RM TEST REPORT Veron "TOMTIT"

built by BRIAN REED and test-flown by ROY YATES

VERON'S Hawker *Tomtit* is a 52in. span (approx. 1/6 scale) replica of the very first in a series of famous biplanes, built for the Royal Air Force in 1928 and used mainly for advanced training and instrument flying. There are one or two departures from scale, the main ones being the increased areas of fin and tailplane, and the omission of the exhaust stubs and pitot tubes, etc. However, these items are of a minor nature and can very easily be altered, or added, together with cockpit detail, by the keener scale types.

The impression one gets upon opening the box is that here is a model which is certainly going to consume a great deal of time but, although obviously it takes longer to build than the usual multi model, building time is actually fairly rapid. One of the reasons, if not the main one, must be the excellent plans and building instructions included in the kit. Besides the main general arrangement drawing, there is a very comprehensive detail drawing and these, together with an instruction leaflet and a set of no less than 36 step-by-step photographs of the model at various stages of construction, leave absolutely nothing to be desired.

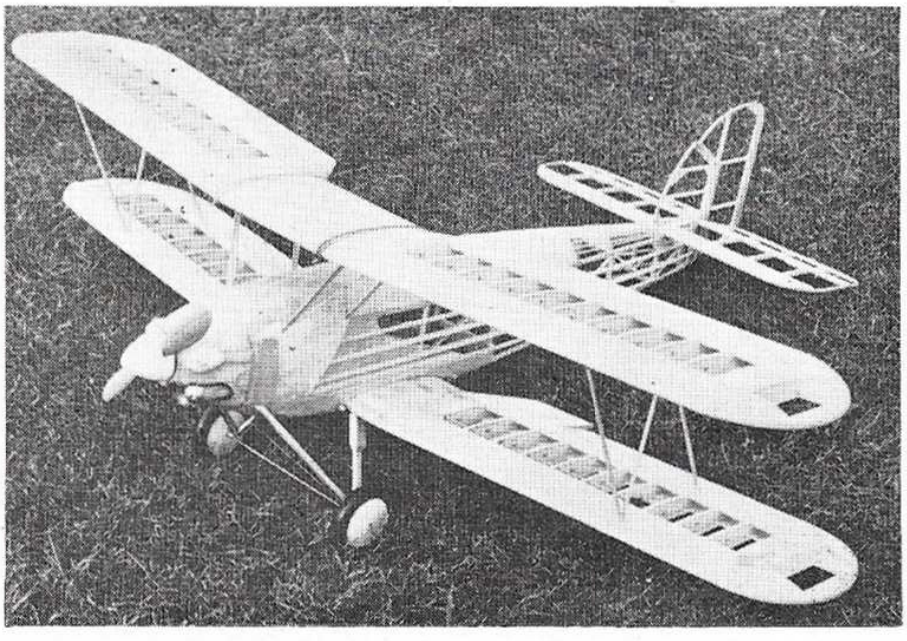
The quality of materials, die stamping and cutting were first-class although a little knife assistance was necessary with the ply components. Included in the kit are five reasonably good moulded plastic replica cylinders of the 150 h.p. Mongoose engine; a spinner, Palmer cord wheels and a set of self-adhesive vinyl R.A.F. roundels and flashes, together with control horns, piano wire, pre-formed cabane struts and undercarriage, nuts and bolts. Items of additional expense were control-surface hinges, quick-links and nylon-chiffon for covering (although heavyweight tissue is included in the kit).

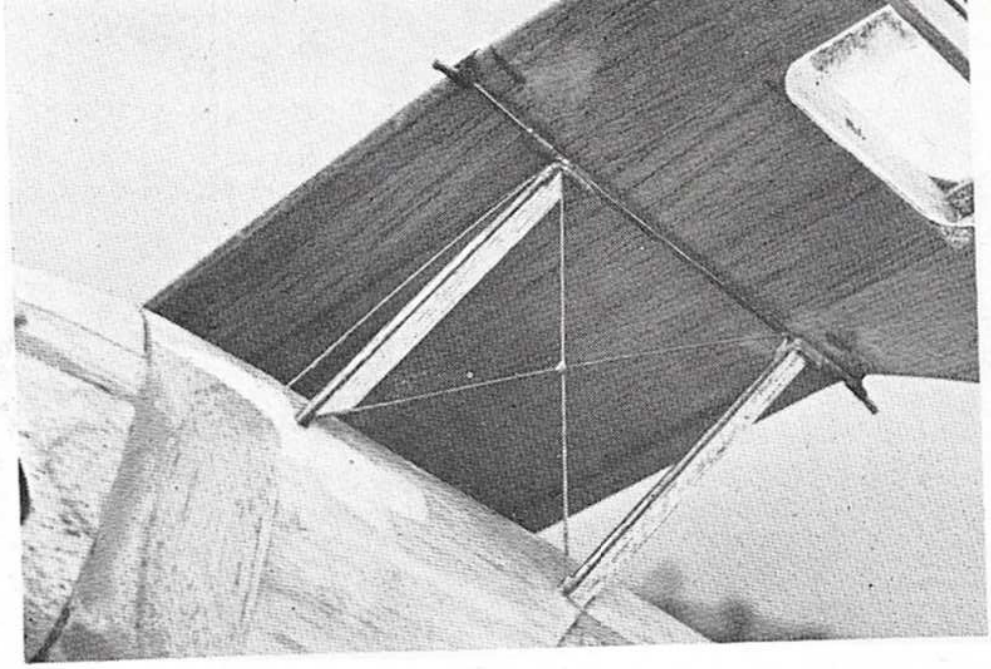
How it went together

Construction was accomplished with no problems whatsoever. So long as the plans are well and truly studied beforehand, and the sequence of building followed to the letter, no gremlins will cause any trouble. Most of the installation has to be carried out, or made provision for, early in the building programme. This particularly applies to the engine, which has to be mounted with all necessary fuel tubing, linkages, silencer, etc., before any building-up of the nose cowling can be attempted. I used an O.S. 35 in this instance—the reason being that I don't happen to possess a 29, which apparently is what the prototype model had fitted. (The power range recommended is between .29 and .40 cu. in.)

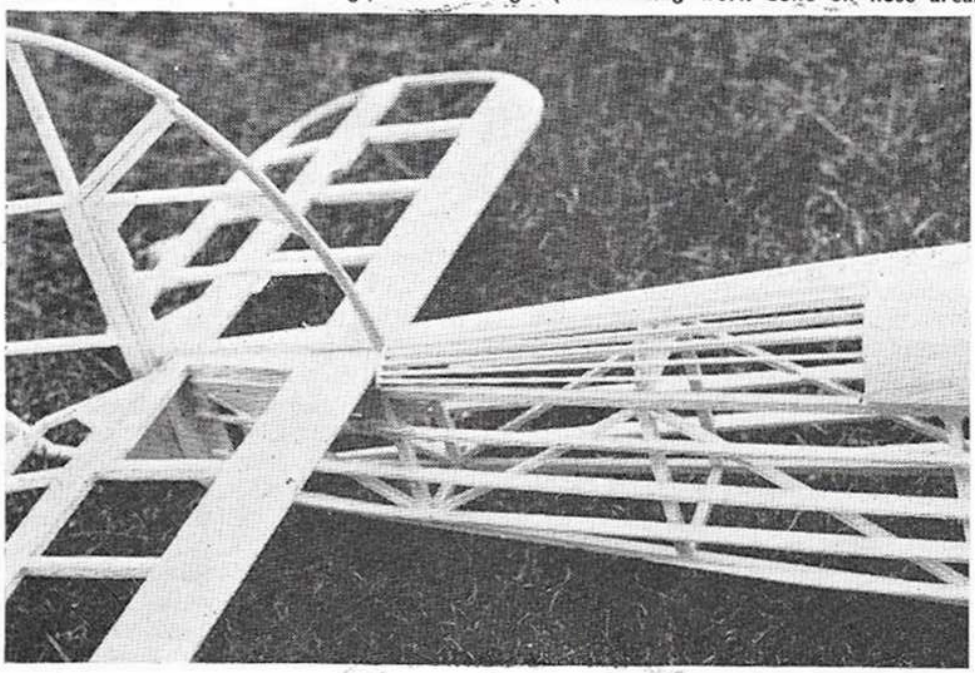
All the precut parts fitted exceptionally well and templates are provided for forming the windshields and locating the dummy cylinders in the cowling. Particular care has to be taken when assembling the cabane structure. Although the main struts are preformed, the assembly of the whole has to be carried out accurately in order to achieve the 1 deg. positive incidence to the top wing. To assist in this respect, however, a jury-strut jig is shown on the detail drawing and this certainly goes a long way in achieving accuracy.

A warning given in the instructions is to keep the tail assembly an ultra-light structure (as one has to in almost all biplanes) in order to obtain the correct c.g., and to resist any temptations to beef-up this area. I subsequently found

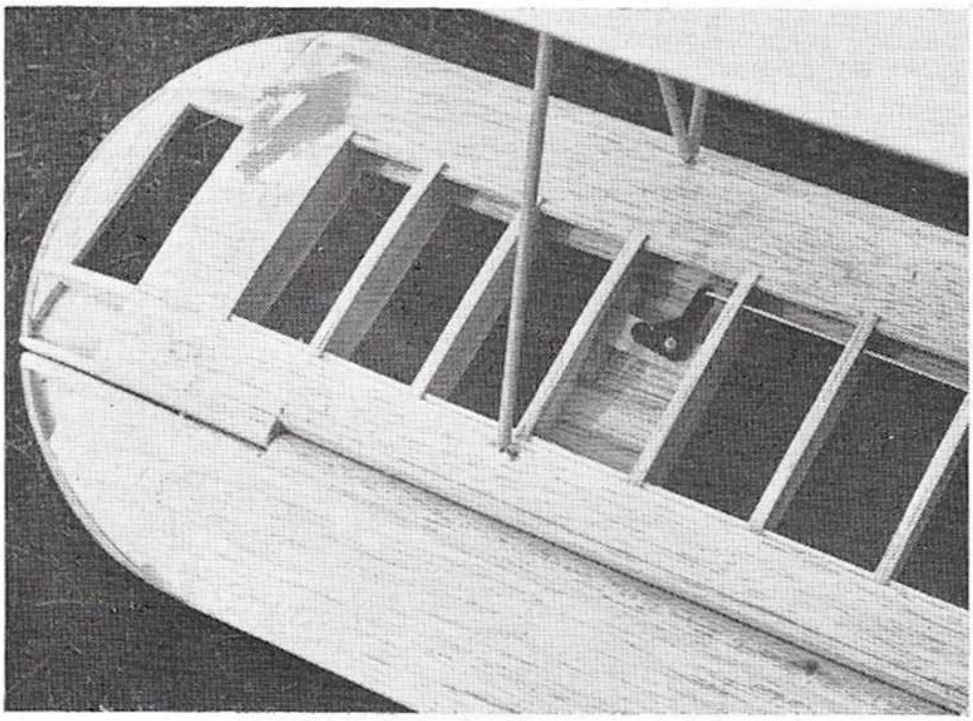




Cabane struts have balsa fairings, wire bracing. (Note filling work done on nose area.)



Tailplane outlines, as well as wing-tips are from laminations of thin ply. Very strong and quite light. Uncovered model, with engine, weighed 3lb. 14oz. Flying weight: 5lb. 14oz. (Prototype weighed 5lb. 6oz.).



that both tailplane and fin possessed ample strength when built as per plan.

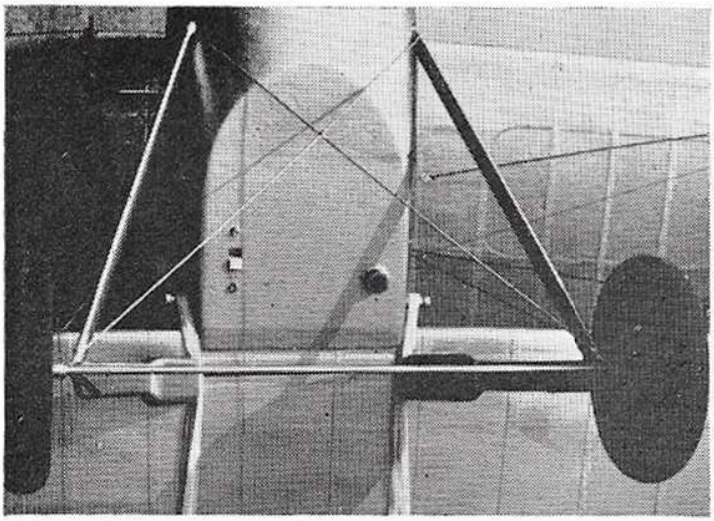
For those who enjoy carving the living wood, there is a fair amount of this to be done up front when forming the cowling and, because of the oval nose section, the pockets for locating the engine cylinders have to be formed at varying depths in order to keep the cylinders on a common diameter. For fliers who have really perfected their landings the wing-retaining rubber bands could obviously be dispensed with and, with a little ingenuity, the wings could be unobtrusively fixed.

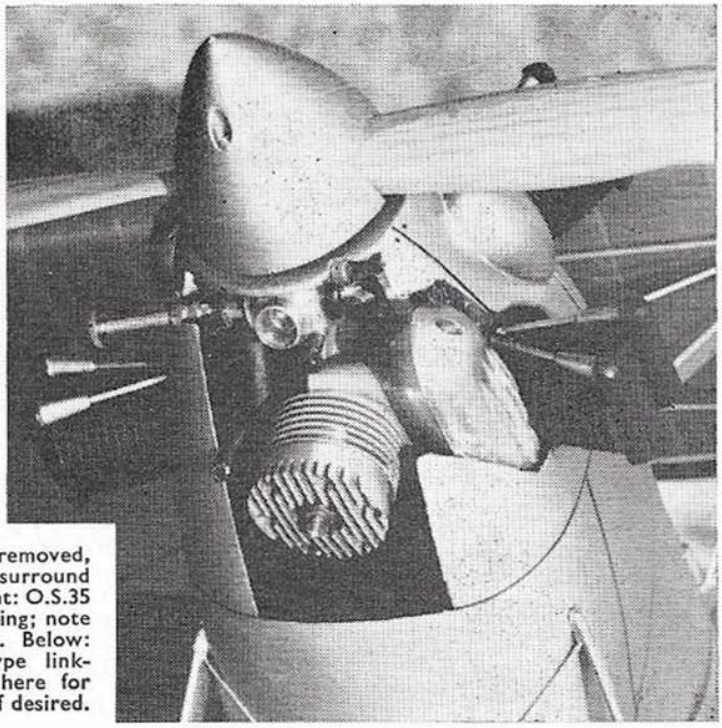
One small omission from the plan, as far as the top wings are concerned, is the absence of the mass-balance weights to the leading edge slats. Although these are clearly shown on the photographs of the finished model, no details are given on the plan and are consequently left to the imagination.

That silver finish

Although tissue is supplied with the kit, I opted to cover the airframe with close-weave nylon-chiffon, which I have found to be slightly lighter in weight than ordinary nylon. This material gives a more natural " scale look," too, unless of course it is " over filled." Three coats of 50 per cent thinned clear dope seemed to do the trick, although when doping the tailplane, I fell into the trap of not noticing the dope seeping through the fabric and " pooling " in one or two places—something to watch out for. As always, a good deal of work has to be put into preparation—especially the nose area—if a good final finish is to be obtained.

The subject of painting was approached with some trepidation as silver finishing was, for me, something of an unknown quantity and I had heard tales that it was not exactly the easiest of finishes to obtain. However, in the middle of my deliberations, I just happened(!!) to read Roy Yates's scale column in the May issue and lo-and-behold!—a letter from a reader recommending a silver paint with good fuel-proof qualities, made by Metton Products of Newbury. Hastily putting pen to paper, I wrote for a couple of cans to try for myself. The paint is in fact composed of ultra-fine stainless steel powder suspended in polyurethane, giving a good satin type finish that I can thoroughly recommend. The number of applied coats has to be kept to a minimum, however, owing to the slightly





Tube seen above was removed, with about 1 sq. in. of surround to increase power. Right: O.S.35 neatly blends with cowling; note plastic dummy cylinders. Below: standard commercial-type linkages used, but scope here for something more scale, if desired.

heavier-than-average pigment, but I found two fine coats did the trick admirably. The whole model took four cans of paint. (The price per can, for anyone interested—90p.)

Applying the markings and final details completed what was now a very attractive looking model and by this time I was getting rather eager to see it airborne.

Fitting the gear

Installation of my Skyleader SL4 gear presented no problems at all, and with the servos positioned as far forward as possible (*i.e.* just behind the fuel tank) and the receiver in the top of the fuselage just above the servos, the c.g. came out just about right. The Deac pack is a tight push-fit into a purpose-made foam rubber lined ply box, placed as far up front as was possible.

I made up the control rods with the usual quick-links and $\frac{1}{4}$in. sq. hard balsa, which will no doubt make any real scale-minded bod cringe, but here again for the enthusiast a push-pull closed-loop cable system could be installed if so desired.

Rigging

Those of us who possess the humble family saloon car will have to rig this model on the field, and this will take longer than with the usual Sunday afternoon model. However, by the time it is accomplished one is really itching for that first flight.

One word of criticism, as far as the rigging is concerned, is that in the instructions it is suggested that shirring elastic is used for the flying and landing wires, and that these prevent the interplane struts from coming adrift. This idea, to my mind, however, leaves a lot to be desired as there is very little, if any, retention value in shirring elastic. For the purposes of the test-flights, therefore, I used small pieces of plastic sleeving (obtained by stripping some electrical flex) pushed over the ends of the wire interplane strut clips.

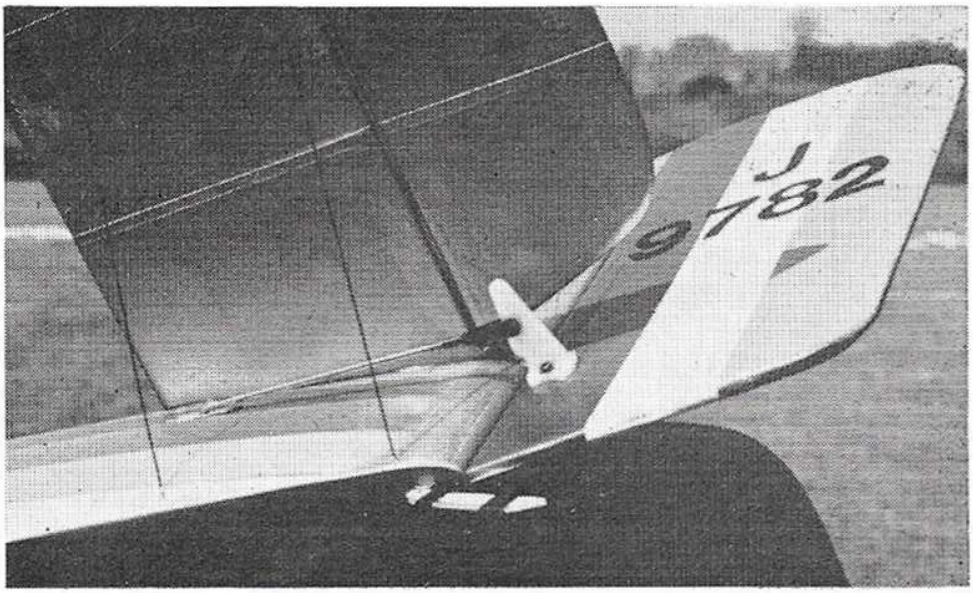
When rigged, a final check was made to double-check that the c.g. was in the correct place and we were ready for that first flight. . . .

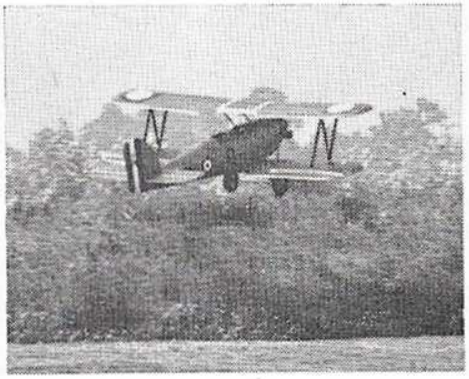
Flying—Roy Yates

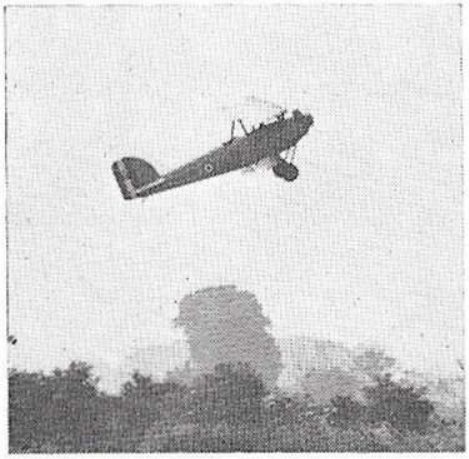
Although in one of my recent Scale Topics articles I eschewed the idea of rubber-band wing-fixings for scale models, I do appreciate that the *Tomtit* is a kit aimed at the sport flier. And anyway, it is such an attractive-looking model, that one hardly notices the bands over the centre-section ! Certainly, in the air, it looks wonderfully realistic, and it also handles well. It is a model with a built-in " atmosphere " and is simply bound to be an all-time best-seller for Verons who are, I feel, to be heartily congratulated on this excellent choice of prototype for their first scale biplane kit. However, to start at the beginning . .

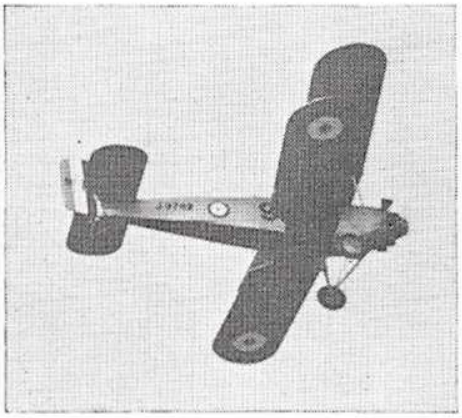
The motor was fired up without any trouble at all, in spite of being inverted, but, at the optimum setting there seemed to be inadequate power. The main cause of this proved to be the length of silicon tubing fitted (as shown on the plan) to the output-end of the silencer, causing back-pressure. We removed this tubing, and allowed the motor's silencer to exhaust-to-air, through the underside of the fuselage, when considerable increase of power was immediately felt.

With the engine now running sweetly, I taxied the *Tomtit* out, over the well-kept grass surround, to the paved take-off strip, and lined up, ready for take-off. Easing the









Above: moment of truth—builder Brian watches as Roy Yates eases *Tomtit* off edge of strip. Left: in-flight realism apparent in these air shots.

throttle gently open, I checked the machine for straight run, with rudder corrections . . . the tail came up . . . and it lifted gracefully off with no persuasion from the elevators at all. (Those watching afterwards enthused about this first take-off. It had, it seemed, looked tremendously realistic—though I must admit I did not hear all the "ooh's and aaah's" at the time !).

The climb rapidly increased, however, so that a gentle forward pressure was necessary on the stick to prevent the model reaching a stalling attitude. As it climbed away, a little right aileron was also required, to maintain a straight-ahead course. I decided, therefore, to bring the model back in again, in a left-hand circuit for a landing, so that adjustments could be made. While doing this, full right aileron trim was applied, as well as full down-trim, but there was still a tendency to nose-up under power. Lining up for the approach, I throttled back and had no trouble in bringing the *Tomtit* down in a very steady and gradual descent, applying just the slightest amount of forward pressure on the stick. It settled to earth in a most realistic manner. Very satisfying !

The necessary adjustments having been made to the control-surface settings, and three ounces of lead ballast added at the nose to bring the c.g. slightly further forward, we were ready for the second trial. The take-off this time was very much more gradual, but the engine was running a little lean, so I was obliged to throttle back slightly to prevent it quitting—which tended to make the climb-out even more prolonged. Again, this really looked more realistic than a steep, fast climb would have done, anyway. A few circuits showed that the *Tomtit* looked really grand in the air, with the sun glinting on its silver paintwork, and one could almost imagine oneself at a Hendon air display, back in the 1930's. So much so, that just flying it around smoothly and gently would probably delight and entirely satisfy most people who build it, but loops, Immelmans and reversals proved also to be well within the model's capabilities, following a shallow scale-like dive to build up the necessary speed. (For rolls, there really was not enough aileron movement—due no doubt to the slightly shorter throw of Brian's Logictrol linear-output servos, compared with rotary types.) Throttled back and on the final approach, however, there was no tendency to drop a wing, and adequate aileron authority was always to hand.

Although there was a certain amount of wind, I did not find it necessary to do power-on landings, the low-throttle approaches not producing too steep a descent, despite all the drag of those "strings and sticks" between the wings. On windier days, of course, the power-on landings advocated in the flying instructions will be advisable, as the glide cannot be stretched at all under these conditions.

To sum up—a very pleasing aeroplane, both in looks and overall flying performance, with good slow-flying characteristics.