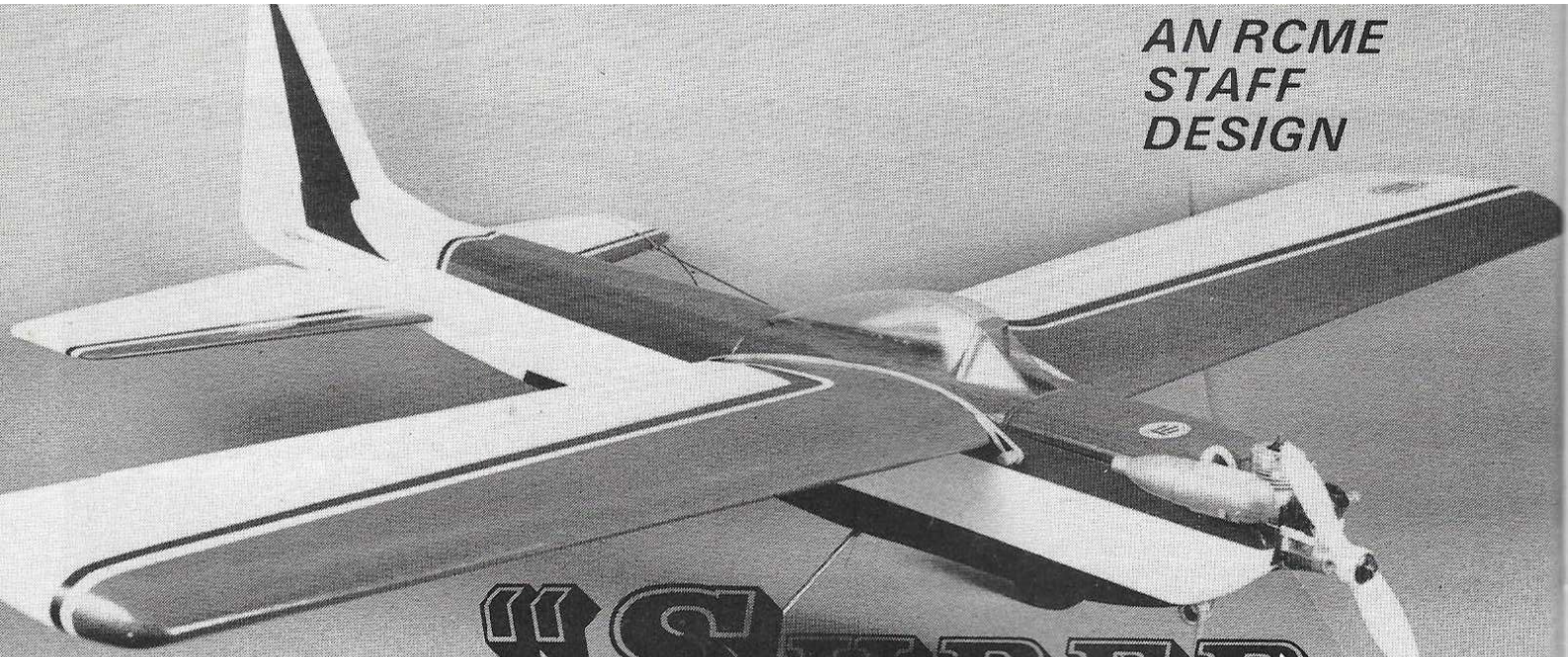

SUPER TAURI PLANS

AN RCME STAFF DESIGN



"SUPER TAURI"

Ed Kazmirski's classic brought right up-to-date for 0.25cu. in. motors and 3 or 4 function R/C.

EIGHTEEN YEARS AGO in April 1964, when plans for Ed Kazmirski's 'Tauri' were published in Aeromodeller magazine, we little thought that the design would prove so popular. We knew it was a good design, it had to be to be kitted by a major manufacturer — *Top Flite* — and, of course, it was designed by a World Aerobatics Champion.

Just what sort of aeroplane is the 'Tauri,' why has it remained so popular, why do we need 'Super Tauri' anyway, if the original is so good?

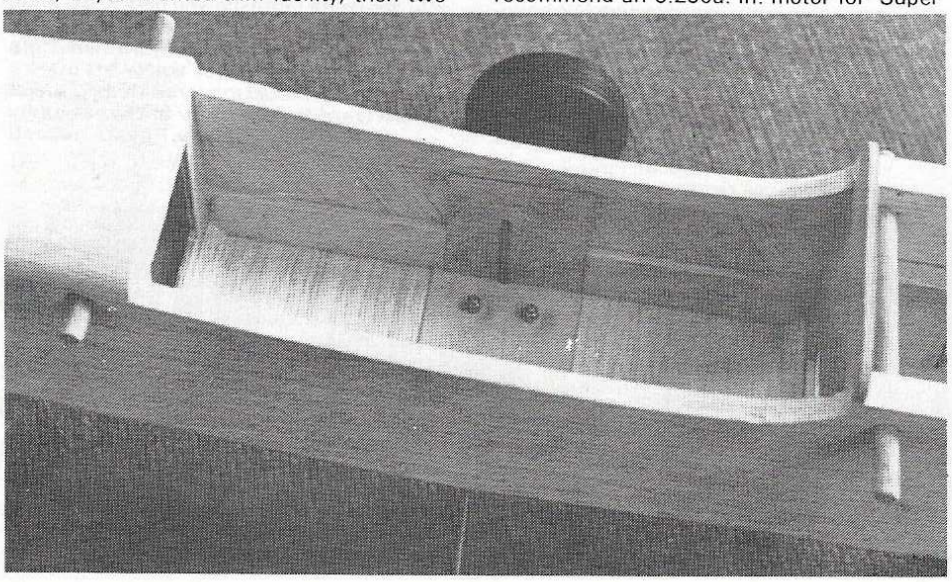
Essentially, 'Tauri' was designed as a multi-channel R/C trainer, not multi-channel *proportional* R/C, but *Reed* System R/C. Reed R/C was non-proportional, the servos went either one way or the other when a switch on the transmitter was thrown — usually, for rudder and elevator, a three position switch biased to the centre. Down — neutral-up — if you like. Servos were very big and bulky by modern standards and receivers were coupled up to a reedbank easily as big as the receiver. Frequently, two battery packs were required, and sometimes three, if you wanted trim facility, then two extra channels and an extra servo were necessary! 'Tauri' was not thought of as a first model, rudder only control was the usual first step as some experience of installation, flying and operating was expected of the intending builder.

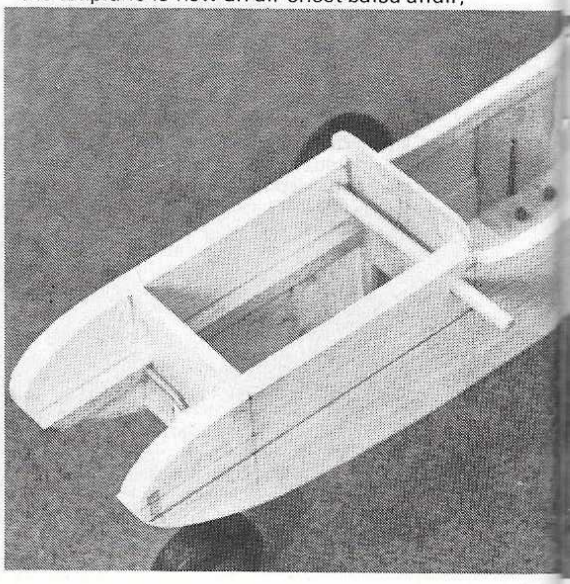
Fashions change in model structure also, Ed Kazmirski designed 'Tauri' for kitting and the published plan structure followed the style of manufacture to be expected of an all built-up balsa kit model — foam had in any event been barely invented. Pausing only briefly to sigh with nostalgia, contrast the situation then with now — modern R/C equipment; proportional control, lightweight, small in volume. More powerful engines, even though we now always fit silencers and many, many more people flying, and learning to fly, R/C. The basic 'Tauri' has proved during the past 15 years to be a very good flier, a model which forgives mistakes and absorbs punishment, one which can provide an immense amount of flying pleasure. But fashions do change, higher power engines are habitually fitted to trainers — we recommend an 0.25cu. in. motor for 'Super Tauri,' and many builders will want to fit full four function R/C to this model right from the start.

Fashions change with regard to structures also, today's modeller by and large wants to spend less time building and more time flying, and with the better control available from proportional control, and more power, he will be able to fly in worse conditions than the modellers of 15 years ago would ever have attempted.

'Super Tauri'

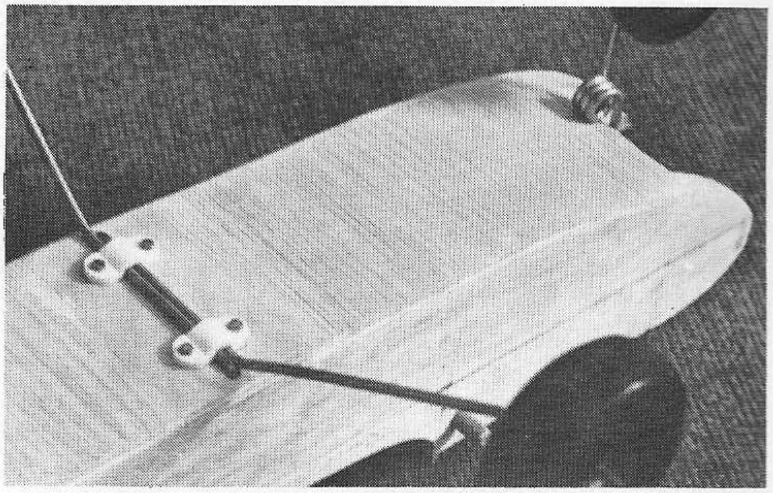
'Super Tauri' retains exactly the original outlines of the '64 version. Subtle changes have been made, the undercarriage referred to as 'stalky' in the original description has been shortened, and because today's flier may well wish to fly for extended periods inverted, the fuel tank has been brought into better alignment with the carburettor by a slight lowering of the thrustline. Fuselage structure is simpler, there are less parts and less expensive balsa wood overall, and lastly the tailplane is now an all-sheet balsa affair,





the complicated open frame structure on the original was designed for silk or nylon covering.

Turning to the wing, we know from discussions with various foam wing suppliers, up and down the country, that there has been a steady demand for foam wings for this model, so it seemed reasonable to allow for this type of wing on the new plan. Also we know that many modellers fly the model with ailerons, so once again the option is shown. These simple alterations do not detract from the appearance of the model, and as far as we are able to remember, the flying characteristics remain unaltered.



Right: main u/c is a simple bending job, but noseleg really needs to be purchased ready formed. Micro-Mold include a suitable one in their accessory range.

Building 'Super Tauri'

Tapered boxes are not really all that difficult to make! Do remember to make two different fuselage sides, one left and one right, most modellers make two left hand sides once during their building careers. Contact adhesive is ideal for fitting the doublers to the fuselage sides, but the remainder of the construction can be carried out with PVA or Aliphatic glue. It is a good idea to drill wing dowel holes before assembling the fuselage to ensure good alignment. As the front end of the fuselage is parallel sided all three formers F1, 2 and 3 can be fitted simultaneously and all remaining support blocks around the engine bearers can be fitted. Fit the plywood main undercarriage mounting plate and sheet the underside of the fuselage up to the tailplane mounting opening. Slot the top block to take the fin and glue this in place; also temporarily tack glue the tank hatch and tailplane fairing block into place. Sandwich a piece of scrap balsa beneath the tailplane fill-in block, so that the block can be carved and sanded to shape before the tailplane is fitted. Carve and sand the fuselage block to section and remove the tack-glued blocks and put to one side.

Assemble and sand to section both fin and tailplane parts and glue the fin into position. The tailplane can be fitted at this point, but you may find it easier to cover it first.

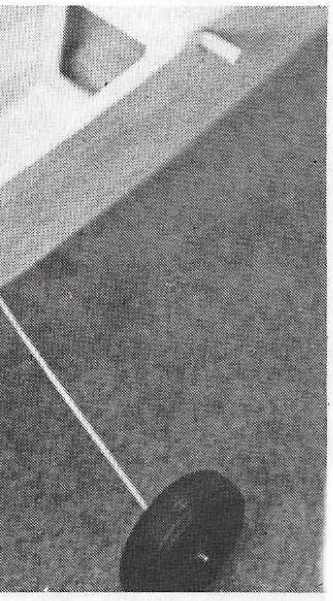
Turning to the wings, some modellers feel that foam cored wings are far quicker to finish off than built up types, others would disagree. There are pros and cons for both types — take your pick, the performance differential will be minimal, the time difference depends to some extent on your attitude towards the foam wings. If the assembly of foam wings is tackled enthusiastically, there can be considerable time saving in their use.

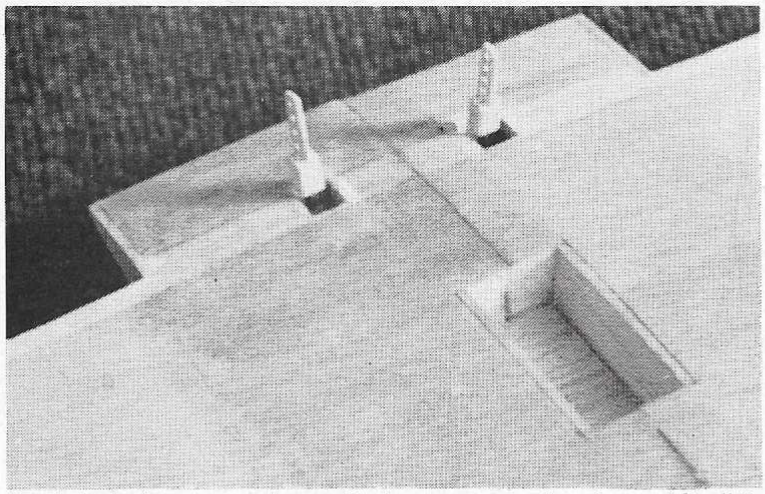
Two types of foam wing are commonly available, those supplied by *Arron Kits* have wrap around leading edges and trailing edges tapered right down, in other words with the addition of tip blocks they are ready to join if the non-aileron version is being built. Some types, however, need balsa leading and trailing edges fitting.

If the 'Arron' type are used for fitting with ailerons, carefully mark out the wing to allow for removal of the aileron, and further removal of material for the aileron sub-spar and a facing on the portion removed so that it can be used as the aileron. A *Dremel* saw, or very sharp knife, and steel straight edge are quite suitable for cutting up the foam wing.

Once the aileron portion is removed, from the basic foam wing, further construction is identical for both 'Arron' type wings and the type that needs leading and trailing edges fitted. Glue on the leading and trailing edge facings, either PVA or a five minute epoxy can be used, small strips of masking tape make ideal fixing, whilst the glue dries. Tear up a sufficient number of strips before starting and stick them to the edge of the bench.

Below left: wing seating area construction note u/c reaction blocks. Below right: nose area doublers and support blocks can be seen below bearers.





Left: foam wing centre section, note balsa lined aileron servo box.

Sand the facings to match up with the core and add the top blocks. Tack glue the tapered trailing edge into place and sand both panels to section. Now, remove the tack glued trailing edge and groove the fixed centre portion to accept the strip aileron horns. Glue the fixed portions into place, lightly grease the wire parts to prevent glue binding up the ailerons.

The wing panels can now be joined — use a generous amount of five minute epoxy or PVA, then reinforce the centre section. Most model shops can supply special 'one-shot' packs of resin and glass tape for this job. Block up the holes where the strip aileron linkage emerge with *Plasticene* before reinforcing to stop resin soaking into the aileron linkage, and apply masking tape to the wing to prevent resin spreading out over half the wing. A piece of polythene stretched tightly over the resin also helps to produce a really smooth finish to the centre section.

If built-up wings are contemplated firstly choose which type are to be built as construction varies. Cut out a full set of ribs using a plywood template or a sandwich of blanks between two templates. Pin the mainspar down and position the jigging piece as shown on the plan and fit all the ribs. Pin and glue the leading and trailing edges into place and the top spar. Glue the dihedral brace in, and add all the spar webbing. Sheet and cap strip the top surface of the wing. Remove from the plan, turn over and sheet the lower surface.

Prop up the complete panel so that the projecting dihedral braces match up with the second wing panel and build the second wing onto the first. Add the wingtip blocks, line the aileron servo box if required, and fit the ailerons and horns as described above.

Finishing

The basic structure of the model is now complete, make a trial assembly of wing to fuselage and adjust the shape of the wing seat as necessary. Cut the engine mount plate from *Paxolin,* fit the engine, trimming the fuselage side as necessary to clear the silencer. Bend the main undercarriage wires to shape and fit using nylon or metal saddles. We suggest that you purchase a ready formed noseleg. Temporarily pin the various parts together and slip on the wheels etc., and rubber band the wings into place so that a rough check on balance point can be made. Lay the R/C receiver servos and batteries on top of the model, to give an approximate idea of the balance point. It should work out within the stated limits with three servos at the rear of the underwing area and battery under the fuel tank up front. Slight adjustments can be made with battery position to get it just so.

Fit servo mounting rails and make up pushrods, ¼ square hard balsa is fine, fit the tube for the throttle cable. Cut all necessary holes for switch, pushrod exits, fuel pipes, aerial exit and temporarily fit the R/C equipment and check that nothing catches at all possible extremes of control position. Remove the R/C equipment and prepare to apply the finish of your choice. We used heat shrink film to duplicate the original Ed Kazmirski colour schemes which was a colour dope on nylon job. Do fuel proof the tank bay and engine compartment after filming, this does help to prevent the edges of the film from lifting.

Re-fit all the R/C equipment and thoroughly check out, lift is left, up is up, etc. Control surface movements on our trial model finished up as follows

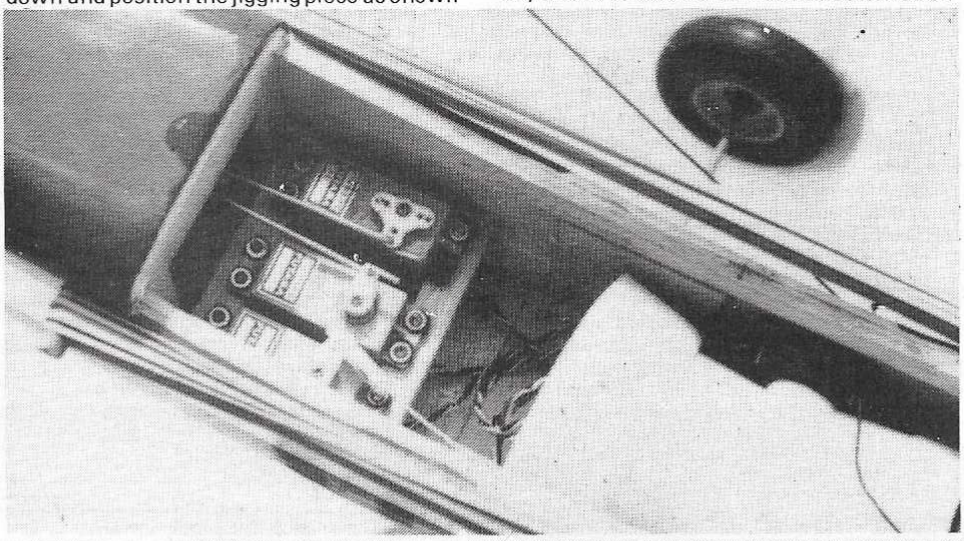
Elevator, ± ½in. Aileron, ± 5/16in. Rudder, ± 1¼in. Balance point 2⅞in back from leading edge.

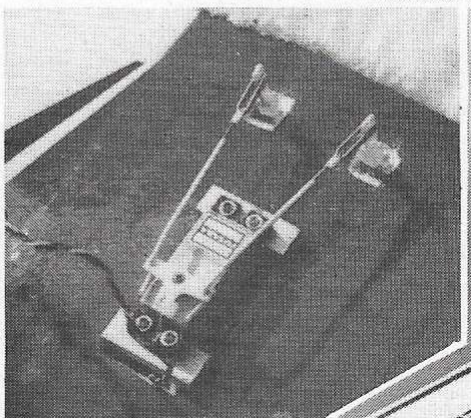
A final check on the balance showed everything to be as it should be and after a pause for a photographic session it was down to the flying field.

Flying

We had already experienced the excellent handling of the *Irvine* 25 and it was no surprise to find the motor firing up after only half a dozen flicks despite sub-zero temperatures. RCM&E Assistant Editor Dave Day took the transmitter for the first flight because he had finished the model off. Well it seemed like a good reason at the time! A brisk heave and, 'Super Tauri' was away and despite a new engine running rich a 60° climb angle was attainable. Dave flew the model round gently for a while getting the feel of the controls then checked it out for low speed handling and to find out what the stall was like — the answer to that was simple — no stall, or at least only a mushy slow forward flight with no tendency to drop a wing.

Once that basic test was over the model was flown around for the camera and at last when fingers started to go numb, lined up for a landing. No problems there, perfectly controllable. A second flight then served to prove the aerobatic capabilities of the 'Super Tauri.' Snap rolls, full-power spins, inverted spins all came well within the model's capabilities proving that the original flight characteristics of Ed Kazmirski's design had not been in any way impaired by the updating. Joint Editorial view was that the model was a delight to fly and despite having probably heavier construction, the overall weight was lower than that of the '68 original and the extra power of the Irvine engine compared to the K&B 19 of the original provided sparkling aerobatic performance on full power. We were well satisfied, we hope you will be.





Above: R/C equipment layout, plenty of room for the largest modern equipment. Left: aileron servo installation.