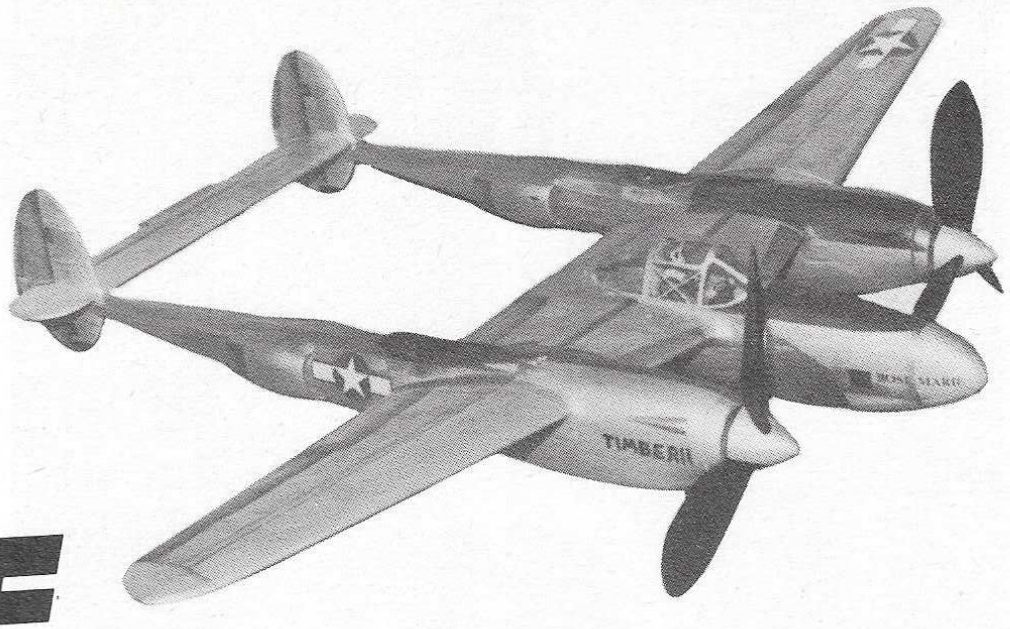
I started aeromodelling by building semi scale models from the *Frog* series like the 'Scamp', 'Sabre', 'Raven' and 'Redwing'. The latter flew reasonably even if you couldn't be trusted with clear dope. My father occasionally helped out and together we built a *Keil Kraft* 'Chief' which flew well for years. However the first significant model I built myself was the *KK* 'Hurricane' which, though painted silver with a brush, turned in surprisingly consistent flights.

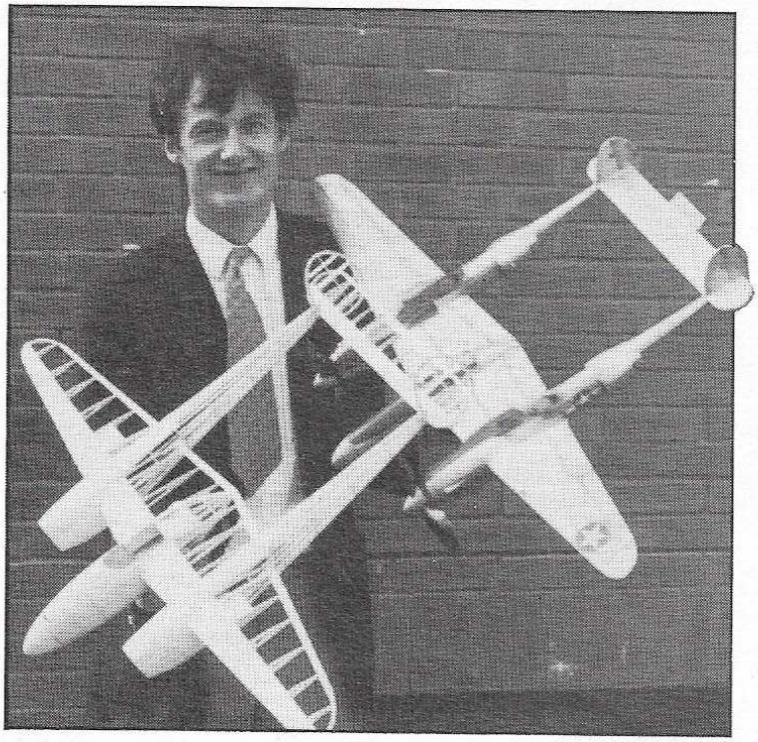
This led me to a series of WW II subjects some of which flew moderately and one or two not at all. These culminated with an *APS* 'Spitfire' at least half of which was ⅛in ply. It led an exciting and dangerous career till I was stupid enough to further weigh it down with an undercarriage...



P.38 F Lightning

Richard's well travelled original P-38. Flight proven on many past occasions it has shown that this choice of model is a very practical flyer.

Following on from our article on rubber powered twins, Richard Falconer burns the midnight oil to show the way...



Left, Richard with old and new models; plans shown here have been carefully checked for authentic scale and - to his surprise - vary little from those of the original. Below, detail, during construction, of fuselage half.

Chequered History

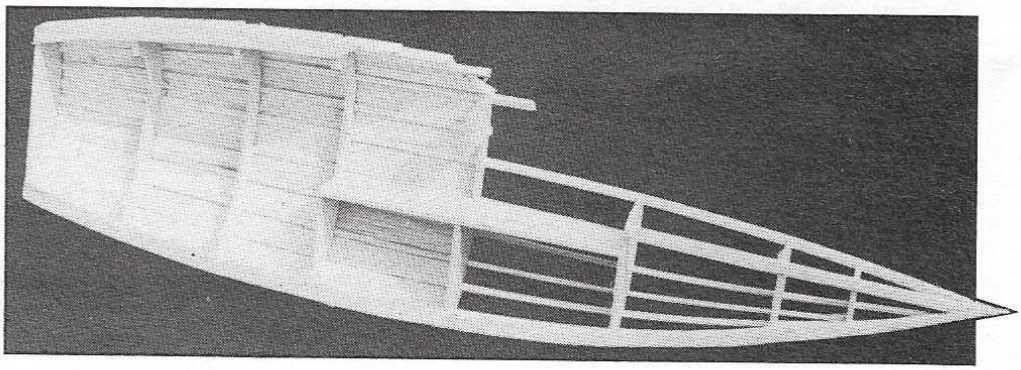
I was living in Capetown in 1970. For the first time in my life I had a lot of leisure so, inspired by an article by Pierre Cloisterman, I decided to build a rubber powered 'Lightning'. Limited to a drawing in William Green's 'Famous Fighters of the Second World War' I bought an *Airfix* kit and scaled it up four times, hence the scale of 1:18...

I think the drawing took me a couple of weeks and I built the airframe in a week! But the propellers worried me as I was clueless on freewheels. I bought some lovely ball bearing thrust races from a pleasant model shop in the Afrikaanse suburb of Belleville and that was about as far as I got.

I nearly gave the model to my hosts' son but an Australian hippie gave me some planks of polystyrene (his only furniture) and I made a box...the model flying back to England in the hold of a VC 10.

I eventually attempted some flights but with little success. In 1973 I met Charles Newman at Old Warden. He looked like a performer in a contemporary pop group but he obviously knew what he was talking about. I sent him some prints from my rough drafts and was amazed when a fortnight later he wrote to say that his model flew well!

Sticking the canopy on my model transformed it and I was soon getting good flights until...someone stole the props! Eventually I built better ones and finished the model properly. Thus equipped I entered the '78 Woodvale Rally where bad trimming sent the model into the runway. Vic Driscoll twisted my arm to fly the model at Old Warden and my inability to resist reducing up elevator/noseweight led to a write-off.



Left, final setting up: nacelles are pinned down to board and the 'noses' aligned using set squares. Note rear end overhanging board. Fit all the stringers before unpinning the complete assembly.

I placed the bits in the polystyrene box, married, moved house, had a daughter and resuscitated the model last year when I discovered the wonders of superglue (I'm a slow learner). In fact it's probably flown more in the last year than in the previous fifteen!

I chose the 'F' model because to me it's a better expression of the beautifully smooth streamlining of the 'Lightning'. In fact the beard radiators on the 'J' are not rads at all but supercharger intercoolers, previous models relying on circulating the air up and down the 'dee' box of the leading edge.

Begin at...

The model is easy enough to build if one concentrates on absolute accuracy in assembly - start by building the wing - it's the easiest bit and you can always use it for something else if you give up! Build the mainspar on the plan, marking the rib positions with a soft pencil - cut out the wing tongues from straight grained 1/8in sheet. Build the boxes with 3/32in cheeks and a 1/8in spacer cut from the same sheet as the tongue.

Cut out the ribs and test assemble the root rib and tongue - then build each by pinning the spar flat and square onto the plan and gluing the ribs either side. Cut the leading edge from soft 1/4in sheet, the t.e. is from pre-cut 1/2 × 1/8in balsa. The same material can be tapered down for the trailing edges of the outer panels. Build in the top sections of formers 'H' and 'G', then add the back-bone and 'R1'. Add the sheet decking which supports the pilot's radio, then the 1/16in stringers.

By tapering the pre-cut trailing edge for the outer wing panels one is left with a thick

trailing edge at the tips which can be sanded to provide washout. The leading edges of the outer panels can be from proprietory pre-cut ¼ × ¼in balsa but choose it soft. Laminate the tips separately around thick cardboard templates. Butt the centre section and each outer panel *flat* on the board, finally cementing the boxes when alignment has thus been ensured. Sheet the whole wing in 1/32in sheet.

The tailplane should be tackled next. Note the ribs are *not* slotted, but glued either side of the full depth main spar. The sheeting ensures a rigid unit and careful sanding will reduce weight without impairing strength. Build the trim tab from sanded 1/32in sheet but *leave it loose*. Fit the ply horns but simplify the covering by leaving off the mass balances.

Next build the fuselage. Lay out the 1/16in sheet perimeter. Note that the floor is 'split' and that the starboard section is 1/16in wider. Note too that former 'E' has a top section which is only cut out *after* the fuselage is completed.

With the starboard side completed leave it pinned to the board and steam it to avoid distortion. Unpin the side and fit the port floor section followed by all the other formers, adding the stringers and checking alignment as the work progresses. As with the coaming to the rear of the cockpit leave the stringers overlong, trimming them and fitting thin ply formers as a final task.

Fit the nose block, noting the grain direction and leaving access for lead shot ballast. Now cement the centre section to the fuselage noting that 'H', 'G' and 'F' should align *perfectly*. Fit the final stringer which is the mounting for the hood. Cut out the false piece in former 'E' and fit the 1/32in sides to the fuselage interior.

Now the relaxing bit! Take some *soft* 3/32in sheet and carefully infill the spaces between the stringers and formers as far as former 'E'. Then sand the whole fuselage

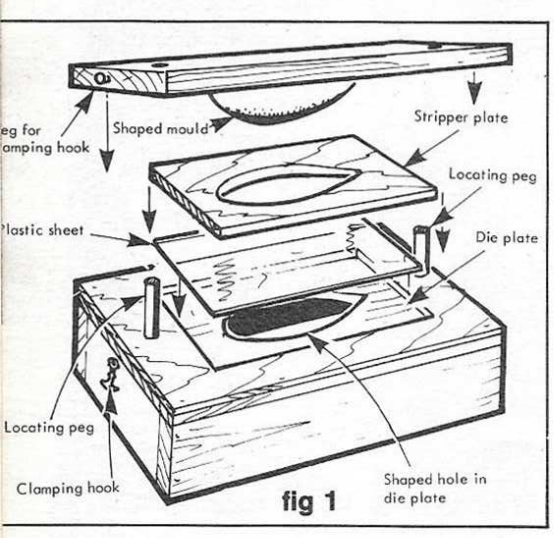
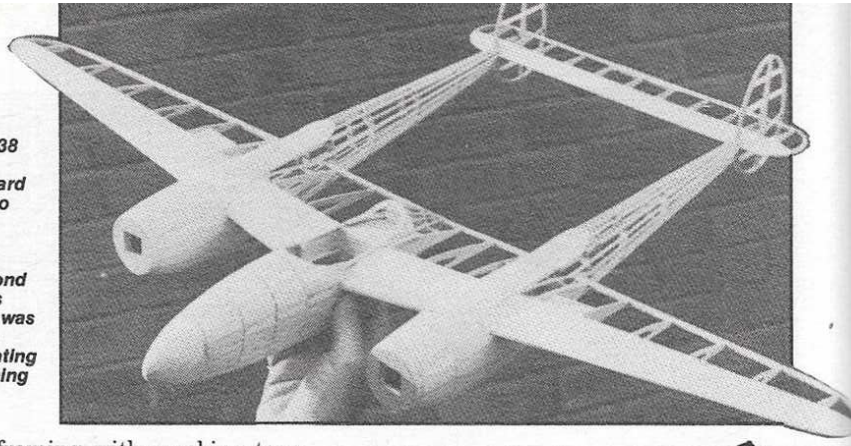


fig 1

checking the nose profile. Use *soft* ⅜in sheet to form the root cuffs, carefully blending them to the wing *before* finally cementing them in place.

I mould the canopy from acetate sheet using a balsa master (Fig 1). Take some soft block and mark up the side view of the canopy and start carving...checking the plan against the cockpit and sections at 'E' and 'F'. If you're making a late model 'Lightning' it will have a *flat* screen. The 'F' model has a curved screen and no division in the rear hood (Yes, my model's wrong...).



Right, another P 38 'Lightning' nears completion. Richard was determined to double check everything for Aeromodeller by building this second model - sleepless nights proved all was well, although he is now contemplating taking up something relaxing like car racing...

You can add framing with masking tape prior to moulding but *Lockheed* were skilled people and the framing was virtually flush, as were their rivets!

Now build the nacelles. Don't forget they are *mirror images* of each other and note the assymmetry of the formers. Pin down the 1/16in outline, noting how it extends to the tail. Get the formers really *square* especially No 4 which has a false piece (as also do Nos 3 and 5) and eventually registers with the main spar.

If you're mean, like me, and cut your stringers from sheet, take the opportunity to cut them with a slight taper so that they are down to a 1/16in at the tail but still 3/32in into the notch. Instead of continuing the stringers between the bottom stations of formers '1' and '2' cut pieces of 3/32in sheet following the same profile as the chin outline - leave out the top stringers until after the wing has been fitted to the nacelles.

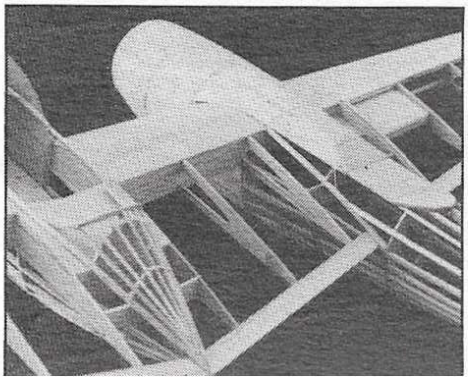
Pin the drawing down on the board so that the tail posts of each boom can overhang the edge. Pin the booms down so they are *exactly* square on *and* parallel - resting on their straight tail sections. Pin balsa set squares to the noses to ensure accurate alignment and height.

Take your perfectly constructed centre section and chop out the leading edge until it fits onto the back of former '3' (this saves a little weight...). Smear cement on anything that looks as if it should connect and plonk it together. Take the tailplane, check for fit, and cement it in position.

Fit the extreme top section of former '4' and complete the stringers, keeping the whole model pinned to the board. Knock out the false piece on formers '3' '4' and '5' and any other extraneous bits...like the trailing edge. Finally fix the sheet supercharger bases.

Remove the model from the board and fit the laminated tail fin outlines, fix the 1/32in sheet ribs and carefully sand to shape. Fill the gaps betwen the stringers with 3/32in sheet from the nose to former '4' below the wing and back to the superchargers on top. Fit soft block in the chin area, then carve out the four ⅜in diameter intercooler intakes. Fit the anchors for the motor pegs and chop out a recess for the exhaust pipes in the top of the nacelles. Make up the nose blocks as

Below and right close ups show detail structure; note how stringers lie along nacelles, especially around the wing/nacelle junction.



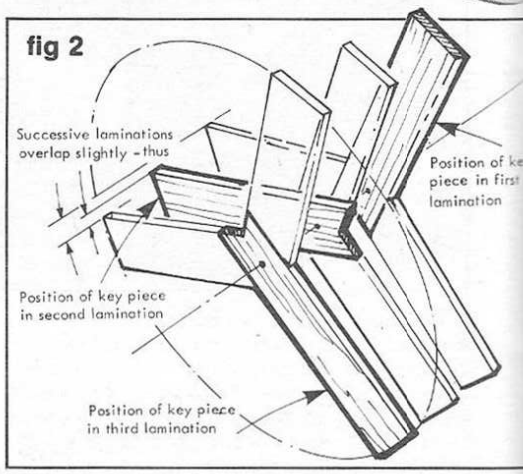


fig 2

shown on the drawing.

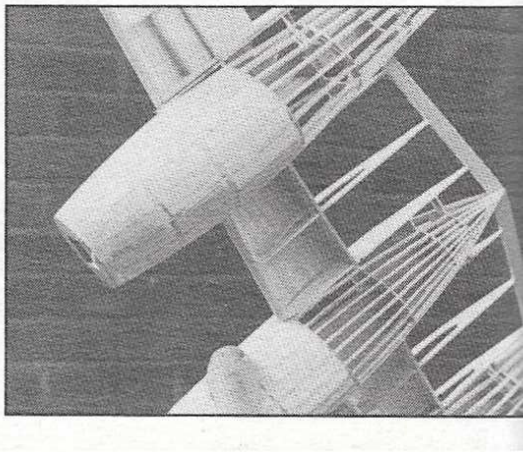
Cover the complete model in lightweight tissue. I used Jap on the tailplane and outer-wing panels, *Modelspan* elsewhere: two coats of 50/50 Butyrate dope.

Now...carve the two carburettor air intakes, the four blisters, two superchargers and wastegates and four radiators. Paper the larger components, fill the smaller ones with sanding sealer. Carve the cockpit radio and battery from hollowed styrene foam and thoroughly paper (using PVA). Form the cardboard seat and carve the steering column from balsa. Alternatively forget all this and move onto the next stage...

The propellers are laminated from sections of 3/32in sheet (fig 2). Get a piece of ¾in chipboard and a drill stand. Place the assembled sections on top of the blockboard, match a drill to your proposed brass tube bush and drill through the lot. Leave the drill in the blockboard and use it as a jig.

Now laminate the sections together using balsa cement (PVA will alway 'grin' through the final finish). THE PORT PROP ROTATES CLOCKWISE. THE STARBOARD ANTI-CLOCKWISE...so the blanks are *different*.

Epoxy the brass bushes into each propeller blank, here comes the difficult bit...sit in a comfortable chair, take a sharp knife and some coarse sandpaper. Work very fast trying to keep each blade at a



P.38 Lightning

similar stage. Keep turning the props in your hand and keep concentrating. Check for symmetry by facing the props onto each other on a piece of piano wire.

Check again on your centre drilled jig, using small cardboard formers taped to a particular point. Undercamber the blades, balance them and smear 'super glue' into the hubs. Now thoroughly sand, seal and paint them with gloss black cellulose car aerosol.

Make up the drive shafts and freewheels cleaning the wire with wet and dry paper prior to soldering. Dedicated modellers will build up the spinners in balsa; I use fibreglass ones but paper cones with balsa tips would be very good. The bronze thrust bearings are American and are available from *SAMS* (see ad: page 677). Having done all this work don't you owe them to yourself?

The motor pegs only fit through the inner radiators so the outer ends are hidden. I use four strands of 1/4in rubber pretensioned for each motor. Use more strands if you have a lot of long grass. Balance the model as shown on the plan and start with fifty turns to each motor.

Forget all those clever launching devices. Grab the model by the lowest blade on each propeller with a thumb and two fingers, stabilising the nacelles with your index and forefingers. Hold the model above your head and thrust it forward firmly and smoothly. If it dives, add up trim: if it stalls add weight to the nose. *Any* excessive turn is probably due to warps as a certain amount of thrust variation just makes life more exciting...

If you wish to build a really accurate model you will need reference books. Most of mine were obtained some time ago but may still be available secondhand. Aircam Aviation Series No 10 by Osprey is good as is the Kookaburra publication. Aero Publishers (USA) have some good photos in Aero vol 19.

Best drawing is 'Plany Modelarskie No 73' published in Poland. Beaumont's (Aviation Bookshop) can often help. Best of all is Jane's P 38 Lightning in their Aircraft Spectaculars series. Aeroplane Monthly gave it an inexplicably bad review - well it isn't great literature but if you want that, try reading Antoine St Exupery, the distinguished French author who lost his life in an unarmed Lightning over the Mediterranean in 1944..