa body plus tail unit, and the foam wings. The wings are made first, as these are needed in the body construction later.

Both wings are made from "Ace" constant chord mini-foam wing kits (No. 13L192). The top wing is full span and has a balsa 1" x 1/4" T.E. added. Instructions in the Ace kit box describe how to do this. The wings are



BLUE BOTTLE

Designed By: Jack Headley

TYPE AIRCRAFT

2 Channel 1/2A Sport Biplane

WINGSPAN

Upper 36", Lower 26"

WING CHORD

Upper 6½", Lower 5½"

TOTAL WING AREA

377 Sq. In.

WING LOCATION

Biplane

AIRFOIL

Semi-Symmetrical

WING PLANFORM

Constant Chord

DIHEDRAL EACH TIP

Upper 1½, Lower 1/2

O.A. FUSELAGE LENGTH

26 Inches

RADIO COMPARTMENT SIZE

(L) 7" X (W) 2" X (H) 3"

STABILIZER SPAN

13½ Inches

STABILIZER CHORD (incl. elev.)

4 Inches

STABILIZER AREA

54 Square Inches

STAB AIRFOIL SECTION

Flat Bottom

STABILIZER LOCATION

Top of Fuselage

VERTICAL FIN HEIGHT

5 Inches

VERT. FIN WIDTH (incl. rud)

5¼ Inches

REC. ENGINE SIZE

.049

FUEL TANK SIZE

Tank Mount

LANDING GEAR

Conventional

REC. NO. OF CHANNELS

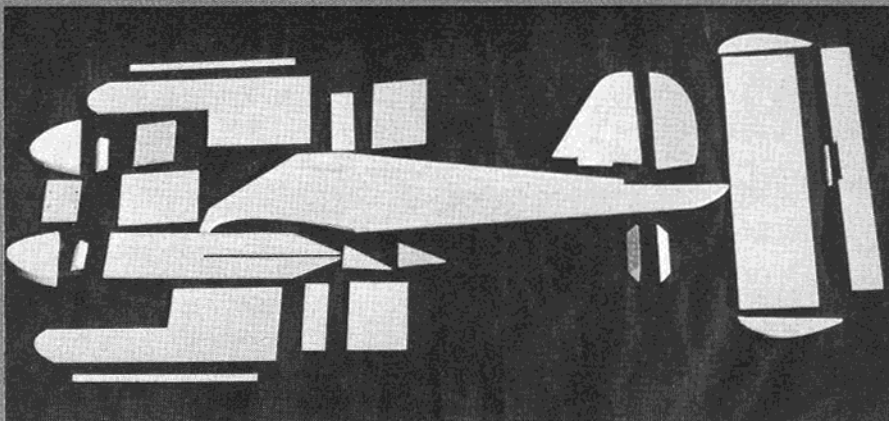
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CONTROL FUNCTIONS

Rudder and Elevator

BASIC MATERIALS USED IN CONSTRUCTION

Fuselage	Balsa
Wing	Foam (Ace wings)
Empennage	Balsa
Wt. Ready To Fly	19½ Oz.
Wing Loading	7½ Oz./Sq. Ft.



Fuselage and tail parts.

Fuselage:

The fuselage again consists of the minimum structure, a box for the radio, a profile backbone, and all sheet tail surfaces. The radio box was designed to use sport size equipment but the guys in the headshed at RCM asked me to use the new Tower System 500 with the Mini Flight Pack. We will discuss the Tower radio in the flying portion of this article.

The first item on the agenda is to make sure that your radio will fit the box drawn, and, if not, to make the necessary modifications. The size of the box isn't really sacred.

The next step is to make a sort of kit of all the sheet pieces required, which can then be assembled almost in one step. Begin with #1, the firewall, which is cut from 1/8" ply. The engine is attached to this piece with 3/48 bolts, and blind nuts epoxied to the back of the firewall, so drill the firewall as required and install the blind nuts.

Next, cut items 2 through 6 from 1/8" sheet balsa and, from a tough piece of 1/4" sheet, cut out item 7. Make the two "fuselage sides" (the outlines of which are shown with small triangles on the plan) from 1/8" sheet also. These pieces are now assembled in the following way.

Place #7 on the plan, and mark on it the position of items 4 and 5. Now glue items 4 and 5 to 7, then attach one fuselage side, and the firewall #1. Glue the 3/8" triangular strip behind the firewall, and then the 1/4" triangular strip along the joint between the side and the floor.

Now attach the other fuselage side, followed by the triangular strips just discussed, and items 2 and 3. This completes the basic radio box, so the next step is to smooth this out with a few strategically placed blocks; but, before this we need to make item 8, from 1/8" ply, and epoxy into place the 3/32" undercarriage wire. When this is set up it can be glued to #'s 4 and 7.

Balsa blocks are now needed in front of #8, on top of #2, and block or 3/8" sheet inside the engine cowling. (The construction photos may show additional blocks in the nose region, since originally I'd planned to have an inverted engine. Luckily, sense prevailed, and I ended up mounting the engine in its correct upright position.)

The lower wing saddles are next. These, #9 on the plan, are cut from 1/4" sheet, and glued to the bottom of #4, to help support #8. Fill in-between #9 and #7 with some scraps of 1/4" sheet. The region aft of #9 is filled in with two small triangular pieces of block.

The upper wing aft section rests on #'s 6, and these can be glued in place after a quick check that the fuselage sides are supporting the top wing correctly, both fore and aft and sideways. Two pieces of 1/16" sheet close in the radio box, between #6 and #4.

Now for some sanding and contouring. The general shape required is shown on the photos, so sand away at all the blocks until this shape emerges. Also, sand on the lower wing supports until both wings line up correctly.

The tail unit is made from 3/16" sheet, and needs little comment. Note that the fin is given some support by keying it into the front of the tailplane. This whole unit is also supported on the fuselage with a couple of 3/8" triangular strips. Again, don't final glue anything into place before checking its alignment. The rudder and elevator are attached with small nylon hinges. Recesses cut into the controls help to keep gaps between the surfaces to a minimum. That's it for the basic body, so a final sanding all over, and it's time to do the radio installation.

The radio pieces fit as follows. The battery pack goes into the space aft of

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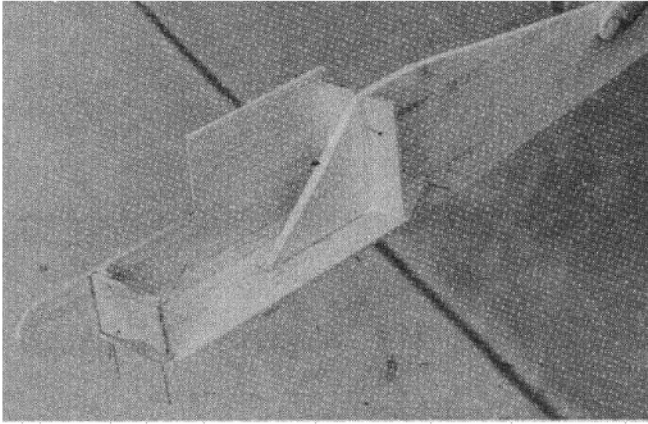
epoxied together with 1½" dihedral under each wingtip.

The bottom wing has a shorter span than the upper, so cut each panel down to 13", making a total span of 26" before epoxying together. This lower wing is otherwise unmodified. Dihedral for the lower wing is 1/2" under each tip.

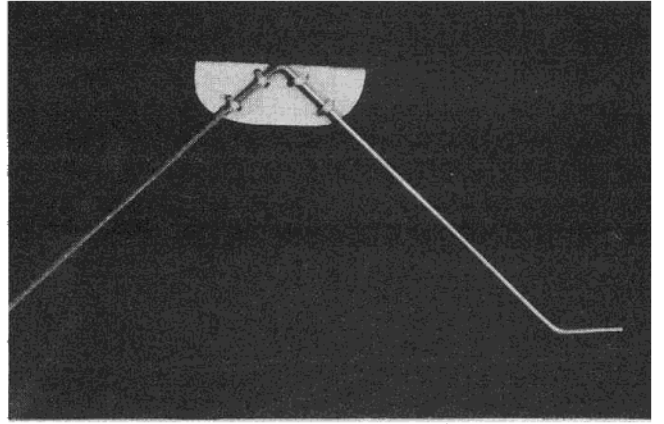
Both sets of wings are reinforced with strapping tape along the lower surface. The kit instructions again cover this operation.

The upper wing trailing edge is cut back slightly in the center section, to give the wing bands a larger radius to wrap around. This relief is shown on the plans.

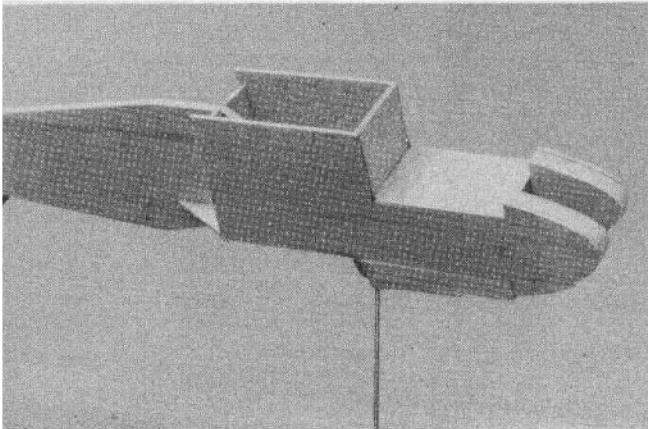
Now for the fuselage.



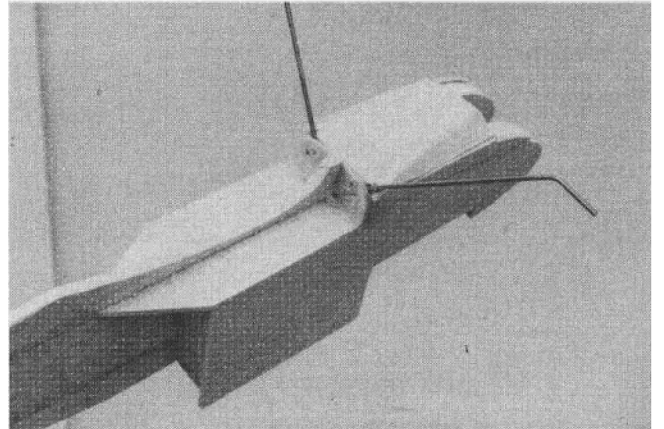
First step in fuselage assembly.



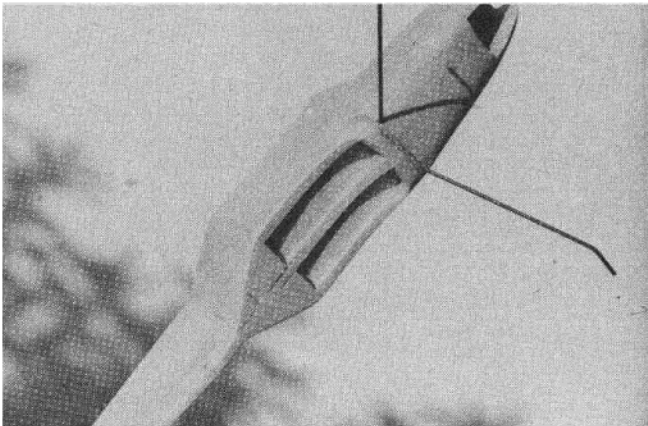
Landing gear wire is sewn and epoxied to Item 8.



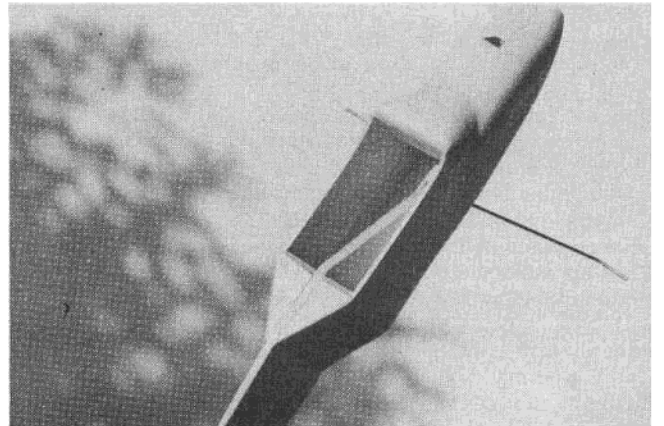
Nose and bottom blocks and landing gear have been installed.



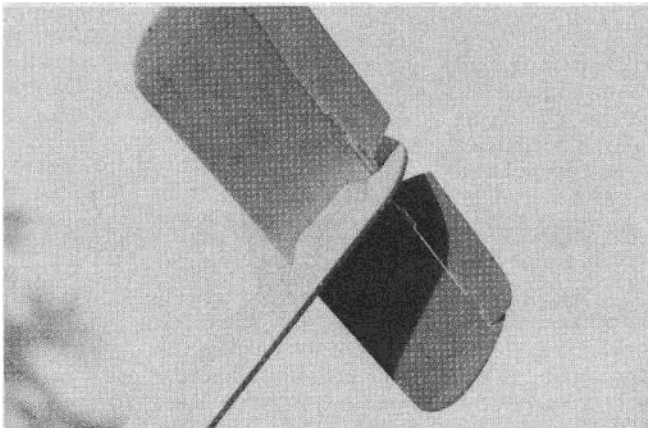
Nose bottom assembly.



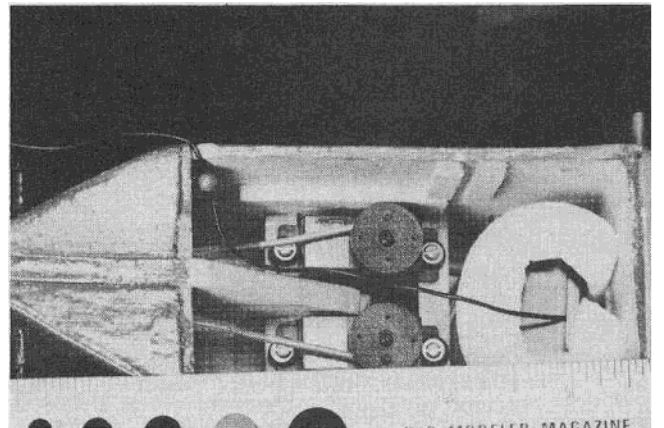
Bottom wing saddle shape.



Fuselage top filled in and shaped.



Tail surfaces shaped and installed.



Tower Mini Flight Pack radio installed with lots of room to spare.

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the firewall, and you may have to trim the front edge of #7 to permit the battery to reach this space. The two servos are attached to the fuselage sides in the back of the box with servo tape. A scrap of 1/32" ply glued to the fuselage sides makes a suitable mounting plate. Since I am using the Tower Mini Flight Pack and the servos are so tiny, I decided to install a pair of 1/8" x 5/16" plywood rails for servo installation. (This Tower radio had not been introduced when I started this project.) The receiver is located in-between these two items.

The servos are connected to the controls with NyRods, the outer sleeves of these being sewn onto the body as shown on the plans. The front edges of these sleeves are held in place by the 1/16" radio box fairing. Note that at the aft end the NyRods are at different levels so that the pushrods run to the control horns in a gentle curve.

Install the radio, temporarily hook up the controls and operate, checking for ease of control movement. When everything seems okay, remove the radio and the inner NyRods, and prepare the fuselage for painting. As I mentioned before, the original was painted blue, after a couple of coats of

sealer had been brushed onto the balsa. The only other painting required is the balsa trailing edge strip on the top wing, and this I colored white. Apply letters and decals as desired. If lightweight iron-on film makes you happier, do it. Just keep it lightweight.

Reinstall the radio now; make a final check on the wing alignment; put in the engine, and it's time to think about a little flying.

Flying:

Our prototype weighed in at 16 ounces without radio and 19½ ounces when the radio was installed. It wasn't surprising then to find out that the model didn't want to take off from my rather rough runway. I prefer hand launching anyway for small models, and the Bluebottle hand launches quite nicely. I expect that given a smoother runway, take-offs should be no problem.

The model climbs quite steadily and with a full tank will reach about 500 feet altitude. This is quite far enough away, one of the pitfalls of smallish models such as this is knowing which way the model is heading, towards you or away from you at this distance.

At this point a few words concerning the Tower System 500 Mini Flight Pack radio are in order but presents a problem. Everything they say in their ads were found to be valid so instead of

repeating it here you can read the ad. The radio was not disassembled for a technical examination, it was merely installed and flown. The problem is just what can you say when it is everything Tower says it is and you get trouble-free performance. All we can say is that it is a great little radio.

Bluebottle will fly quite happily hands-off in large trimmed circles (that I like), and all in all makes a good sport flier. However, if your interest is in something a little more potent, fit a T.D. .049, with a quality prop, and hot fuel, and this should make a "hands-on" type flier. For myself I prefer something that I can fly, then fly again instantly, not a model that I'm glad when the flight is over — if that makes any sense. Happy flying.□

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