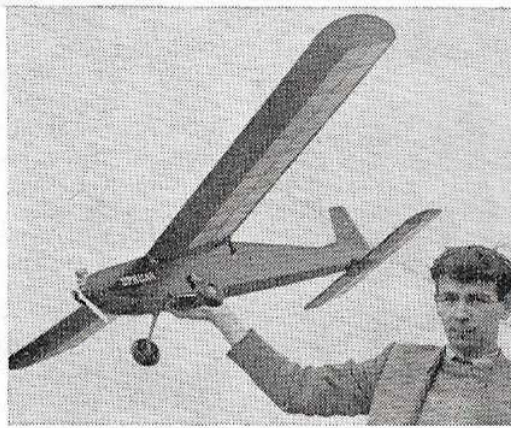


October, 1958

Britain's leading radio control flyer presents his symmetrical section wing, fully aerobatic model.

# UPROAR

By CHRIS OLSEN



WE ASKED Chris Olsen, current British multi radio control champion "Why 'Uproar'?" "Have you ever heard a Fox 29 turning over at 12 000 r.p.m.?" was his rejoinder!

Chris, a 27-year-old Civil Servant in the Scientific Branch, has quite definite ideas on the subject of radio control aerobatic design, which after a four-year development period have resulted in "Uproar".

He believes in a simple, yet strong airframe, which is relatively light in weight, this being achieved by spruce longerons with sheet covering only at the nose and tail components. He does not advise an open fuselage structure, this is quite a less costly measure, and a crash occurs then the engine and radio which suffer instead of the plane, which is after all cheaper to replace. The airframe can be built in wood and costs approximately £3.

The radial engine mounting is important, as in a crash it gives more clearance to the engine and has proved less prone to vibration than the standard bearer.

The model weighs approximately 54 lbs. with a loading of around 16 ounces per square foot. It is powered by a Fox 29, or any other good engine, and as the new ETA Mk. VI, it is capable of producing 24 pounds of radio power. For more details contact Chris Olsen at the address given below.

issue and meantime emphasise that neat, careful, and well-supported mounting of the radio and servo equipment is a notable feature of the designer's current machines. The essential reliability of his equipment has undoubtedly been a major factor in his competition successes and will we hope be a moral to others.

An 80 per cent symmetrical airfoil gives a fast flying speed, great manoeuvrability, and first class penetration; as we know, "Uproar" has a repertoire which includes loops, figure eights, and other aerobatic manoeuvres. The model is originally flown, aileron control is recommended to the designer has, in fact, only been used during the R/C Elimination trials.

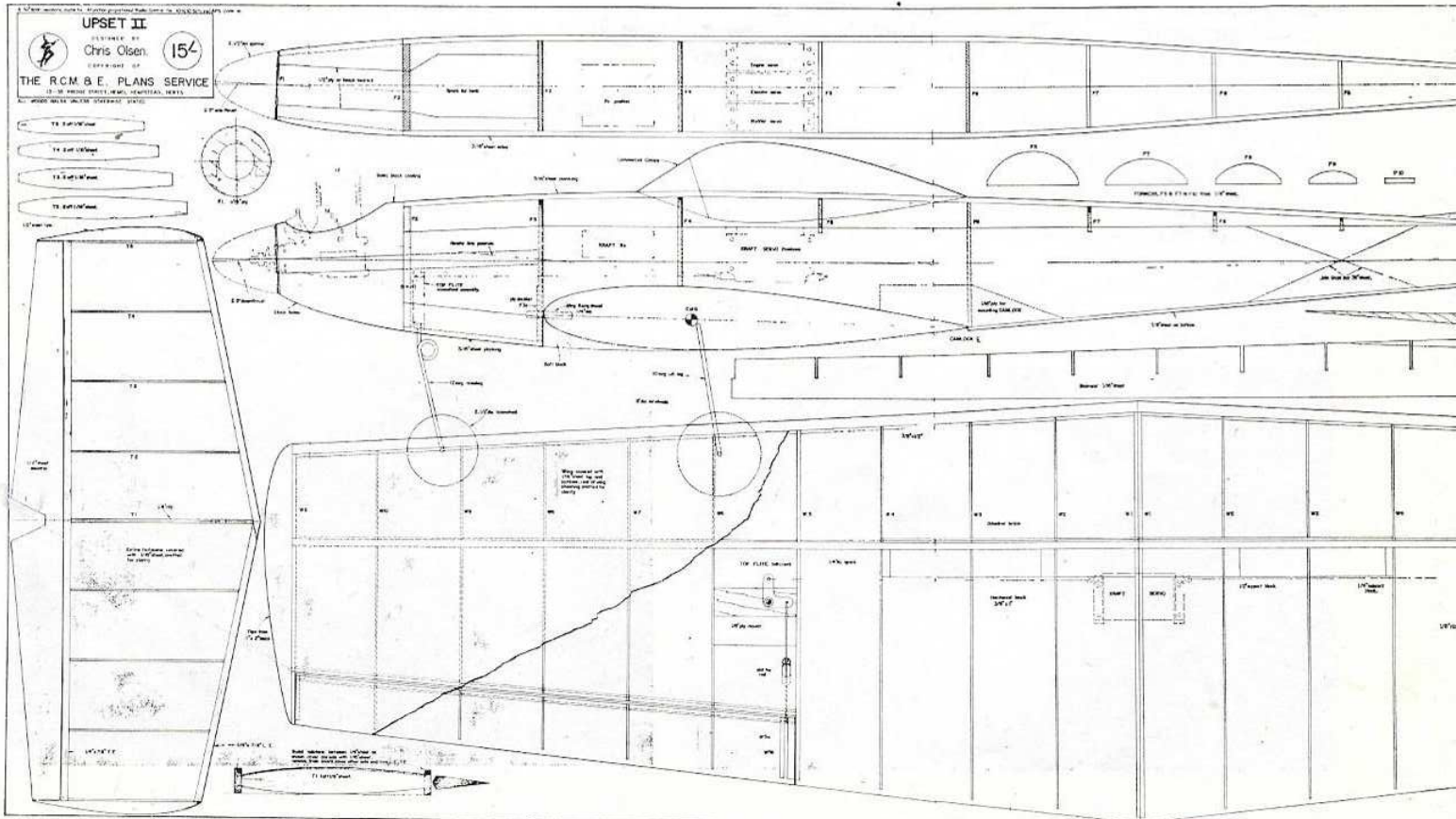
# Ten years of design development have resulted in

# BRITAIN'S

# By Chris Olsen

# UPROAR

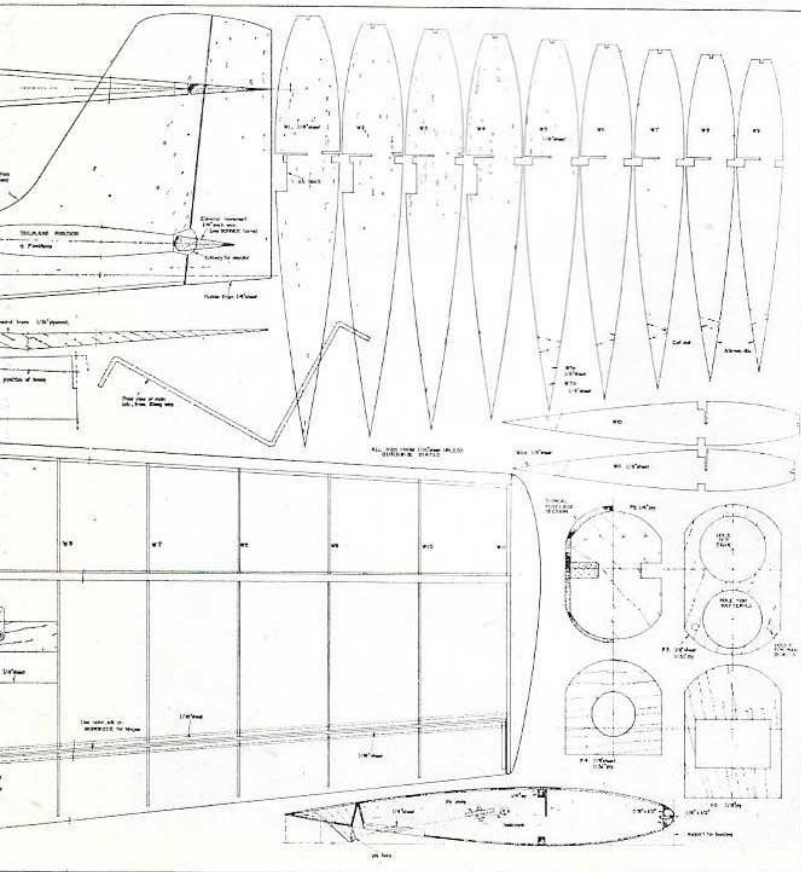
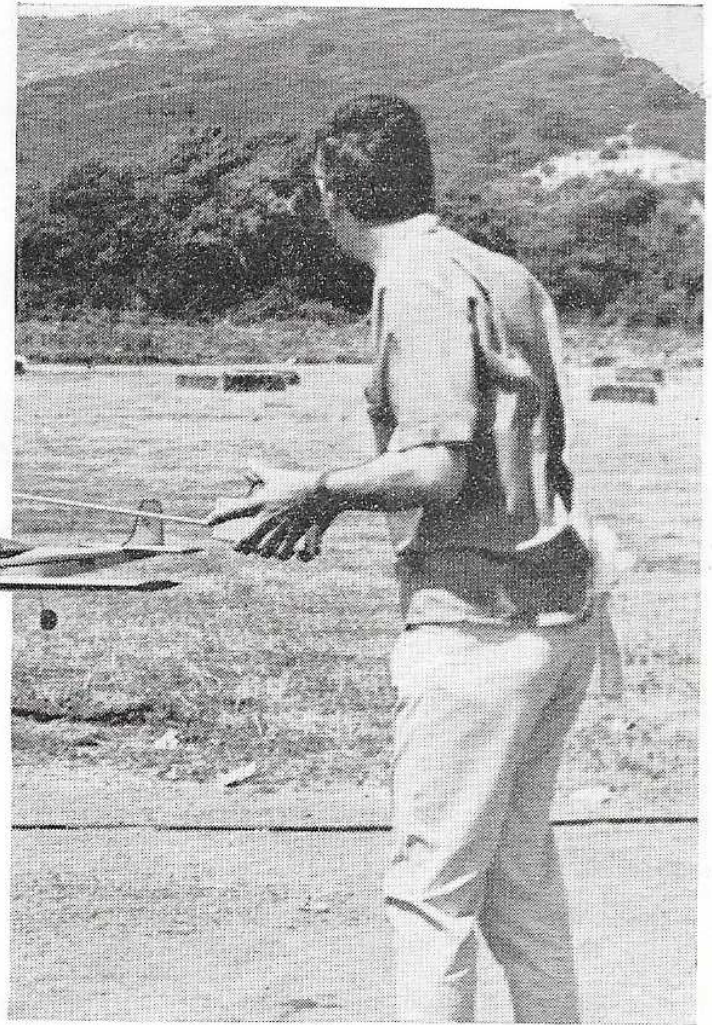
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# UPSET II



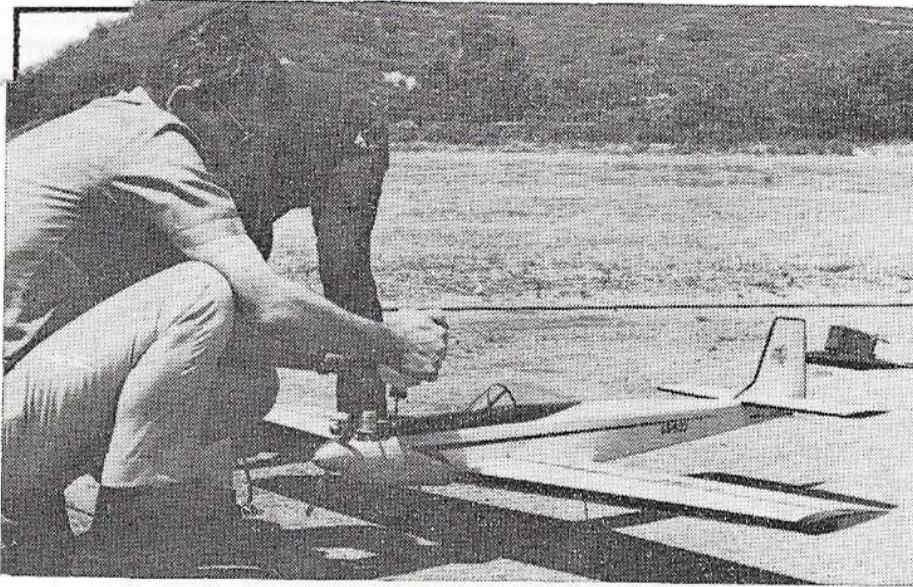
UPSET really started back in 1953 with a *Sparky* designed by Harry Hundleby, which was my first radio model. About five years later *Sparky* begat *Uproar*, the only thing in common being the shoulder wing. *Uproar* was a successful contest model as far as I was concerned, although others thought otherwise. Its only real problem was that it was a functional design and as such was rather ugly.

As a result of this and the fact that low wing models tended to have some advantages with the then current contest pattern of 1963, *Uproar* gave way to *Uplift* which had an *Uproar* wing and tail in low wing configuration on a streamlined fuselage. This again was fairly successful but was still not quite good enough in my opinion for the current pattern (1964), the main problem being a reluctance to spin and the fact that when flown with reeds, it tended to be rather twitchy.

It was therefore decided to build a new model for the Swedish World R/C Championships in 1965, so a new model with tapered wings was designed. Due to the silencer rule which came into force in 1965 it was made smaller than *Uplift*, 600 instead of 750 sq. in., so I could continue using a 49 size motor. However, since the model weighed 6 3/4 lb. and had a glide like a brick it was decided to make a larger model and use a 61.

This resulted in *Upset*, which is in many ways similar to *Uplift*, having the same wing area and weight. However, the wing has a lower aspect ratio as I have found that models seem to roll better if the wings have a short span. The wing taper, apart from looking better, helps the model to spin as the tips stall more readily on a tapered wing than on a parallel chord wing. The tail moment was lengthened to try to make the model smooth in pitch although, whether this has worked I am not sure.

The dihedral was made 4° instead of 2° to get more



Left: Chris Olsen fuels up Upset prior to practise flight at the 1967 World Radio Control Championships in Corsica. Model used Merco 61 motor driving a 12 x 6 prop. Kraft KP-4B radio. Model finished in yellow MonoKote with black trim.

Near right: Upset lifting off during one of its three competition flights in Corsica. Model features very straight climb-out after take-off. Far right: Chris lands Upset at 1967 National Championships where he won S.M.A.E. Trophy Multi event.

stability in the roll plane. The original Upset which was flown with reeds was a very satisfactory model with the schedule as used in 1965, however when the schedule was changed in 1966 and I started flying proportional, a number of small mods were needed. The dihedral of  $4^\circ$  was fine when only two rolls one after another were needed, but three continuous rolls were more difficult. Also, the straight inverted flight was a bit more difficult as the half roll at each end and was part of the manoeuvre. Dihedral appears to cause barreling in rolls so this was reduced to  $2^\circ$ . It also made the figure M (double stall turn) less difficult as the rudder has more yaw action and less roll action.

It was also necessary to increase both the fin and rudder area to make the stall turns in the figure M more reliable. The fuselage was reduced in depth  $\frac{1}{2}$  in. in order to lower the centre of drag since the dihedral had been reduced. The only detrimental result of these mods is that spins are now more difficult. However, it is hoped that making the tip section thinner may solve this and I am at present experimenting with this and with sweep back.

The above model was the one I took to Corsica in 1967 which from a performance point of view seemed to be pretty good. Since then, I have been working at modelling professionally in association among others with Mick Charles, who in his usual polite fashion said that it was too '—' complicated to build! Although I hate to admit

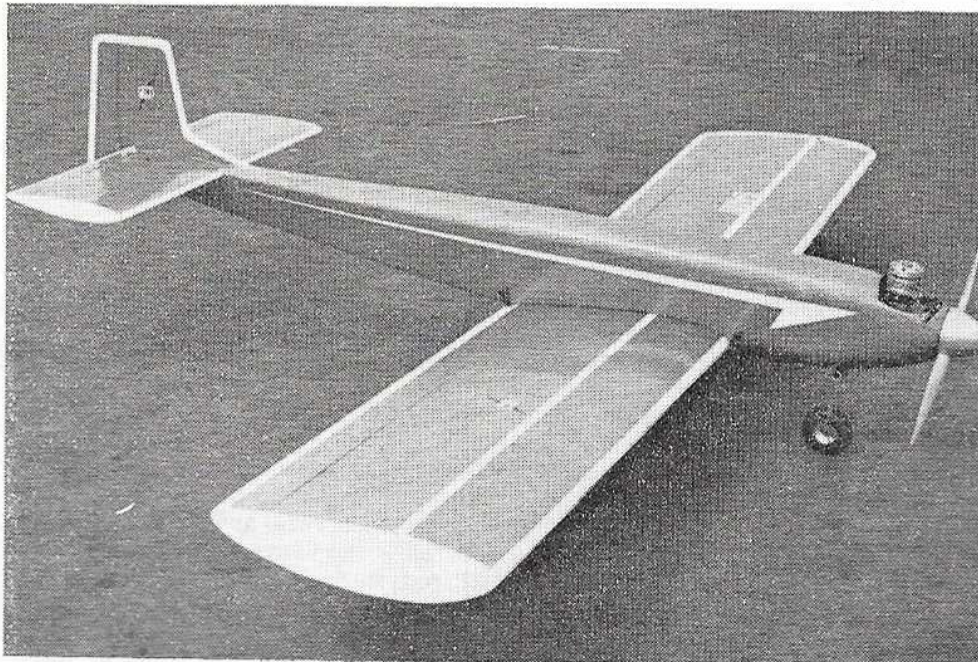
it, Mick was right and as a result a lot of the basic structure has been altered. The wing, although still complicated, is a sure way to get a straight one so the only mod. has been to use an all sheet surface and cover it with paper. This is lighter, stronger and more rigid than the original. The tail plane has lost the main spar and is also sheet covered for the same reasons. The fuselage has two  $\frac{3}{16}$  sheet sides with no doublers although it is still planked on top with  $\frac{3}{16}$  strips as this still seems the lightest way of building a curved top deck.

As a result of all these alterations and the loss of 6 oz. of radio equipment when changing from reeds to proportional, the latest models come out at  $5\frac{3}{4}$  - 6 lb. instead of the  $6\frac{3}{4}$  -  $7\frac{1}{4}$  lb. of the original models.

The construction as just discussed has been simplified but some detail is necessary.

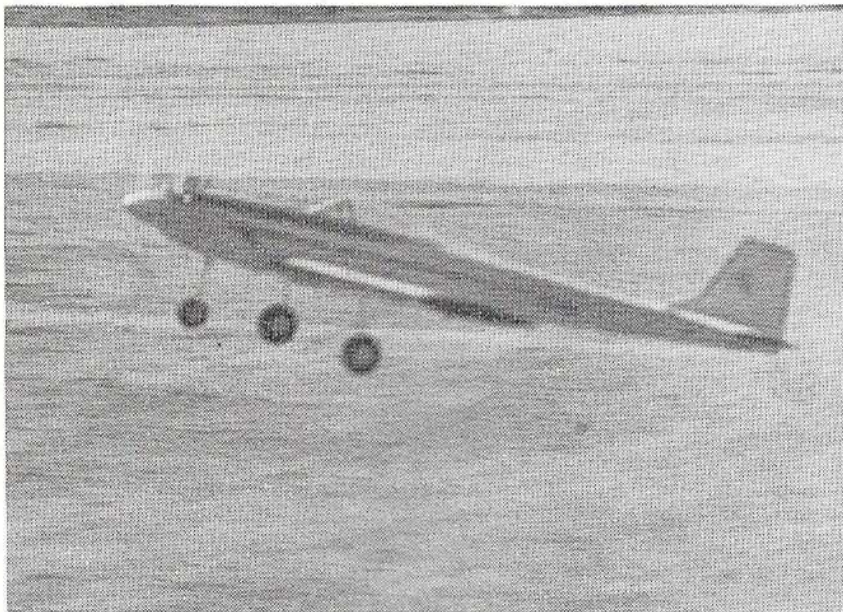
The fuselage sides are cut out of  $\frac{3}{16}$  sheet and former positions are marked on the inside of both sides. Fit formers F2 - 3 and 4 checking alignment. When dry chamfer the inside of the tail end and glue the two sides together so that the finished width is  $\frac{1}{4}$  in. Fit former F2 at front. Check alignment of all formers, and then fit the engine bearers, checking down and side thrust.

When the bearers are set, fit  $\frac{1}{4}$  sheet below the bearers for the bottom of fuel tank. Add the nose wheel bearing and linkage, then plank the top deck and bottom in front



Left: forerunner to Upset was Chris' Uplift design. 66 in. span model featured constant chord wing and tailplane.

Right: Chris sets Upset down at 1967 R/C Trials at R.A.F. Upwood after earning himself a place in the 1967 British World Championship Team. Far right Upset in Corsica again. Chris Olsen prepares for an official flight assisted by Team Manager Geoff. Franklin and Roger Hargreaves. Chris was top Briton, placing 9th.



of the wing with 3/16 in. strip. Add  $\frac{1}{8}$  in. sheet to rear fuselage bottom. Add nose block and F1, hollowing out to fit motor.

The fin and rudder are cut from  $\frac{1}{4}$  in. sheet.

The tailplane is made by using 1 x  $\frac{1}{4}$  in. strip with a centre line marked on it as leading and trailing edges. The ribs have the centre line marked. Then the leading and trailing edges are pinned to the plan and the centre line of the ribs are lined up with the centre line on the leading and trailing edge. When dry, sheet the top surface and when this is set, turn over and sheet the bottom surface. When dry, carve leading and trailing edges into shape, cut elevator from  $\frac{1}{2}$  in. sheet.

Tapered wings are more difficult than parallel chord wings, mainly because of the difficulty in cutting the ribs. This problem has been reduced in Upset in the follow-ups.

First cut the root and tip ribs as shown on the plan from  $\frac{1}{8}$  in. ply, cut all the holes and slots, mount the two ribs on two pieces of 3/16 in. dia. studding with 10 pieces of  $\frac{1}{4}$  in. sheet, interspersed between the  $\frac{1}{4}$  in. sheet should be the appropriate pieces of 1/16 in. or  $\frac{1}{8}$  in. sheet for the ribs.

Carve and sand the whole block to shape. Cut slots for main spar and remove 1 to  $9\frac{1}{8}$  in. sheet ribs. Replace with unshaped pieces and repeat the procedure. This

should give two sets of tapered ribs. The assembly of the wing from this is pretty obvious from the plan. I use a complete jig for building the wing inverted. When all sheet is on the bottom surface, turn the wing over, install aileron linkage, undercarriage blocks, block for cam-locks and dihedral braces. Then, pin one half of the wing in the jig, top side up, and sheet. Repeat for the other wing panel.

Concerning finish there are so many methods available that it is difficult to decide which is best. However, as far as a lasting fuel proof finish is concerned two pack polyurethane is ideal and probably worth the extra bother involved as it is completely proof for all model fuels.

As far as flying is concerned, if built true with the C.G. and angles of incidence correct Upset II should fly straight off the board. All six I have made so far have done so.

Trimming is another matter and if your kindly editor has his way (I always get my way - Ed!) will be dealt with in a further article as the subject is too involved to go into this article.

One last thought on the basis of Upsets I have built - there is some statistical evidence that models painted white have an affinity for fences and orange models do not last more than 25 flights. So bear this in mind when deciding what colour to use!

