

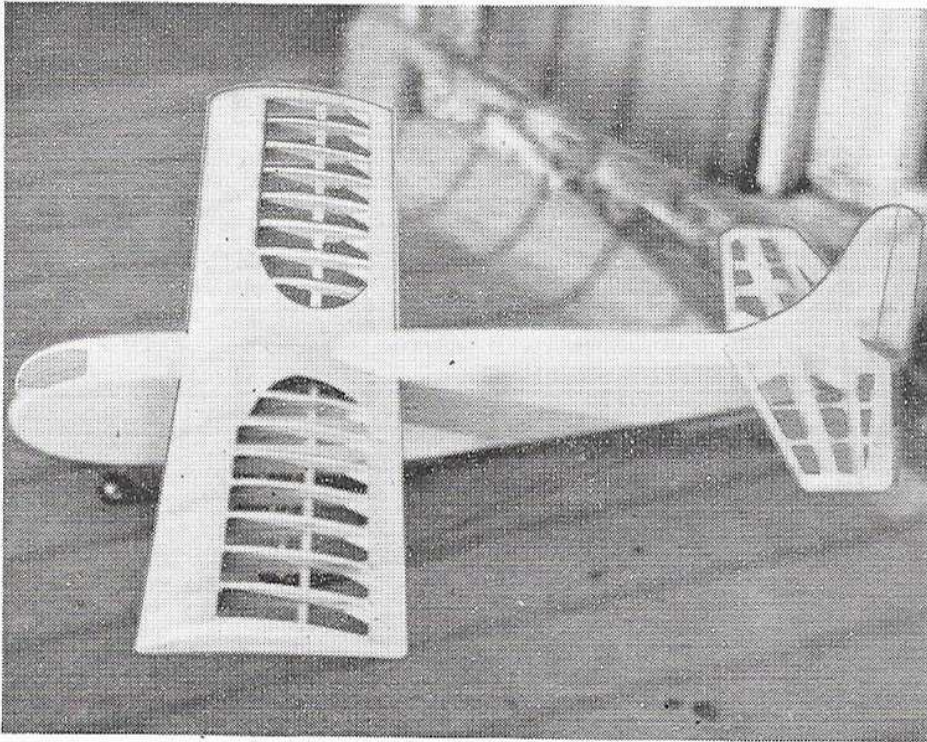
SHOULDERSTRAP was born out of frustration, mainly frustration with the then accepted normal layout in single channel models. I say 'then' because Shoulderstrap was built in 1964, but due to many things (I was 'chicken') it was not until 1967 that I discovered just how well she flew, much to my surprise I might add! She was my second single channel design, the first, Shoestring, being a sort of scaled down 'Uproar' at 40 in. span. However, this model, good flyer as it was, did not look very appealing so Shoulderstrap was built, a neater model, smaller, but a bit more economical on materials. For her size, she's a bit heavy but on a 1.5 cc. motor is not too hairy for a beginner though she doesn't like to glide down wind - tail first that is! Performance is not lacking as the prototype showed one Sunday last Autumn. I had a jumper lead in the flat power supply go open-circuit due to vibration (there's an obvious moral there!) this happening at 200 feet overhead. Instant no control! On a 5-6 minute engine run she went O.O.S. and was found 7 miles away - all this at an A.U.W. of 29 ozs! There is plenty of room for most s/c equipment in the fuselage which is a good thing as I'm a messy installer!

The structure of this model is almost conventional. I use hardwood spars and plywood doublers for two reasons. Firstly, strength. secondly, warp resistance. The prototype spent three rainy days outside and I stood the wing and fuselage in the airing cupboard to dry out and they didn't warp! It's harder to bend spruce than balsa, also paper covering is entirely adequate making for a cheaper model. The use of elevators is for trim purposes alone - more about those later!

SHO STR

37 in. span func
for single chan

By P. R. Williams



Another view of the bare airframe showing wing and tailplane structure. Fuselage has sheet sides and block top.

Below: close-up of tailplane on first prototype showing built-up elevators, not solid as on plan.

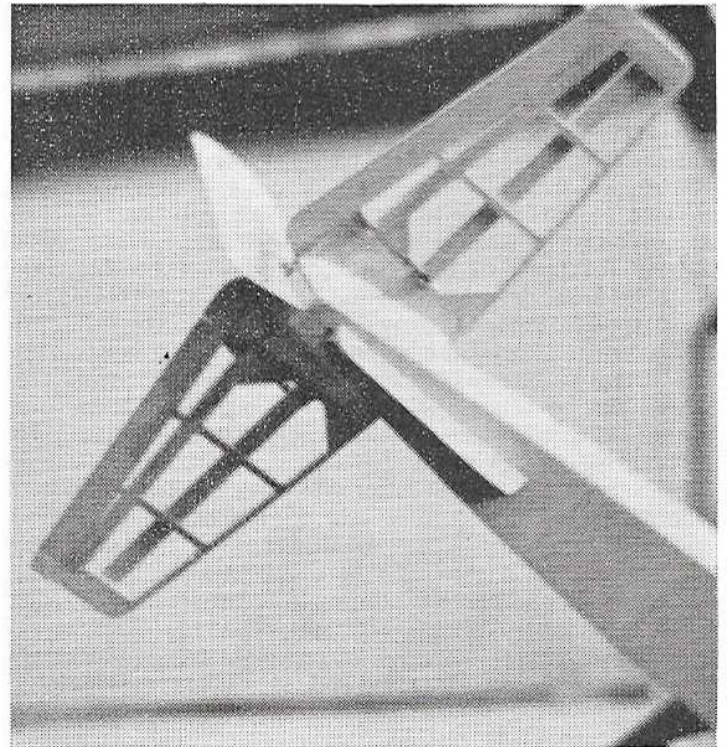
the other tip). When dry, cut and fit centre section fairing blocks. Patience and elbow gr \acute{e} ase are needed here but the final effect is well worth it. Sand the wing and tail seat to the correct angles. Offer up the wing and sand the top deck to shape. Finally sand the wing, fuselage and tailplane to finished shape, and fit the 3/16 in. triangular reinforcements to the base of the fin. At this point the installation should be made. Without the tailplane and fin in place one can see precisely how the torque rod fittings go in.

Installation

This is up to the individual but the prototype is equipped with a Terrytone Mk. 1 and the Elmic Commander. The second aircraft is fitted with a Mk. 3 Guidance System and an Elmic Compact. The equipment is mounted on 1/16 in. ply formers slipped into rails cemented to the fuselage sides. In the second machine, I use a 3 cell Futaba battery box which is sewn to the front former facing forward. The second former has the Rx. Evo-Stuck to it via a lump of SPONGE RUBBER, NOT PLASTIC FOAM. The third former carries the escapement! The rails can be made from off cuts but I use $\frac{3}{4}$ in. x 3/16 in. or 1 in. x $\frac{1}{4}$ in. TE strip. The ply formers are installed with the majority grain running across the fuselage for maximum stiffness. Keep the wires short, but long enough to allow each of the formers carrying the gear to be removed. Nothing but absolutely first-class soldering will do and more than enough has been said by others about that!

Assembly

Offer up the fin and tailplane and when everything is satisfactory, cement them on. Cover the model and dope. The original models are covered with black and yellow heavyweight tissue. Any of the new finishes, i.e. Solarfilm etc. would be alright over a tissue basis. Don't forget to pin down the wing when doping. Cover the rudder and elevators, then fit them in position as shown on the plan. Lastly, a coat of good fuel-proofer paying particular attention to the engine bay. Bolt in the engine on its Paxolin mounting plate (5° side thrust - 3° down).



Make up the main landing gear - it may not be exactly as on the plan but to suit the noseleg length aiming for about a 2°-3° nose down ground angle. Check the gear, feed at least 100 signals through, and it shouldn't miss a beat! And now the bitter bit. Check that all the flying surfaces are true, C. of G. as on plan, and using the elevator trim for a reasonably fast glide. Always adjust the elevators together and by equal amounts. When the glide has been achieved cement the elevators solid. When they are dry, check the glide again and correct any wing drop with a tab on the appropriate wing. With the prop round back to front, get the club ace to do the first trimming flight(s). The prototype flew beautifully off the board! Incidentally, I found that a simple prop change tripled the rate of climb! So go to it, and good luck!