

**An unorthodox sports
model with a friendly
character. That's
Stewart Lunney's**

Have you ever tired of looking at those box type trainers and sports models which all seem to have the same basic shape and all look the same? You have? Then read on.

Originally I fancied something that had features similar to a microlite and would incorporate some type of tubular structure, as well as the use of rolled ply, which I have found to be better than conventional type structures; adding both strength, durability and lightness. All these led to the origination of the 'Micro Pole'.

Construction

The wing (the easy bit) on my original is made from foam and veneer but you could, of course, make it a built-up wing which will make the model even lighter and a suggested built-up structure is shown on the plan. Be sure, however, to make the centre section strong as this has to take the strain of the elastic



MICRO-POLE

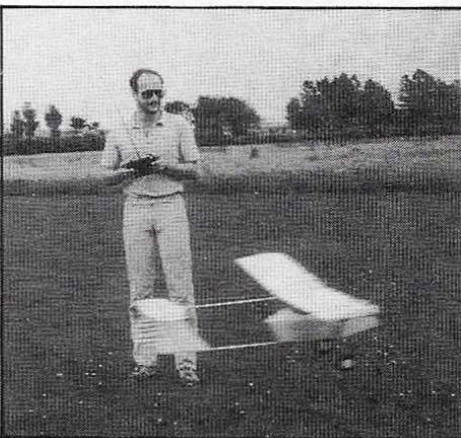
bands as well as the wing seating mounts on the piano wire.

The fuselage construction (the hard part) may at first appear a bit difficult to the beginner but, with a bit of patience, and maybe some help from a fellow flier, you will produce good results.

The fuselage is constructed using $\frac{1}{4}$ in sheet balsa for the base, $\frac{1}{8}$ in for the formers with three of them having $\frac{1}{32}$ in ply strengtheners. Rolled ply of $\frac{1}{32}$ in is used to make the cowl, fuselage mid-section and rear sections.

Start by cutting the base out of $\frac{1}{4}$ in balsa and mark on where the formers will go. Next cut the formers, remembering that the wing supporting piano wire will be attached to formers 4 and 5.

On the engine bulkhead I used $\frac{1}{16}$ in ply doublers and $\frac{1}{32}$ in ply on formers 4 and 5. Remember to drill the three holes for the fuel tank pipes to come through. Former 2 should be cut to size to fit the tank being used.



The man and his model! Micro-pole designer Stewart Lunney and his out-of-the-rut creation. Model is refreshingly different in both looks and construction but is a predictable performer with a fine aerobatic repertoire for the more accomplished pilot. Prototype here has foam wing but our plans show built-up option.

On formers 4 and 5, which hold the piano wire wing supports in place, drill holes on either side of the piano wire so that they may be tied in place using a few short lengths of copper wire or thick fuse wire. Make sure that the piano wire will fit correctly into place, but don't attach just yet as this may cause problems when trying to roll the ply over the fuselage.

Next, glue the formers into place plus the connecting supports (use epoxy glue) and fit the tank into place. Don't forget to glue the $\frac{1}{32}$ ply doubler to the $\frac{1}{4}$ base of the fuselage. Drill the holes through the ply and base which accepts the bolts for the rear fuselage section.

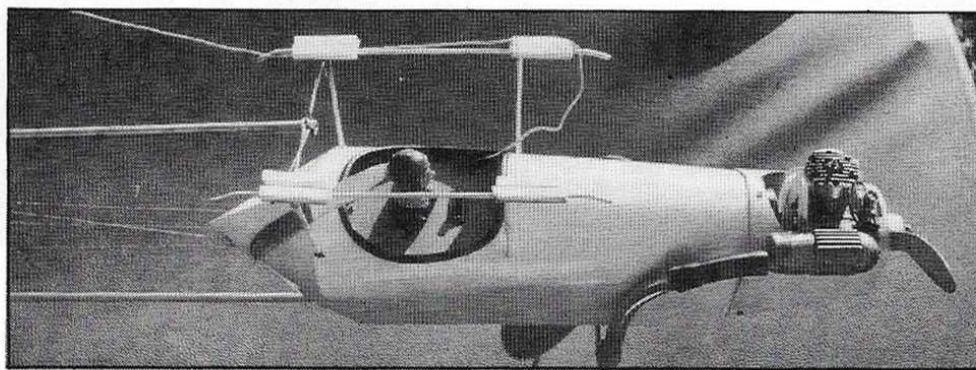
Now for the tricky part. You may have your own way of doing this but I will tell you how I did mine. Get a piece of thin cardboard (I used a big cornflakes packet) and bend it over the structure you have so far, trying to use one of the straight edges to go parallel to one side of the fuselage base. You can pin this in place or use a piece of tape to hold it -

you may find that you need three hands! Then simply draw around the edge to form the shape required. When cutting, make things slightly bigger and keep doing this until you get it exactly right.

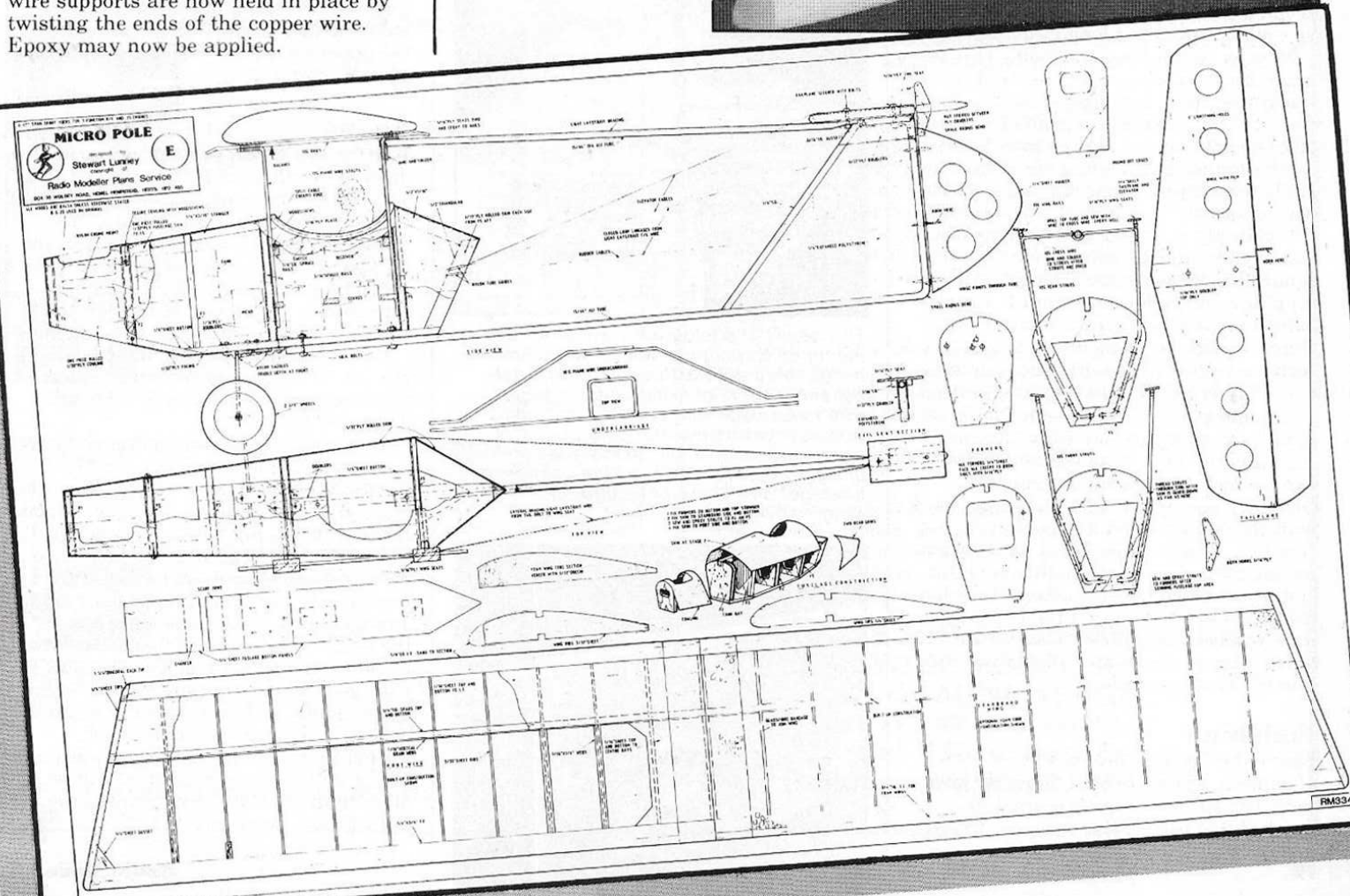
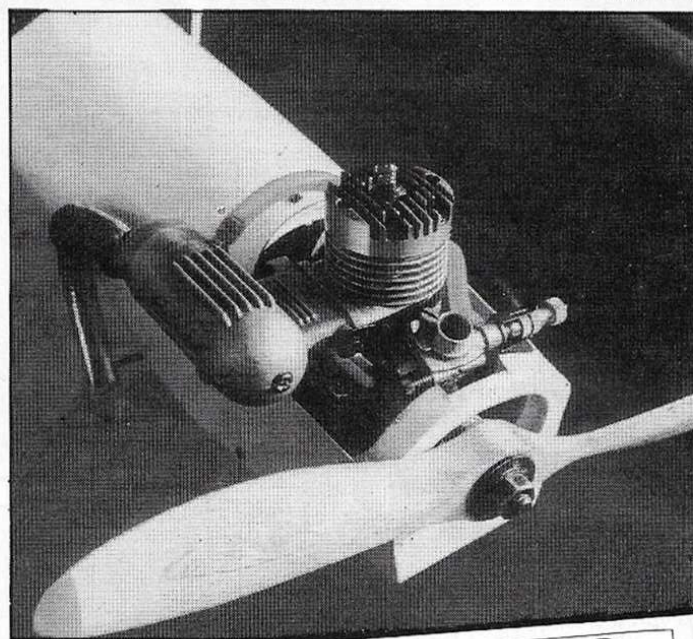
The cockpit area is shaped last and you may have to cut the back end in order to get it to fit correctly on the fifth former. Remember though that you are also going to have to join the rear two shells onto the same fifth former. Don't worry though if this is not possible as you can always add a piece onto the former later. Once you are sure that things fit correctly, lay the cardboard outline onto the 1/2in sheet of ply, draw around and cut the ply. I used a pair of sharp, fine bladed household scissors.

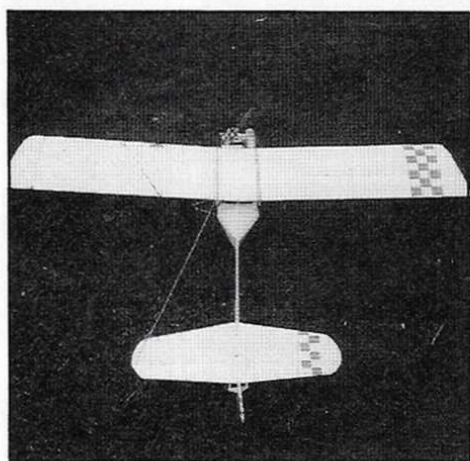
You are now almost ready to stick the ply into place but make sure all the pipes, etc., going to the tank are correct. Fit the Bowden for cable for the throttle as once the ply is in place there is no going back. Now back to the formers 4 and 5; put the pieces of copper wire through the holes (from behind so that you can get at them later to twist around the piano wire wing supports).

Do the gluing half fuselage at a time. Use contact adhesive on both sides and line up one half first. Let this dry for a while and then bend the other side over to check that all is still O.K. and glue that. See, not so difficult after all... The rear two shells are done in the same manner as is the cowl. Holes are then drilled through the fuselage shell so that the wing supports are aligned. The piano wire supports are now held in place by twisting the ends of the copper wire. Epoxy may now be applied.



Engine and cockpit areas form a sort of 'power egg' on Micro-pole, attached to wings and tail components via piano wire and aluminium tubing. Those useful K&S 'Metal Centres', found in many model shops these days, are your best source of supply for the bits you'll need. Different, isn't it!





The undercarriage is held in place using three simple supporting blocks with screws.

Construction of the wing mounting section is best described by looking at the plan and photographs. The rear section of the wing mounting piano wire has a cross-member which also attaches to the aluminium tubing which runs parallel to the boom of the tailplane. At this end I cut a small groove in the tube so that this would fit onto the piano wire. As you know, you can't solder aluminium so I tied several layers of fuse wire around and then soldered that. A second piece of piano wire now acts to produce an opposite force pushing the boom away from the wing section thus keeping the lateral supporting wire taut as well as the closed loop systems.

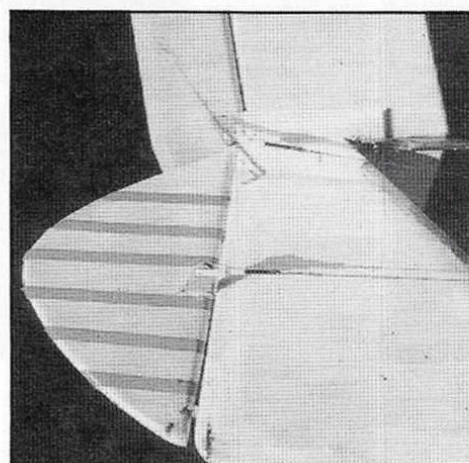
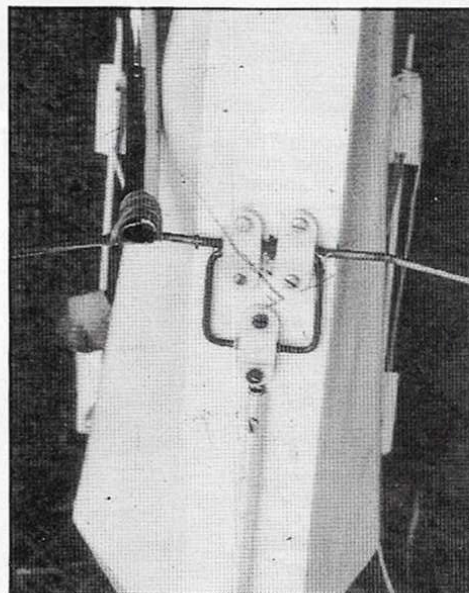
Now on to the fuselage boom. This is made from aluminium tubing bent into the appropriate right-angles and holes drilled. The fin area was made from a piece of polystyrene foam which I had lying around. The leading edge was made from a piece of scrap balsa which was shaped.

1/16in ply was then used to form the rest of the tailplane section with 1/4in square balsa to provide strength. The tailplane and rudder are from 1/4in balsa (medium) which were sanded to shape. I drill 1in holes in the tail sections to reduce weight. The tailplane assembly is held in place by two bolts.

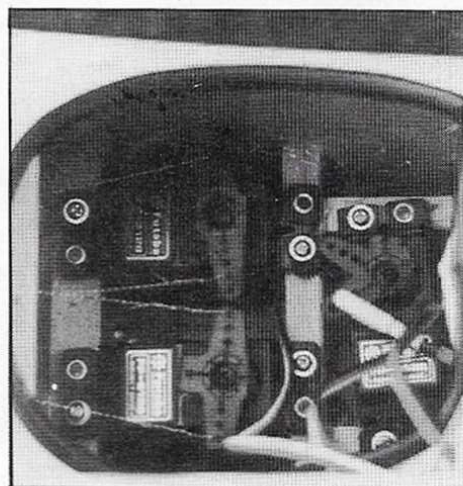
Another piece of aluminium tubing goes from the wing mounting section to the tailplane as well as the two guide wires which provide lateral support. Ordinary steel control line wire was used with the ends twisted and soldered. Don't be afraid of the closed loop system for the control surfaces as this is really quite easy on this model. If not, Bowden cables could be fed along the boom to their respective surfaces. The control horns were made from 1/16in ply slotted into the elevator and fin.

Finishing

I gave the fuselage and cowl two coats of sanding sealer, rubbed down between each; car spray paints were used to finish. I don't feel Solarfilm, etc., would



This series of photographs will prove useful during construction of Micro-pole; note handy servo access through cockpit cut-out and method of fixing undercarriage wire to fuselage with commercial clamps. Both rudder and elevator controls are of the closed-loop variety so there are no unsightly pushrods to spoil the open frame fuselage. Give Micro-pole a go - you'll be delighted you did!



be advisable on the fuselage as it is often difficult to get is to stick to ply - at least I think so. Don't forget to fuel proof thoroughly. The wings and tailplane section are, however, suitable for Solarfilm.

Control movements each way are 3/4in each way on rudder and elevator and, as for trim, a little nose heavy won't do any harm. For the absolute beginner control movements should be less.

Flying

Well, as usual the weather was lousy for days but in the end I got fed up with waiting for the wind to calm down so off I went to the field. Start her up, pre-flight checks, etc., open the throttle and off you go. The tail lifts by itself so don't try to haul her off the deck. Give her time and, with a touch of up elevator, she'll be away by herself.

I can honestly say that the model will not stall! I have held full up elevator with very little throttle and it literally just sank down.

Multiple flick rolls are a dream as are spins with immediate recovery. My favourite manoeuvre is very close circular flying around myself or "control line flying" as my fellow modellers call it. Twenty consecutive loops have also been performed so don't be fooled by the structure as it is of more than ample strength. Of course, these may appeal to the more experienced of flyers but for the beginner the model will fly very slowly with good control response and you have got to admit, it does look different to the normal type trainer/sports model.

I found my OS 25 more than adequate power and feel that a good 20 will be more than O.K. My next modification is to fit flaps - some day!

