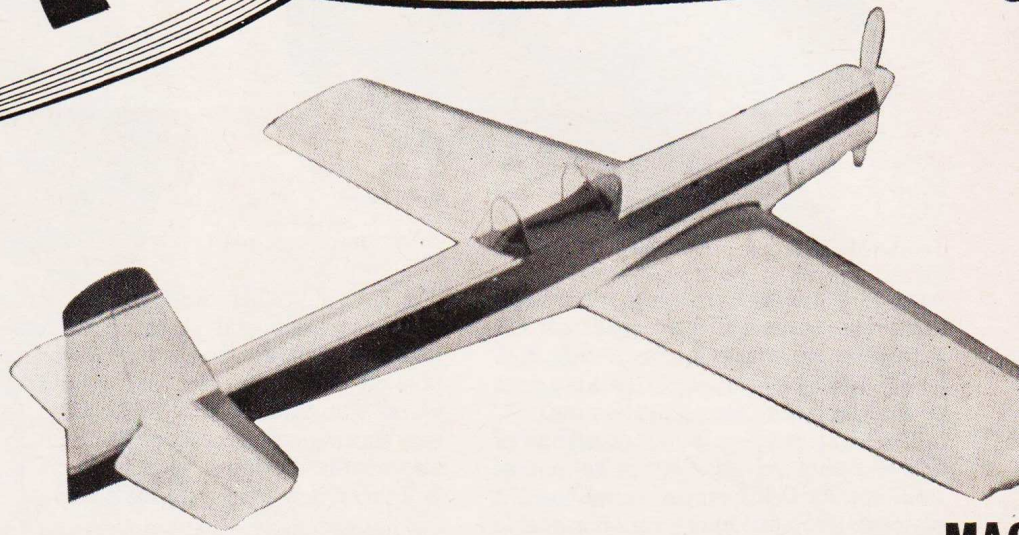


**Eric
Herbert's**

AKROBAT



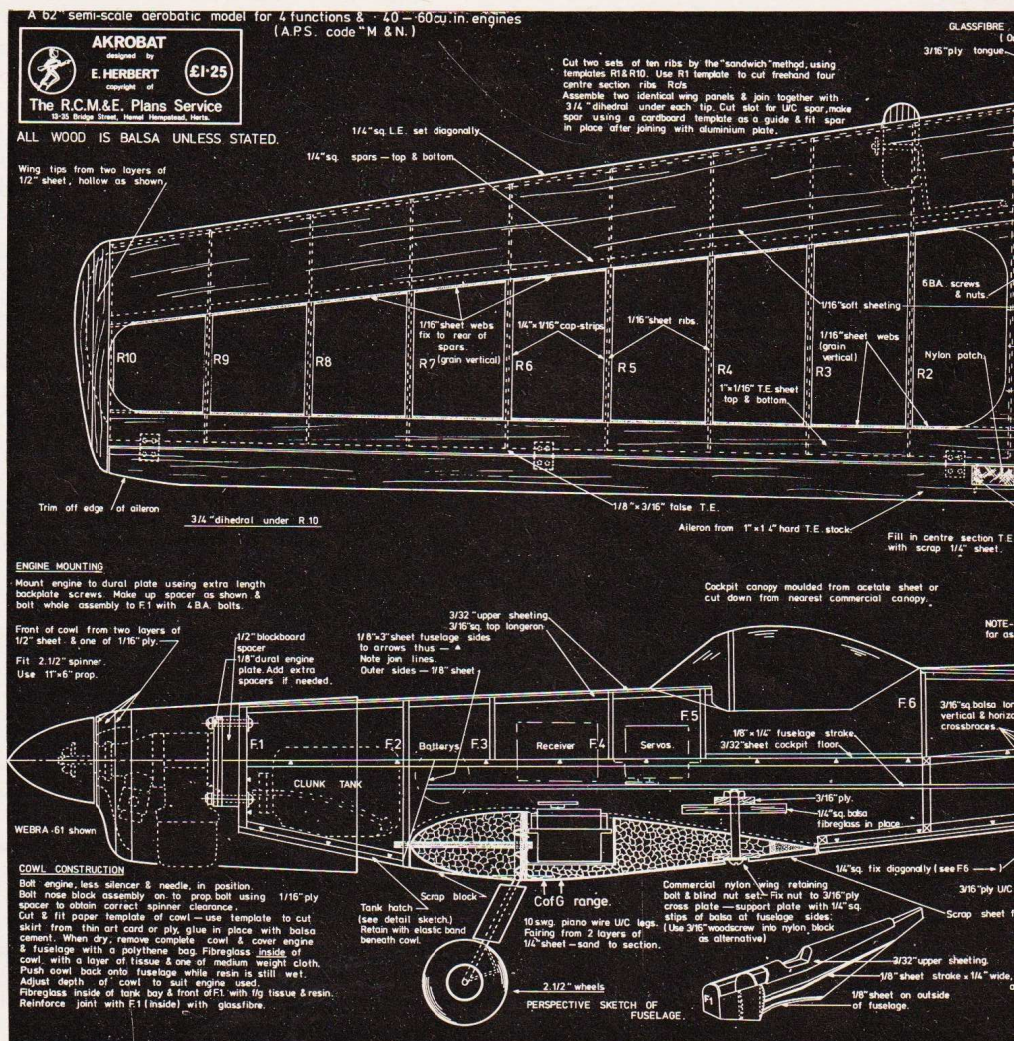
MY first Akrobat was designed and built in October 1969 when I thought that there was a possibility of the F.A.I. following the A.M.A.'s lead by introducing a more difficult aerobatic schedule with flick rolls etc. However, predictable as always, we went the other way and simplified the schedule!

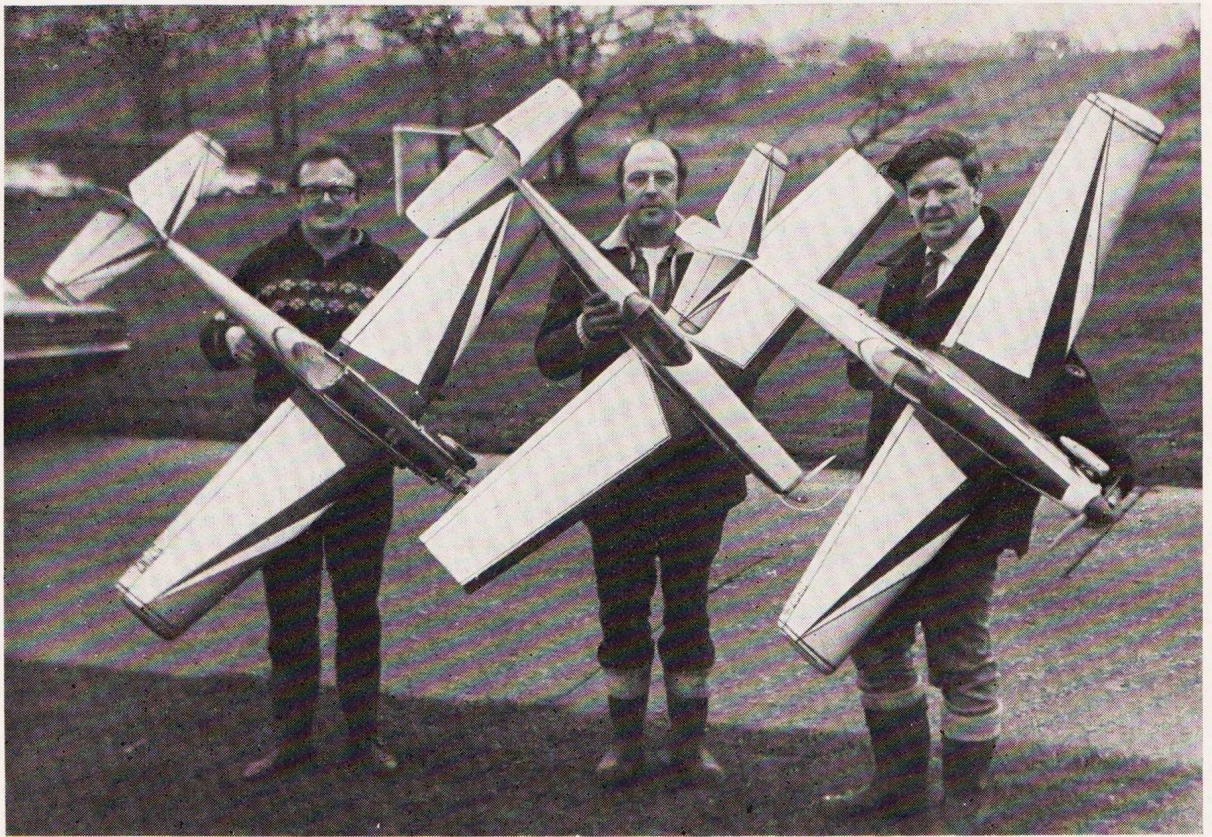
I completed the model though and found that the performance was even better than I had expected, so much so that I have built nine variants and think that it is now impossible to improve one aspect of performance without detracting from another.

The airframe structure has been widely modified throughout the series in an attempt to reduce construction time, reduce cost and improve the Zlin-like appearance; again I now think that I have reached the optimum with the construction shown on the drawing.

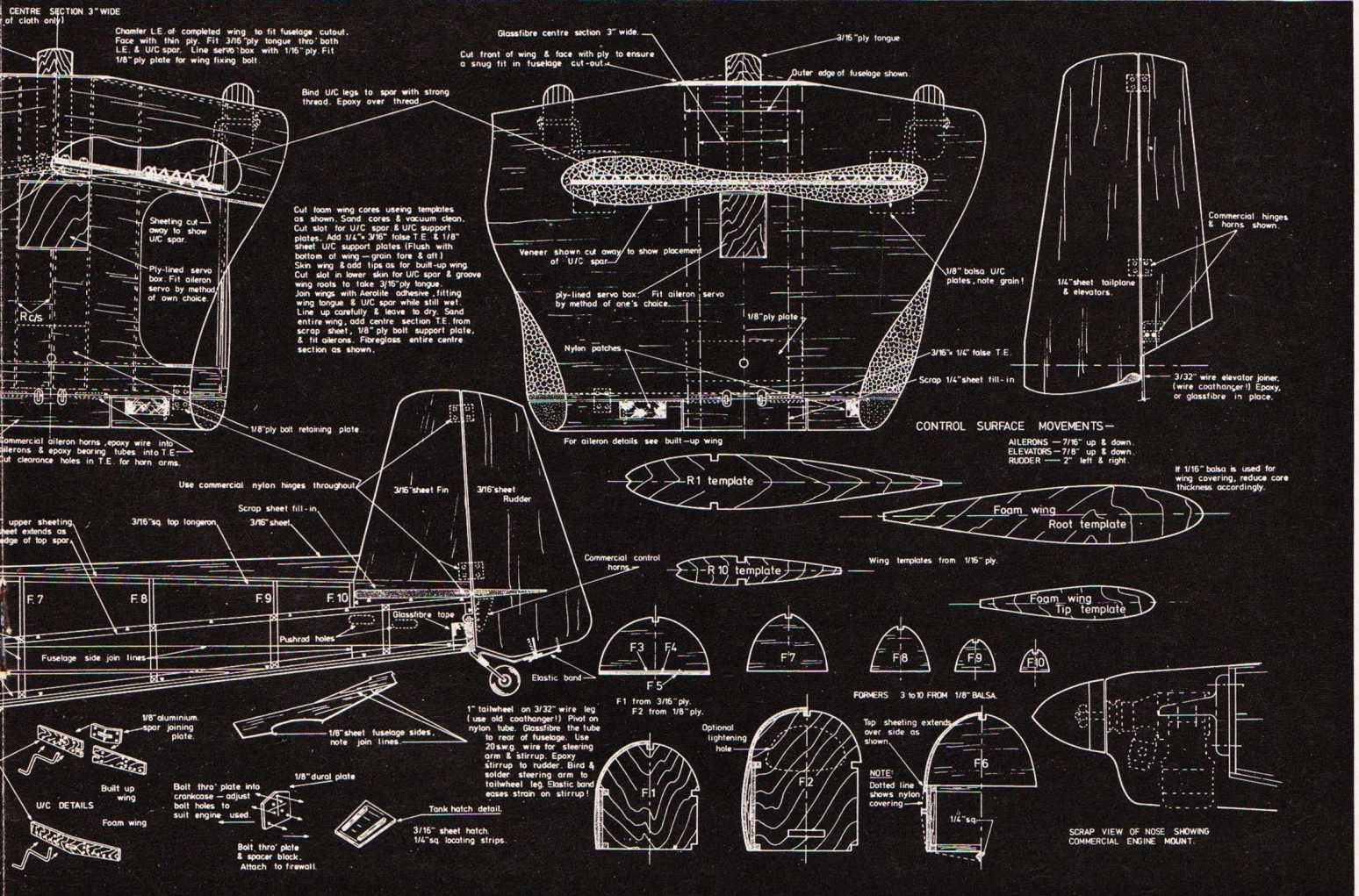
I do not claim that this model is especially good for F.A.I. aerobatics; but it's a lot more fun to fly and will do manoeuvres that would have a Super Star falling out of the sky. It is ideal for fun fly events now so popular (35 spins from 30 secs. climb for instance!) at Lindholme 1971. 78 spins including starting engine and spot landing in 2 mins. at Fradley 1972. I was timed at less than a minute for a take-off, 3 loops, 3 rolls, Cuban 8, 3 spins and landing, at Lindholme 1972.

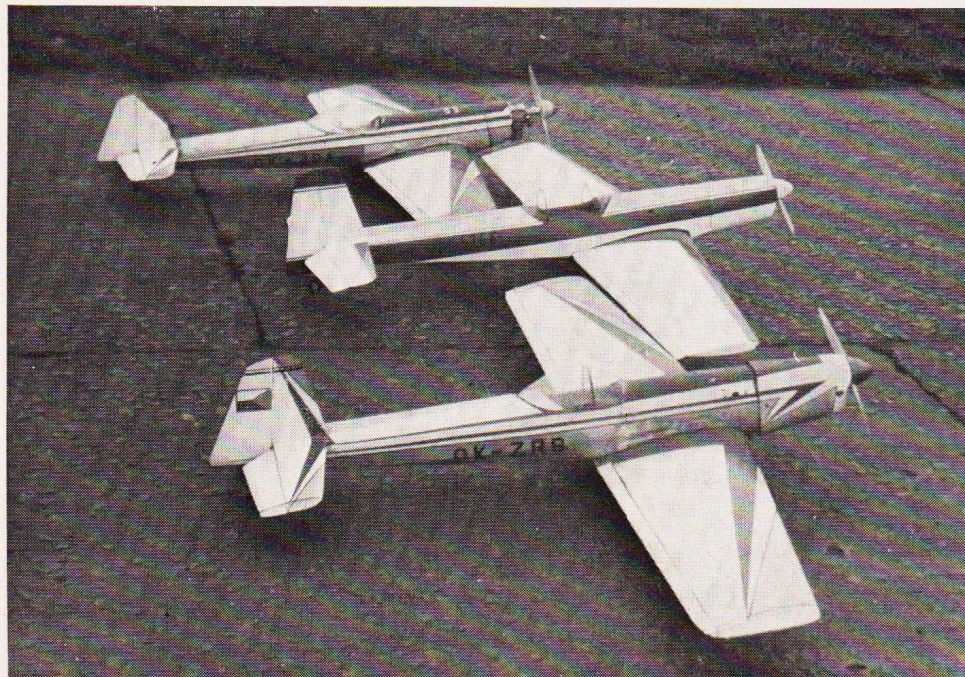
A tailwheel U/C is used for several reasons, not the least being that a nosewheel would look completely out of place, and is also far less practical for sport flying. I concede that a nosewheel may be superior for F.A.I. events but see no point in the complication, vulnerability, added weight and drag and ruined rudder servos which a nosewheel guarantees. Akrobat's take-off and landing characteristics were good enough to enable me to do six touch and go's in three minutes when winning the Lindholme Rally last year.





... OR MAYBE YOU MIGHT LIKE TO CALL THIS SEMI-SCALE AEROBATIC PLANE THE 'SLIM ZLINN! DOES MANOEUVRES YOU'LL NOT FIND IN 'THE BOOK'





Construction

This is quite straightforward and several models have been built from the drawing, without instructions by people to whom I have given plans; all have remarked on the speed, ease of building and small amount of expensive materials used.

Fuselage

No plywood doublers are used but the inside of the tank component is covered with one layer of glass fibre tissue and the corner joints are reinforced, the plywood cross piece to which the wing is bolted is also fibreglassed in, and the 2nd former around the wing tongue hole is covered with glass cloth.

Pay particular attention to the tailplane mounting, the top of the fuselage side is *not* parallel to the thrust line, the tailplane *must* be parallel.

The sides are cut from $\frac{1}{8}$ in. \times 3 in. \times 36 in. medium balsa, note the joints under the tail. The $\frac{1}{4}$ in. corner pieces and uprights are then glued on, making sure that left and right hand sides are made. Pin the rear ends together and fit both front formers (5 minute epoxy), add formers and cross pieces allowing sides to curve naturally to tail. Fit top decking, front doublers side and bottom stringers wing securing plate and servo mounting plate. Make up tailwheel assembly and contact cement in place.

Fibreglass inside tank bay, both formers, wing plate and tailwheel bush using glass tissue for surfaces, and chopped mat for corner reinforcement. If fuselage is not to be covered with Solar-film, build and fit tailplane and fin. *NOTE* the top decking is brought approximately $\frac{3}{16}$ in. over the sides. The bottom is not sheeted. Sand down all stringers to shape, fill and sand smooth in usual way.

Wings

All versions built so far have used foam cores, veneered with various materials. Of these, Obechi seems to give the best value. For interest other materials used have been:

Koto - cheap but splits easily.

Balsa - very expensive and tedious to do.

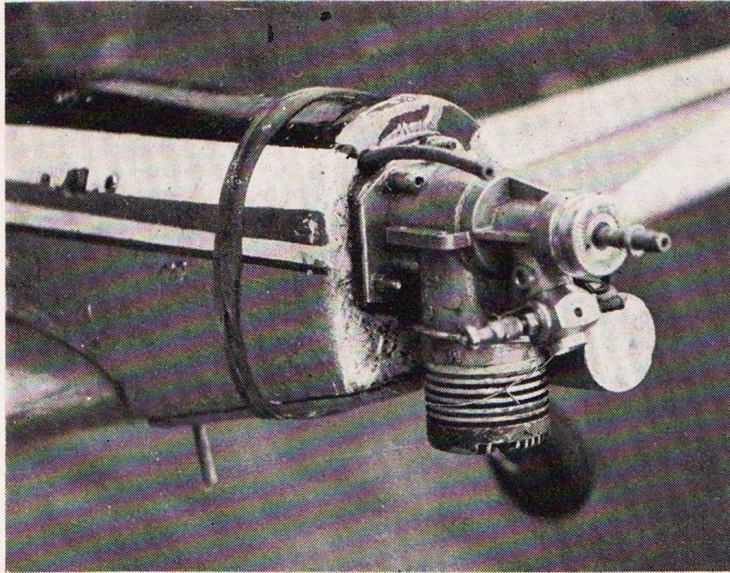
Acetate - Difficult to repair.

Cardboard - difficult to obtain sheets large enough.

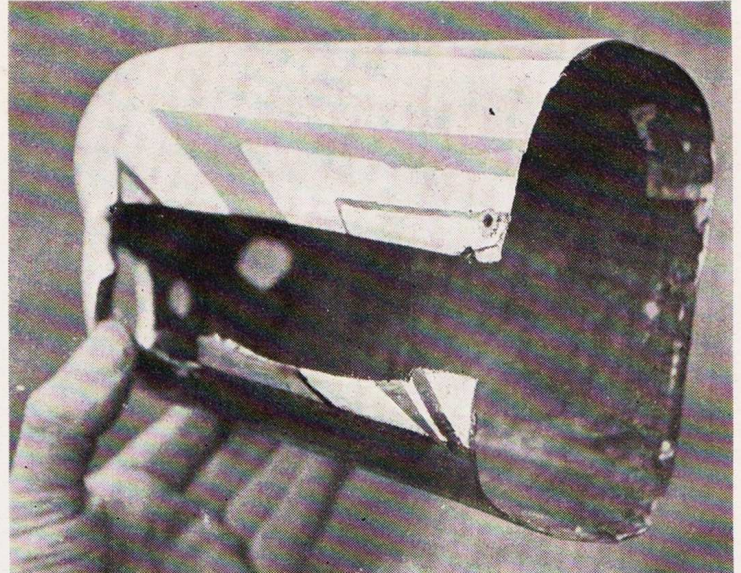
Mahogany - very, very heavy.

$\frac{1}{64}$ in. ply - astronomic price and heavy.

An alternative built up construction is shown for those who prefer it. Cut the undercarriage spar from $\frac{1}{8}$ in. ply and bind on the U/C legs, cut the slot in the cores and ensure the fit is correct prior to skinning, pack out the slot cores whilst skinning otherwise proceed as usual. Don't forget to cut a slot in each Expression on Eric Herbert's face suggests model is getting a bit too heavy to hold by the wing tip. Pictures second and third down show sleek layout of semi-scale model. This design is well proven.



The motor installation, showing Merco 61 radially mounted to firewall on metal plate which bolts to the backplate. Entire cowl removes for easy accessibility of motor area.



The glass-fibre motor cowl, showing cut-out to clear the muffler. Designer Eric Herbert can supply moulded engine cowls and vacuum-formed cockpit canopies to order. Details on plans.

half for the tongue and slot the bottom skins, for the undercarriage legs and spar. Join the wings and fit the spar and then tongue using a slow drying epoxy or aerolite (a fast epoxy melts foam): Fibreglass the wing joint when aileron rods have been fitted, with glass cloth (1 layer only).

The built up version features a 'split' U/C spar. This is necessary due to the swept back mainspar line and I suggest that construction should proceed as follows:

Build two wing halves over drawing in turn (they are symmetrical), pinning down one $\frac{3}{4}$ sq. spar, adding ribs then top spar. Unpin, then add T.E. lower sheet and with this pinned down flat, position the T.E. upper sheet and webs, then L.E.

Make up the wheel spar assembly complete and cut through each rib and bind aluminium joiner carefully until ply fits tightly against the mainspars. Epoxy wings together and wheel spar in place at the same time, Sheet L.E. and add L.E. webs. Install 1/16 ply servo plate and sheet centre section. Add cap strips. Carefully cut back L.E. and test against fuselage until a 1/16 ply former can be fitted between F2 and wing.

Mark position of the tongue through the slot in F2 on this former, and fit the wing tongue and former to the wing.

Complete wing in usual manner with one layer of fibre glass cloth around the centre section.

Finish

Cowl construction is detailed on the drawing, the tank hatch is held on with rubber bands around the fuselage which are covered up by the cowl. The cowl is held on with two self tapping screws into aluminium plates epoxied into the fuse-

Right: it's not exactly the neatest installation picture we've ever published, but then, the model had done a great deal of hard work, and put in plenty of air time before the camera was pointed at it.

lage. I have always mounted the engine by its rear cover plate screws (tapped out to 4 BA) to an aluminium plate This is then bolted with a ply spacer to the front former. However I am told that non-vintage engines are not so strong and most other builders have preferred a cast aluminium mount!

Most of my versions have been completely covered with Solarfilm for speed, and the design lends itself to this treatment. However, I really recommend heavy weight tissue, dope and polyurethane on the fuselage as this gives a much stronger and more rigid assembly. If Solarfilm is used, the fuselage should be covered before mounting the tail unit. The cockpit cover is always fitted last.

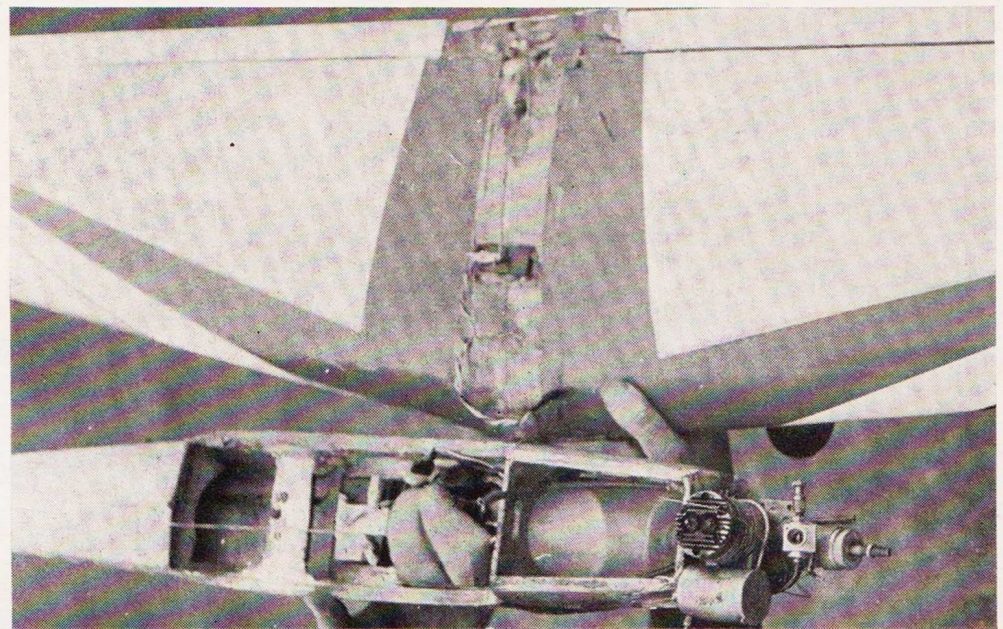
The colour scheme of the aircraft used by the Czech aerobatic team in 1972 is shown on the Sept. 1970 *Aeromodeller* cover OK-ZRA was gold where ZRB was silver. A five aircraft team OK-WXA/OK-WXE was used in 1969 with generally similar colour schemes but using various metallic colours on the underside and

lower fuselage. OK-WXE is yellow for instance. *Model Airplane News* Dec. 1969 and Jan. 1970 shows two other colour schemes. These are the only Zlins using bubble hoods, all other single seaters use a side hinged canopy with two frames, colour schemes are legion. The Players Gold Leaf aircraft was red underneath, white on top with blue sunburst on wings and tailplane with G-AWAR on fins and rudder and under starboard wing.

Flying

1. Try to fly this model unless you have previous experience of high performance models.
2. Lift off too quickly when flying from long wet grass.
3. Try and stretch a short landing approach by applying up elevator.
4. Approach the stall on a rectangular landing approach especially the third corner.

Although these apply to any models, pilots with only nosewheel U/C experience seem to think that the nose must be



Akrobat

kept up when landing a tailwheel model. Item 2 is there because this model will take off any ground that the prop will clear, but if only just above flying speed the slightest aileron deflection will cause reversal; on tarmac the take-off run can

be under 10 ft. and is reminiscent of an Apollo launch.

The control deflections shown on the drawing are measured from my current model which is set up for fun flying; for F.A.I. aerobatics the elevator and aileron movement will need to be reduced; read up one of the many articles on trimming and try the settings shown before altering them. This model will perform any

known schedule, model or fullsize, my party piece is going through the control line stunt schedule as though on 200 ft. lines.

Lastly, by all means alter the design, if you do find an all round improvement I would be very interested to hear of it, and would also like to know how the built up wing performs. I hope to be able to supply foam wing cores, cockpit canopies and fibre glass cowls, watch classified ads.
