FAIREY JUNIOR

A ONE-QUARTER SIZE EXACT SCALE MODEL OF THE POPULAR BRITISH LIGHT PLANE

BY DENNIS R. FOSKETT

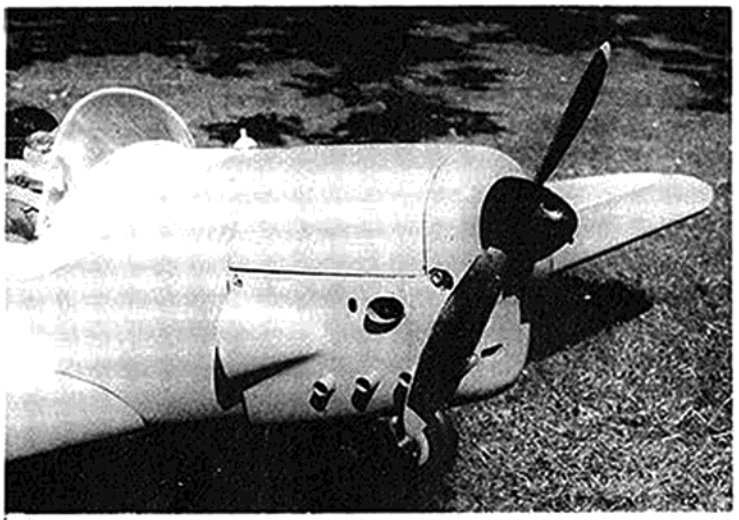
The Junior was a first scale model. In this respect, it is perfect. Simple, practical construction – absolutely no need to deviate from scale in any way, and so relaxing and realistic to fly – these are its characteristics. The formula of 8 lbs. in weight, 1000 square inches of wing, and a smooth reliable .60 will enable any average pilot to compete in scale class with a flight pattern of which he can be proud.

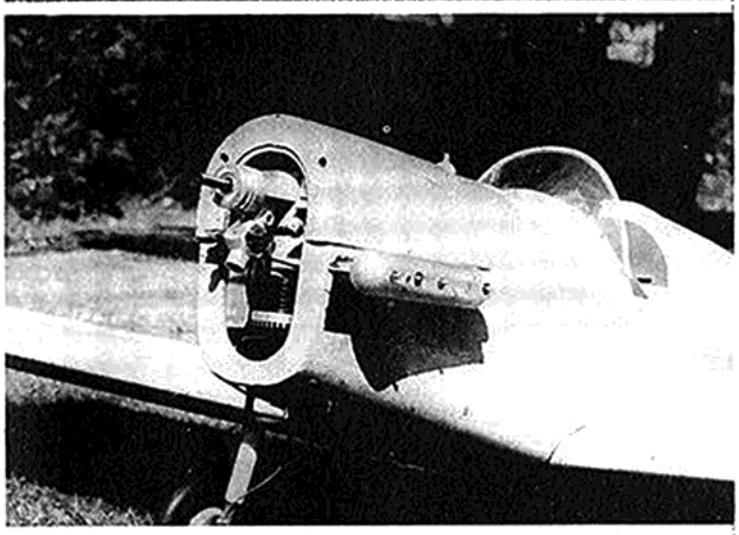
My original model still exists, now three years old and, while in a rather sad stage, is still in use as a club trainer. It has, in fact, survived a motor failure, while doing a long slow inverted pass, 6 feet from the runway! I have since built other scale models, much more complicated, more detailed, and more time consuming, but none yet has produced the satisfaction of that so SMOOTH, so SLOW flight of The Junior.

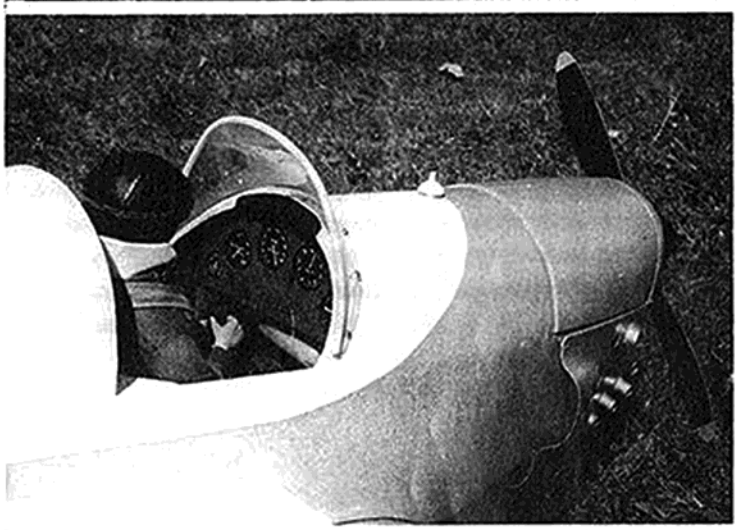
It was during a social visit to a full-size flying club that I first saw the "Junior." My immediate impression was that it was nothing more or less than an overgrown model, and why, I reckoned, shouldn't a reduced size version fly in a similar manner? The owner kindly gave me all the information necessary and, together with this and an ancient 1/36 scale three-view drawing, I drew up these plans for a 1/4 full size "Junior."

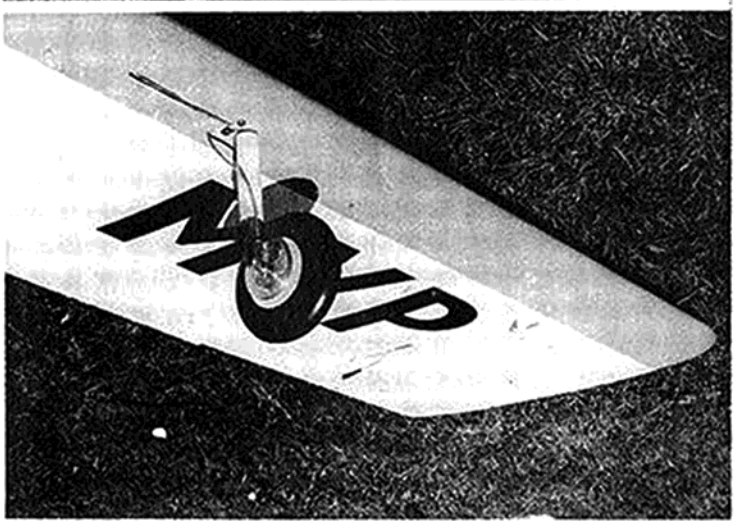
It was my opinion at that time and, in fact, still is, that the only way I, or any modeler in a similar position, could compete successfully in the scale class was by keeping the subject simple, practical, and exact. If all dimensions and details are correct, no matter how simple the subject, a fair judge must award good scale points, and a steady realistic and reliable flight pattern can, or should, produce a higher score than maybe a spectacular, but nevertheless, frightening, overloaded handful of "sudden death." This was perhaps borne out at my first scale competition which was the British Nationals. I achieved 6th highest flying points, and the "Junior" finished 9th overall, in what I thought was an entry of very high standards.

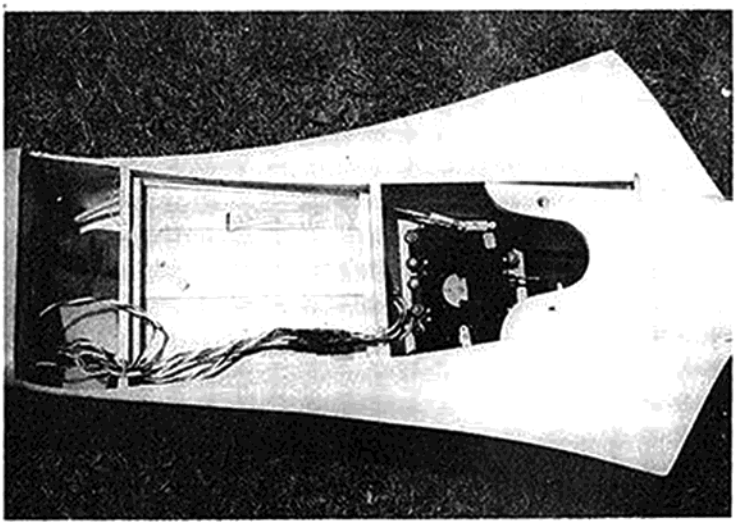
So, on to the original aircraft which, for those interested, was designed by a Mr. O.E. Tipps (hence Tipsy) who had been connected with several successful ultra-light aircraft since the middle thirties. The "Junior" was an attempt by Fairey Aviation to provide cheap club flying for the thousands of war trained pilots who wished to continue flying for fun, and it was estimated that this could be done for $2.50 per hour. (I can't fly R/C for that!) I have been











unable to trace the exact number that were built, but the project came to an end prematurely, and to my knowledge only two now exist, one in a museum in Belgium and the other G-AMVP, which is privately owned and on the British Register. The latter is the subject of this article.

CONSTRUCTION (or how to get a little "Tipsy" without a hangover.) The construction as shown per plan can no doubt be simplified, but if built in this manner, the result will be a true scale model. The number of longerons, formers, rib spars, etc., are exactly as per full size as are the areas of sheeting. Even so, the suggested methods should not trouble anyone with sufficient interest (insanity) to consider a "scale job."

The fuselage sides are cut from medium soft 3/16" sheet and the top edges pinned to a true board. Epoxy the firewall and white glue F3, 4, 5, 6, and 8 into position. If you have any doubts about the fuselage sides conforming to the contour required, forget it. By selecting the right balsa and wetting the outside surface, this is easily accomplished. Leave overnight to set, allowing F2, 3, 4, and 5 to overhang the board and ensuring the rear top edges are in contact with the . . . . . .

board. Fit and clamp together the rear of the fuselage and tailpost; then the 1/4" square cross braces below former positions; again moisten the front sides and clamp in to fit F1. The top front fuselage can now be planked with strips of 1/8" sheet and after sanding, the full length is covered in soft 1/16" sheet and then a further piece of 1/16" sheet covers the length of the cowl top.

Install the blind nuts to hold the motor mount; drill the firewall and check the tank fitting. Using plenty of white glue, fit the triangular braces behind the firewall and to the fuselage sides above the 1/2" flooring, but do not fit the flooring until the wing doubler positions have been marked. Add the 1/8" flooring to the open hatch behind the pilot, then all the rear top and bottom formers.

The fin and tailplane fairing block is easy if a tailplane rib template is used to mark a piece of block balsa. Beg, borrow, or steal a friend's band saw and you will have a perfectly fitting, square tailplane the first time – the fairing being shaped and sanded after fitting to the fuselage. You will, no doubt, have noticed that the rear formers are not pre-notched to accept the longerons. I have found a much more accurate method and that is to pin each longeron in place and then notch the formers to suit. Any similarity in construction to the rear half of this model, and the Aeromaster (one of my favorite multi ships) is purely intentional. The 'piece de resistance' of the model is the detachable front cowl. Having first cut and carved the front block to the correct profile, the bottom half can be formed from either fiberglass matting, or thin aluminum sheet. I made one of each, eventually deciding on the fiberglass on the grounds of durability. This was my first attempt at a fiberglass molding but the result was very pleasing. A dummy front fuselage was built from former F3 forward. This was sanded, sealed, and waxed, and stood in a biscuit tin which was filled with liquid plaster. In the resulting mold the fiberglass matting is laid, coating each sheet with resin. When the matting has hardened it can easily be removed from the mold, cut to shape and epoxied to the front block. Sounds like a lot of trouble, doesn't it? It sure is, but the result is a completely enclosed motor which is still quite accessible after cowl removal, and providing the underside of the cowl is cut away, no overheating problems will arise. I would have preferred to have enclosed the muffler, also, but time was pressing, and the "Nat's" but a few weeks away.

WING:

The wing and tailplane are built in a similar method, this being probably the best way of ensuring a true wing if a jig is not available. Use the full depth spars as shown and the sheet leading edge; these, together with the small trailing edge packing pieces, will produce the 'goods' and the excess on the underside of the rear spar can be lightly scored and easily removed after completion. I found it easiest to complete the wing before cutting out the ailerons. The necessary ribs can then be trimmed and the aileron spar fitted. The landing gear is quite conventional multi ship practice, and after the two wing halves have been joined the center part ribs can be fitted to support the center sheeting.

You will, by now, have seen the simplicity of the design; in fact, it is difficult to imagine, on occasions, that you are actually building a scale model. The U/c leg fairings are made from soft balsa dowel drilled down the center and the bottom sliders are square hardwood. These are fed on to the wire before the final bend is made. I used two ¼" thick aluminum discs as dummy brake drums and these, together with plastic covered wire for brake cables, produce a realistic result.

TAILPLANE FIN & RUDDER:

This department really requires no explanation. Once again construction is fully scale, but do keep the timber as light as possible here and note that the end elevator ribs at the rudder cutaway are plywood as a precaution against nylon shrinkage pulling the construction out of shape.

The only major item left is the wing fillets which I approached with apprehension, but they, too, proved quite simple. Cut out the 1mm ply base as shown and glue well to the wing seat. Fit the wing, tighten down and leave to set. Cut from balsa sheet the end formers for the necessary shape, fit in place and, finally, sheet in with soft 1/16" sheet. Chamfer the sheet into the fuselage and cover the joint with your favorite "filler."

After a final sanding the entire structure was given three coats of wood sealer with a good rub-down between each. It was then covered with lightweight commercial nylon which was, in turn, filled with the necessary coats of clear dope, approximately 5 coats in all. From here in it's up to you since we all have our favorite methods of finishing, but for the record I used Polyurethane Eggshell Enamel. Three coats produced a satisfactory and realistic finish. The original "Tipsy Junior" was colored Primrose Yellow except for the rudder, tailplane, and the wing areas, aft of the main spar which were aluminum. The registration letters were in blue. My "Junior" is finished as per full size G-AMVP and is white with blue trim and black letters (just in case the Editor doesn't show a color print). With such a large open cockpit, a dummy pilot is really a must. This puzzled me for awhile as most male dolls are way out of scale and several ideas were tried before "Charley" was conceived. He is basically a Williams pilot head and shoulders, with homemade clothes fitted and stuffed with cotton wool. My wife must take credit for "Charley" although it cost me plenty, indirectly! He is understandably the star of the show and creates a lot of interest wherever I fly the "Junior."

Providing the CG works out between limits and the incidence angles check out O.K., have no fears! Just go out and fly scale! Control surface movements are not critical, about ¾" total on both elevator and ailerons being about right. Any good .60 will fly the model and, although best performance will be obtained with a 12 x 6 prop, the model flies pretty good on a true scale prop of 14 x 5. Advance the throttle slowly on take-off and only a very minor swing will occur, being easily corrected with a little rudder. I allowed myself a non-scale steerable tail wheel which proved a big help when taxiing in adverse conditions.

The original aircraft was stressed for aerobatics and the model will do everything in a like manner (plus a few not in the book). My contest schedule includes spins, rolls, Immelmans, reversals, etc., and all of these can be performed in a smooth and realistic manner without putting too much stress on pilot skill. The general performance is such that it could rate with any multi-trainer and that wing area – Oh Boy! This is the first multi-ship with which I have actually caught lift on slow motor – a thirty minute flight on a 10 oz. tank can't be bad! My finished model came out just over 8 lbs., but I'm sure that wing could

handle plenty more.

To anyone who finds these light aircraft appealing, or to anyone dithering on the brink of a scale 'first' I can only say "try the Junior." You will at least have an attractive model that can be flown in any weather conditions and from any reasonable flying site both concrete or grass. I would be pleased to help with any queries from anyone considering building the model, and can be contacted through R/C Modeler Magazine. □

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