RED ARROW

By
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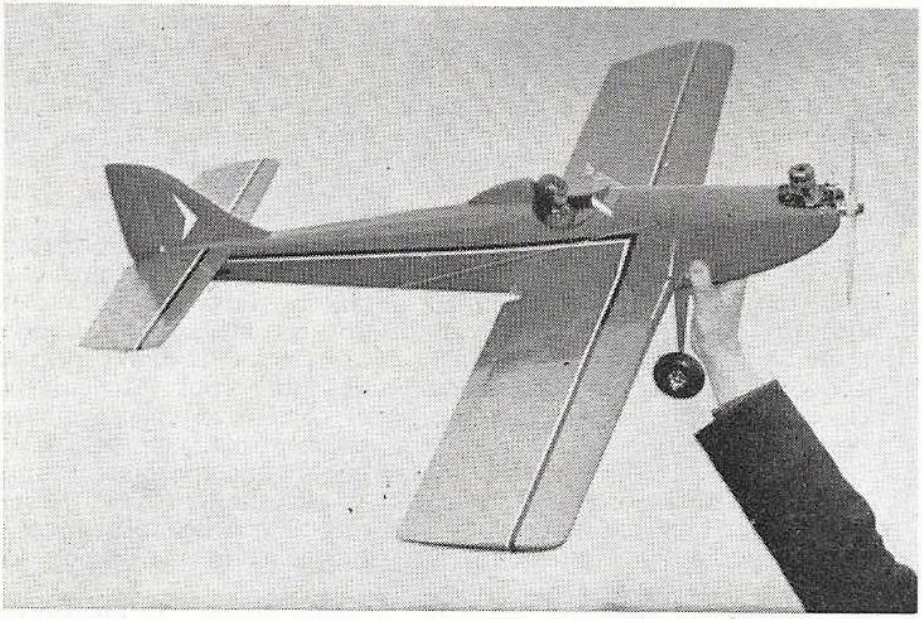
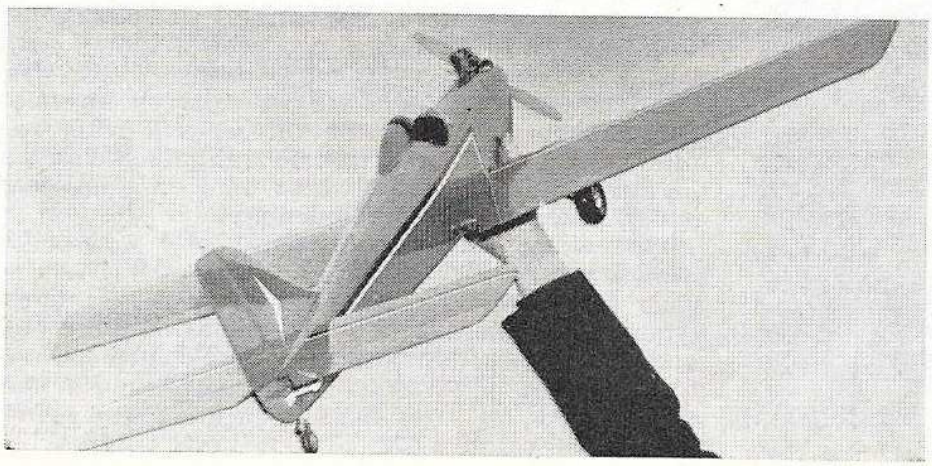


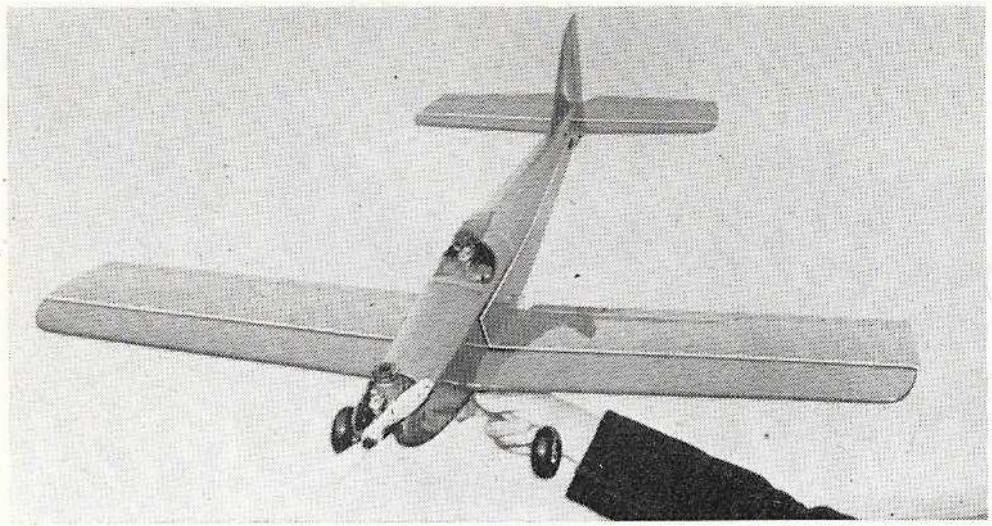
I AM not, and probably never will be, a radio control competition enthusiast, particularly for aerobatic competitions. The thought of practising hour after hour to achieve the highly proficient standard required to attain any success fills me with gloom. There are times, though, when I like to go and have a bit of a rave-up and have a model that will perform more manoeuvres than my average sports or scale model.

Not particularly fancying the average .60 powered beast, I decided to settle for something that could be launched from our rough pasture flying field.

Parentage of the 'Red Arrow' is about as mixed as the average mongrel dog. It owes a little to a single channel design called the L'il Roughneck which in turn was developed from the old 'Orion' multi design. Add to this bits and pieces of a number of my own models and you finish up with a design that bears little relation to any other design. There are no revolutionary features in the design or constructional methods in this model and the only modifications to the plans as a result of testing the prototype is to shorten the nose a little and to increase the wing saddle area to allow easier fitting of the wing and aileron connections. This is the first model I have ever built that has given me a problem with nose heaviness but at least it means you will not have to be too careful in selecting the lightest grade of balsa for the tail surfaces.

A Taipan 19 and a S.T.23 engine were used on my 'Red Arrow' for test purposes and this range of power will be sufficient for the average modeller, but a .29 should satisfy even the most power conscious flyer. With a small model like the 'Red Arrow' it is important to keep it flying at fairly close range and the faster they go the quicker they get away, so, unless you have phenomenal eyesight, I would suggest keeping the power within bounds on the first flights. Simple skis were fitted to the model for last winter's snowfall and the 'Red Arrow' not only performed well with them on but it also looked very attractive, the blood red of the model contrasting both with





the snow and the blue sky. Do fit a pilot in the open cockpit; without an occupant in the 'office' the model looks quite wrong in the air.

A few notes on construction may not come amiss even to the experienced builder, but I shall not deal in detail with building – it is not the type of model for the second or third attempt at an R/C aeroplane and, after that, you should be able to cope with both the building and flying.

Fuselage

The front cockpit coaming is formed from .4 or .8 mm plywood although block balsa could be used instead. When a polythene clunk tank is used, the cowl over the tank should be made removable. Fuel proof thoroughly around the fuel tank and engine bay areas. Use countersunk screws to bolt the engine, the paxolin engine plate ($\frac{1}{8}$" thick), the plate itself is bolted to the engine bearers with 4 or 6 b.a. bolts with anchor nuts secured to the underside of the bearers. The $\frac{3}{8}$" sheet trebles to the underside of the bearers is recessed to cover the anchor nuts. Undercarriage legs are retained in position by small alloy plates screwed into F2 and the $\frac{1}{8}$" ply plates. Round off the bottom corners of the fuselage and the nose area to a smooth profile, the wing seating area should allow for wing seating tape to be used. Note the additional 3/16" sq. diagonals at the rear end to strengthen this area, alternatively, micro ply can be used between former F8 and the stern posts.

Wings

Wing ribs are made by the block method using the ribs R1 and R2 as templates and cutting the root ribs separately. The wings are built in two halves and joined on completion after cutting slots for the plywood dihedral base. The rear spar, main spar and leading edge are blocked 1/16", 3/32" and $\frac{1}{4}$" respectively off the building board. Build the wing flat on the board pinning down the 1/16" sheet lower trailing edge before adding the ribs, but not the lower leading edge sheet. Shape the balsa tips to the shape indicated. I do not claim that they are more efficient than other shapes but they look quite well. When all the sheeting has been completed, shape the $\frac{3}{8}$" x $\frac{3}{8}$" leading edge to section and slightly level the trailing edge to allow for deflection of the aileron. The aileron horns are made from cycle spokes, the ends having been heated, flattened and drilled to the size required; commercial horns can be used if small ones can be found. Wing retaining bands were used on the original, and are shown on the plan, but a ply-tongue and nylon bolt method of fixing can be used if preferred. For lazy modellers, and that includes most of us at one time or another, the wings could be made with a parallel chord but I think the shape shown here is more attractive.

Bright red Solarfilm was used for covering the prototype model, with white and black trim strip decoration. The ailerons and elevators were hinged by the three-thickness Solarfilm method and the rudder had a sewn linen thread hinge. These forms of hinges proved to be satisfactory and free from binding. I usually fix the tailwheel direct to the rudder and, although some people consider it bad practice, I have never had any servo troubles as a result; the flexibility of the push rod prevents any great transmission of vibrations from landing shocks. It certainly makes for easier tailwheel operation.

Radio installation will depend on the type of equipment but three Controlaire S4 servos will fit across the width of the fuselage leaving ample room for the receiver and batteries, etc. I had one of the pushrods to the ailerons come adrift during flight on one occasion and the only difference noted in flying characteristics was a reduced rate of roll. This may not prove anything in particular but it does give you an extra little bit of confidence that, should it happen again, there is nothing to panic about.

Flying the 'Red Arrow' only presented the immediate problem of keeping up with it on initial flights. Being used to rather slower models it takes a little while to become adjusted but, as soon as the extra speed was accepted, I found the model responsive and smooth. I am not qualified to give a comparison between the aerobatic potential of this design and that of other small and large aerobatic models. It will certainly do all the conventional manoeuvres and is quite good at flick rolls. Perhaps some competition modeller will build a 'Red Arrow' and let me have a considered report on its characteristics. You will never see this one in the winner's circle at the Nats but it will give you a lot of fun and, at the same time, it has the advantages of looking like a 'real' plane and fitting easily into the car.