Litespan covering is strong and light, colour scheme is quite easy to achieve, text tells you how.

THE QUARK

BUILD FROM OUR FULL SIZE PLANS

A smart little model designed by Peter Miller to test a micro radio, but you can fly it free as well

When I bought the new CETO micro radio outfit I planned to fit it into a C02 powered model. I soon realised that to get the best out of it the model would need to be very low weight and also low on drag. Quark was designed with these parameters in mind and also it had to be suitable for pure F/F, after all I was experimenting with a different type of control system and so the less things that I had to worry about the better. The construction is pretty conventional generally speaking. The curvaceous tail surfaces are no harder to build than square cut ones and are probably fractionally stronger. However experienced you are, I do suggest that you follow the sequence given, in particular for the installation of the radio.

Building the airframe

I suggest that the first job is to cut out the formers for the tail surfaces and wing tips. Cut the 1/32" X 1/16" strips of medium balsa, soak them in water for a few minutes and then pin the laminations round the formers and leave to dry. When the laminations are dry carefully glue them with PVA and re-pin them round the formers. Avoid getting any glue on the formers. When they are dry sandpaper them to a rounded section while still held to the formers.

Build the two fuselage sides from 1/16" sq. including the 1/16th sheet infill and gussets in the nose and round the U/C mounting. Also fit the 1/16" sheet switch mount to the left hand side and the 1/32" sheet area where the pushrod emerges. Chamfer the rear ends of the sides so that when they are joined they are only 1/16" thick. Set the two fuselage sides upside down over the plan view and add the cross braces in the front area where it is parallel and fit Fl. When everything has set pull the rear together and add remaining cross braces. This can be done off the board. Now the undercarriage and it's mount can be fitted. I suggest using epoxy for this as the fillet eachside of the mount will add considerable strength.

At this stage fit the motor and tank. The model has about 3 degrees downthrust built in. Add about 1 right side thrust, I used a piece of 1/64" ply with one lamination sanded off.The tank is supported as shown. Fit the two cowl sides, the laminated nose formers and the "instrument panel" and then cover the top of the nose with 1/32" sheet and sand everything nice and smooth. Fit the 1/32" sheet infills flush with the bottom in the bays indicated on the plan. The fuselage is now complete.

Installation

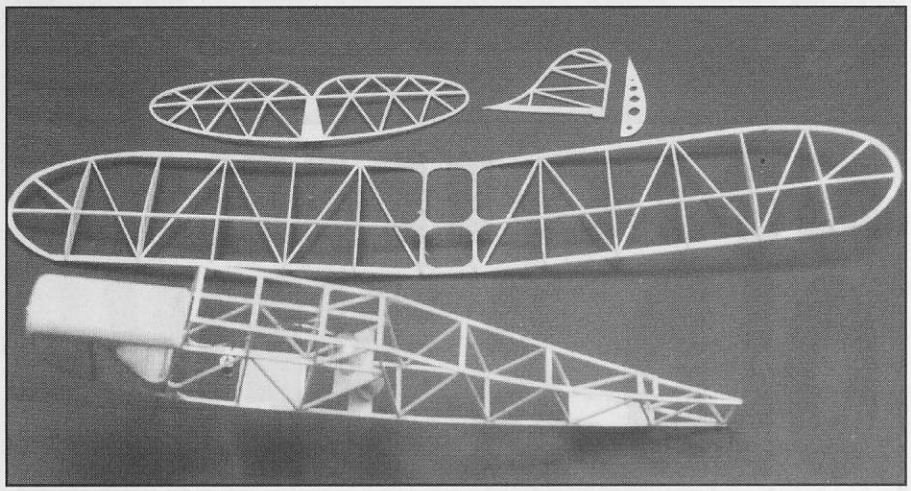
Cover the bottom and the left side of the fuselage. Cut away the covering from the slot where the pushrod emerges and for the location of the switch. The switch must be a tight fit in it's mount. The pushrod is made from K&S .005 brass wire, leave it over length and make a 'Z' bend in one end. Place a piece of tape over the batteries to keep them in their box. The battery box is held to the rear of Fl, I used a scrap of servo tape for this. The switch

is fitted into it's location and a tiny drop of CA or PVA is used to hold it there. DO NOT GET CA INSIDE THE SWITCH.

The receiver is mounted with double-sided Sellotape on the floor just behind the open bay in the bottom of the fuselage. Fit the pushrod to the servo arm, feed the lead down the fuselage and feed the pushrod through it's guide and then fit the servo in it's bay. Do not press it down onto the tape until you are certain it is in the right position and that the pushrod is lying in the correct location. It should run down the outside of the fuselage close to the tailpost. At this stage it is a good idea to connect up the radio and check that everything functions properly.

Complete the covering of the model and then fit the tail surfaces. Hinge the rudder using Litespan 'clothes horse' hinges Just like a control line model. The rudder must be very free but with no slop. The control horn is cut from a scrap of plastic sheet, even a section from a Yoghurt pot would do. Drill the holes with a pin and fit the horn into a slot in the rudder with a drop of CA glue. With the servo in the 'no signal' position off-set the rudder 1/16" to the right and bend the pushrod down in line with the hole. You will find the you have to use a hole very close to the rudder to get the required throw.

A short length of wire can be soldered to the pushrod to act as a keeper, this will allow moving the pushrod to vary the throw and also allow you to bend a kink in it if needed to equalise the rudder movement. Check that you have equal movement each side of neutral, the recommended throw is 1/16" each way. There must be no trace of binding anywhere because we are working with very small forces. The wings can now be glued in place and the model



Quark ready for covering, note floors for mounting radio. Switch mount and pushrod guide not fitted at this stage.

temperatures were used on the wing.

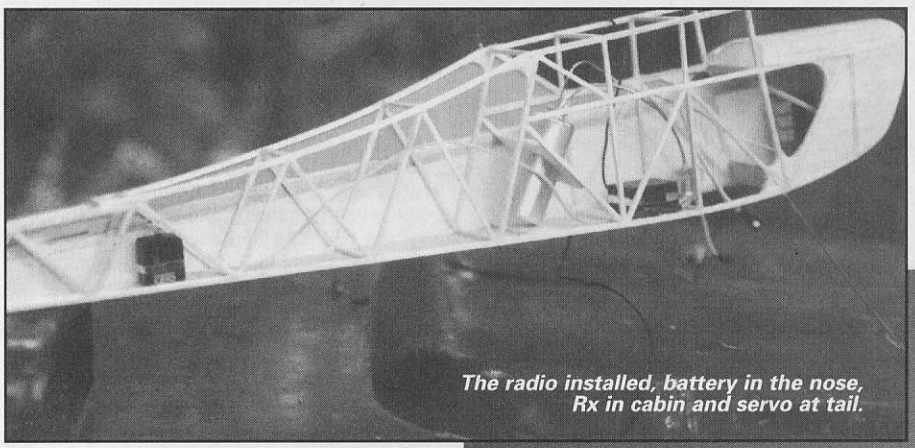
The windscreen and side windows are in one piece. Make a paper template and trim to fit and use this to cut your clear sheet. This is stuck down with R/C Modellers Glue before the wings are fitted.

Trimming and flying

Treat the model as a F/F model for trimming. I made up a control lock from three pieces of 1/16" strip to hold the rudder central. This is slid over the rudder and fin and held in place with a scrap of sticky tape. Test glide the model over the proverbial long grass, it should glide in an almost straight line and float in to a landing. When the glide is satisfactory give it a gas charge and fly the model under power. That straight glide means that you will have a long walk to retrieve...now you know why you spent £120 on the radio! Much to my total amazement my model needed no trim adjustments at all...I must live right!

When you are satisfied with the power pattern remove the control lock, give her a liquid charge, switch on the radio, start the motor and launch. Start pulsing the Tx button fast and in equal signal on, signal off ratio. If the model starts to turn right hold the signal on a bit longer than off and vice versa. In the first flight you will master the knack of doing gentle or tight turns either way, it is much easier than you would believe. On my trimming flight I had to walk well over two hundred yards to retrieve the model, with the radio working I never walked more than twenty yards. I was able to keep the model over our 40X50 yard mown strip - so flying in a sports hall with no wind at all would be simple.

Even if you do not fit the CETO R/C, Quark will give you great flying, especially as it will only weigh about 1.5 ounces, but be prepared for very long walks.



The radio installed, battery in the nose, Rx in cabin and servo at tail.

checked for correct balance which is just behind the main spar. You can also weigh it now, two ounces or less is excellent. It will fly at higher weights but of course performance will be degraded.

Notes on covering

My model is covered with Litespan or you could use the new Airspan. The colour schemes was achieved in the following way. Pieces of red and white Litespan were joined with about 3/32" overlap using a cool iron, just hot enough to activate the Balsaloc. Strips of black Litespan were ironed over the join with the cool iron. You must not cause any shrinkage at this stage. The model was then covered in the normal way with these pre-joined pieces. The shrinking stage did not affect the joint even when quite high

Two ounces of pure fun. CO2 powered radio is a great step forward - silent and green.