'OL BLUENOSE

Designed to resemble a full size homebuilt, Clive Smalley has created an attractive aerobatic model that is a pleasure to build and fly.

By Clive Smalley

Watching the flying activities at my local club field (not flying you'll notice, just watching) and demonstrations at various trade exhibitions, I have often noted that model fliers tend to "burn up the sky" at full bore for the whole flight, only finally throttling down when entering into the pattern or, more usually, straight into final approach. There is a lot of fun to be had using the throttle through aerobatic maneuvers, and cruising at reduced power between them. This has been pointed out many times before in the magazines but little seems to change at grass roots club level. The new turnaround aerobatic schedule will no doubt influence the contest fliers' approach and the vintage scene has also brought about a naturally slower flight scene, but just why does the average club flier with a .40 powered "kipper" type continue to blast around? Is it because there is a lack of confidence in the models flown, through being too highly loaded, and, therefore, the fear of stalling out? Is it because the "fish shape" design doesn't look or sound "right" throttle back? Or, is it simply just habit from years of similar flying handed down to newcomers by the old hands, from the lack of real flying training usually given at club fields? Most tuition stops when the pupil can

ABOUT THE AUTHOR

Clive Smalley, 41 years old, is a trained mechanical engineering designer residing in England. He is presently working in local government with the technical aspects of waste disposal and pollution control.

Clive's modeling interests go back to 1952, starting in R/C in 1969. He is particularly interested in powered sports and scale types and also slope soaring gliders. Other hobbies include painting aviation pictures in oil and acrylics. Over his modeling career, he has had numerous model articles published.

reasonably and confidently take off, stooge around with perhaps the odd loop, and land again without assistance. From there on he's usually on his own as regards to learning to fly aerobatics and without any knowledgable guidance. Okay, so I'm not the guy to tell you how to fly aerobatics as others are far better qualified than me, but I can provide an aeroplane design that will at least provide a basis both in performance and looks that removes two of the above questions. Kicking the habit is up to you.

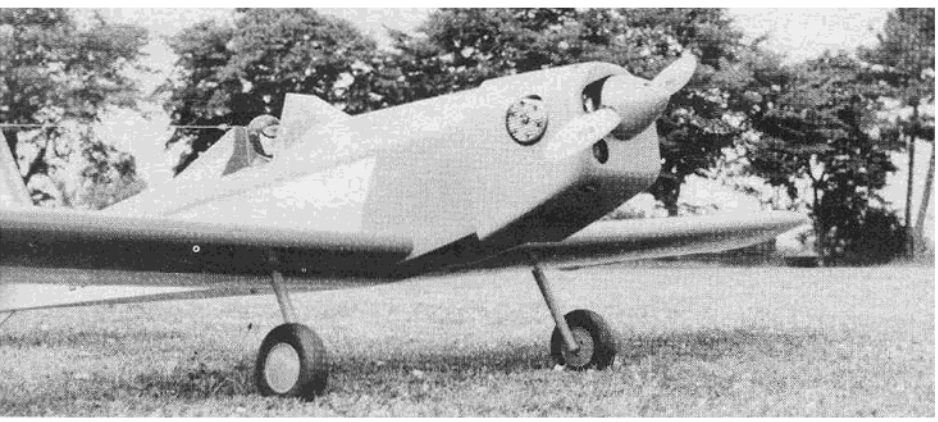
The design of the model was based on the following criteria:

(1) Low wing loading for good low speed characteristics.

(2) Large wing area to reduce the R/C and engine weight percentage.

(3) Thick symmetrical wing section with parallel chord planform to keep the airspeed down and give good handling near the stall.

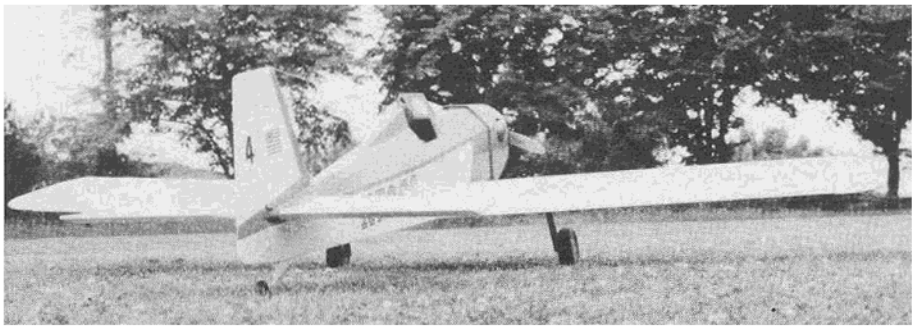
(4) Power requirements suitable for average "cooking" 2-strokes or possible use of a 4-stroke should I purchase one later.



(5) Attractive semi-scale appearance with simple construction.

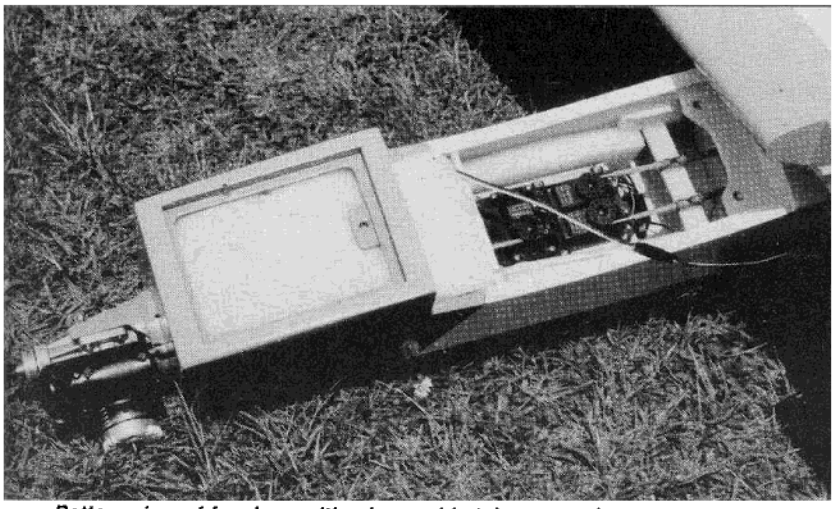
(6) Two wheel main fixed landing gear because I like tail draggers.

(7) Flaps were considered as an option but I omitted them due to laziness, a point (on reflection) that

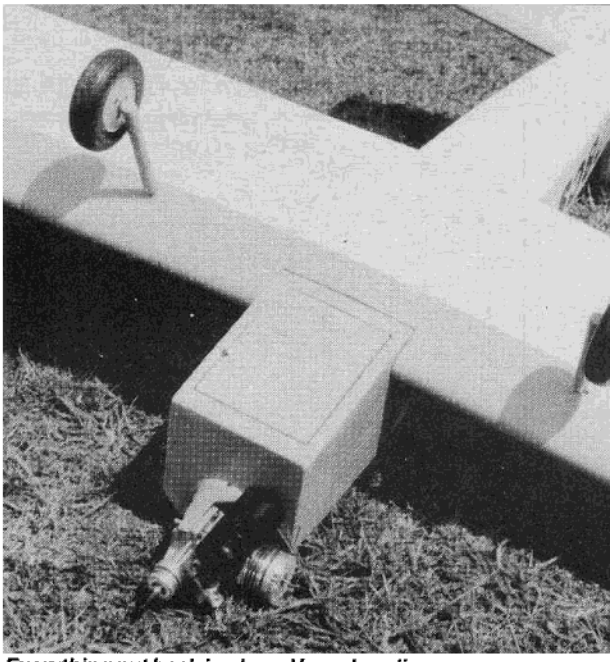


'OL BLUENOSE

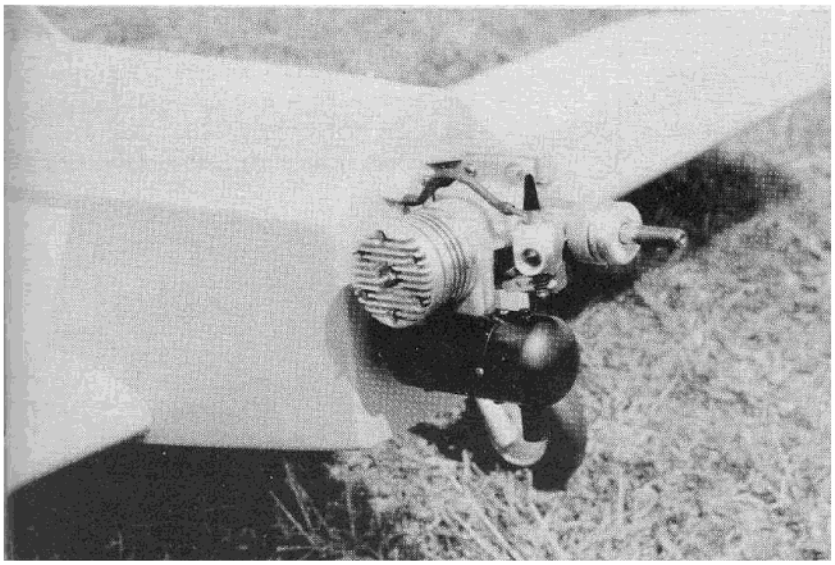
Designed By:
Clive Smalley
TYPE AIRCRAFT
Low Wing Sport
WINGSPAN
65½ Inches
WING CHORD
12 Inches
TOTAL WING AREA
780 Sq. In.
WING LOCATION
Low Wing
AIRFOIL
Symmetrical
WING PLANFORM
Constant Chord
DIHEDRAL EACH TIP
1¼ Inches
O.A. FUSELAGE LENGTH
51¾ Inches
RADIO COMPARTMENT SIZE
(L) 10½" x (W) 4" x (H) 3"
STABILIZER SPAN
22⅞ Inches
STABILIZER CHORD (incl. elev.)
6½" (Avg.)
STABILIZER AREA
150 Sq. In.
STAB. AIRFOIL SECTION
Flat
STABILIZER LOCATION
Top Of Fuselage
VERTICAL FIN HEIGHT
8 Inches
VERTICAL FIN WIDTH (incl. rud.)
8" (Avg.)
REC. ENGINE SIZE
.61 2-stroke
.61-.80 4-stroke
FUEL TANK SIZE
16 Oz.
LANDING GEAR
Conventional
REC. NO. OF CHANNELS
4 (5 Opt.)
CONTROL FUNCTIONS
Rud., Elev., Ail., Throt.
Flaps (Opt.)
BASIC MATERIALS USED IN CONSTRUCTION
Fuselage ..... Balsa, Ply
Wing ..... Balsa, Ply
Empennage ..... Balsa
Wt. Ready To Fly ..... 112-128 Oz.
Wing Loading ..... 20-24 Oz./Sq. Ft.



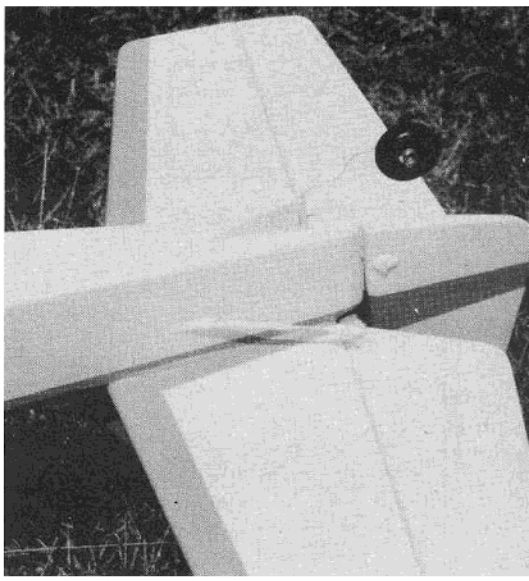
Bottom view of fuselage with wing and hatch removed.



Everything put back in place. Very clean lines when cowl is in place.

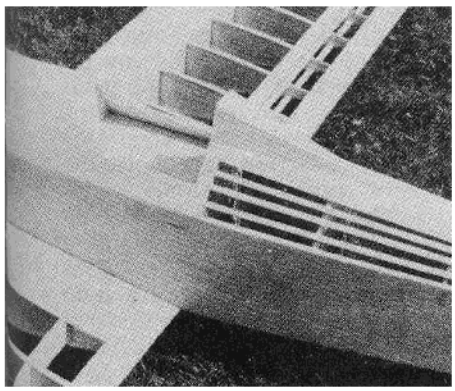


Cowl removed to show the clean installation by the author. Prototype used British Merco .61 for power.



Bottom side of tail group. Original model had a fixed tail wheel.

may have been an error. It depends on your landing strip. The model does tend to float on landing even with just a touch of power. Flaps would help the spot landing, but if you fly from tarmac, or have a large field, it's probably not worth the complication for such a small percentage of the flight envelope. On future models, to this criteria, I would fit them but as I have no practical experience using flaps, I have omitted them from the plan. By all means modify the wing if you wish. The inset ailerons were specifically chosen to enable simple torque rod operated flaps to be included.



Construction is easy to follow and when covered with one of the fabrics, looks like a small version of a home-built.

'Ol Bluenose is not intended to represent any particular airplane but in general has the lines of a typical EAA/PFA type, though possibly the cockpit is perhaps too far back to give the impression of, say, a Volkswagon powered type. It is perhaps more of the Spinks Acromaster size if you based a scaling factor on the pilot (Williams 2⅝" scale used on the prototype).

The construction is extremely simple for this size of model, with the fuselage decking being no more than flat sheets and strip on a basic box. Some minor changes have been shown on the plan as compared to the prototype, mainly to balance the tail group appearance better and to slightly desensitize the elevator. Other minor alterations have been to the nose construction to simplify positioning the fuel tank.

The prototype is powered by a Merco .61 which is adequate power although I had much trouble during early testing with a poor crankshaft crankcase front bearing fit. Any .60/.80 4-stroke would be okay with the sound considerably improving the overall impression in the air. The fuel system is kept separate from the main R/C compartment which is one of my pet fads. You could modify it if you wish by omitting the bottom hatch and cutting a tank hole through the bulkhead and poking the tank in through the R/C compartment. The structure is, however, plenty strong enough with the hatch. I've proved it! An advantage of the hatch is that you can locate the NiCd pack in the tank compartment if you need a little nose ballast.

Flying-wise the airframe proved to be sound and fairly vice free (although I had initial motor problems as mentioned). In fact, the early flights

nearly all ended in dead stick landings because of the motor, and several times I stretched and overstretched the glide in an effort to hit the strip. The model remained controllable right down to the stall. Both the ailerons and elevator are quite powerful; it would be best to test fly on rate switches if you have them. Roll rate is good, spins easily accomplished without the use of aileron, and inverted flight easy. Flying at about half throttle, one of my original beefs, produced nice sedate flying in a scale-like manner but with plenty of power in reserve to fly maneuvers. Take-offs are dead easy. Little rudder has been found necessary due to the wide track. It makes little difference whether you start at full throttle, or gradually open up.

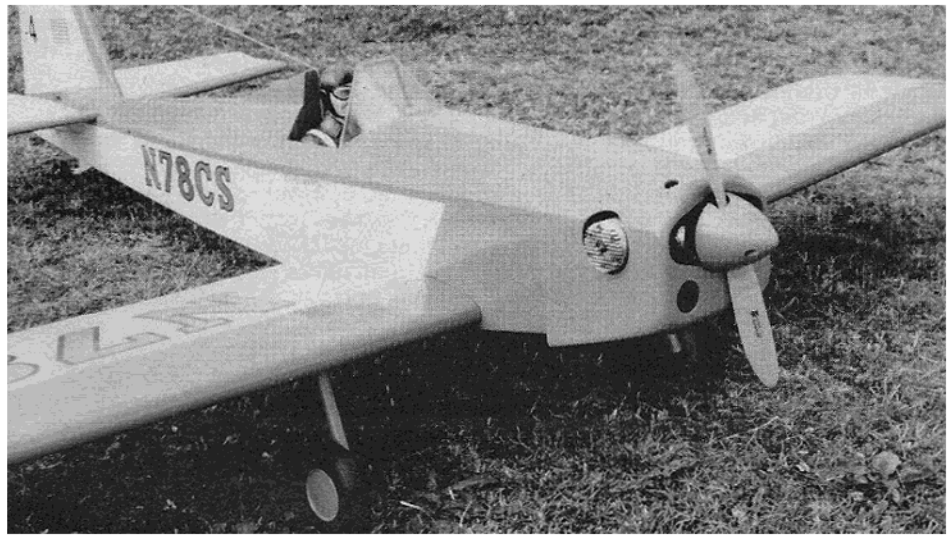
All-in-all the airframe has fulfilled my original aims to give good controlled flight over a wide speed range and it has proved most enjoyable to use the throttle considerably during each flight.

As noted, construction is very basic so these notes have been left to the end. Experienced builders may now watch TV, or even start building, perish the thought!

Construction Notes:

The wing is constructed over the plan by pinning down the front lower spar, shimming up the lower rear spar and cutting a parallel strip from scrap to support the rear of the ribs. This gives three positive location points to assist alignment. The ribs are added next including the aileron end ribs, which are spaced 1/16" away from the main ribs with scrap 1/16" sheet balsa and pinned or spot cemented in the correct location. Next add the top spars, aileron top spar sub leading edge, and rear upper trailing edge. Now web between the main spars with vertical grain sheeting and leave it to dry.

Remove it from the building board and flip it over, re-pinning down along the trailing edge. Add the bottom T.E. sheet and the lower aileron spar. Web between the aileron spars the same as in the wing. Complete both wing panels to this stage. Epoxy the wing panels together adding in the braces. Fit the landing gear rib stiffeners (W-8), and mounting blocks and glue in the wing dowels. Trim the sub L.E. to match the rib curvature and sheet the top and bottom leading edges back to the spar. Fit the aileron control tubes and trial fit the servo. Cut the ailerons away from the rear spar and through the end rib; spot cement. Complete the leading edge of the aileron. Glue in the aileron horn, hinge blocks between the spars in the aileron, and the wing. The ailerons can be center hinged using pinned hinges, or top hinged. The gap on the prototype was filled with 3/32" sq.



strip glued to the wing rear spar between the hinges in line with the pivot. This has proven to be an effective method of sealing the gap irrespective of the position of the aileron. When satisfied that everything works okay, finish sheeting the wing center section, add the leading edge, and shape; cap all the ribs and build on the wing tips. Phew! Alternatively, have a foam wing made for you!

The fuselage is built in the conventional way. The upper side is dead straight to enable the sides and formers to be assembled inverted on the building board. The horizontal formers in the tank bay are a little unusual, but give a clear access to the tank and plumbing. They also give lengthwise support to the engine mount. The front decking is built from simple sheet as far as the cockpit. Aft of this position, side stringers are used for lighteners. Side sheeting could be used but due to the fuselage plan curvature it will not be simple straight sided shapes.

The tail group is easy and no further explanation is necessary. The tail wheel is shown fixed or steerable, but do use some form of protection for your servo. Tail wheels take a surprising amount of hammer, particularly if you fly from grass. The prototype used a fixed tail wheel.

Finishing can be any method you prefer. The prototype was finished in my favorite nylon and dope and painted. One of the plastic films or heat shrinkable materials will do nicely.

Build the cowling to suit the engine/silencer used, but try to enclose the silencer if possible. Make sure adequate cooling air can get **into** and **out of** the engine bay.

With a wing area of around 780 sq. inches it is quite possible to build the model to a loading of 20 oz./sq. ft. or less. The design is very strong requiring only a medium to medium/soft grade of balsa throughout, except for the main spars which should be a harder stock. You could substitute spruce but the weight goes up and it is **not** necessary. Keep lightness and trueness in mind throughout construction and you will have a sweet flying aerobatic design with no vices. □

From RCModeler Dec. 1985