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ON THE COVER

Scale floatplan models are very much a minority interest among flying scale modellers for all sorts of practical reasons.
Long-time scale modeller Ken Marsh has been flying models off water for years, none with greater success than this Lockheed Sirius, which is one of our major construction features in this issue.

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CONTACT

Rise-off-Water (RoW) has never been, and probably never will be, a mainstream part of the model aircraft flying movement - and that's for all kinds of models - let alone scale types!

Yet it has long enjoyed a loyal minority following - minority inevitably - because the flying facilities are limited. In addition, the take-off and landing techniques are different from rise-off-ground and need to be learned, along with an understanding of float or hull shapes to achieve a reliable 'un-stick'.

On the other hand, if you can find an available, usable expanse of water from which to operate, the take-off/landing surface is guaranteed to be absolutely flat!

So it has been a pleasure to build this month's issue of FSM around Ken Marsh's scale model of the famous Lockheed Sirius as flown by the legendary Charles 'Lindy' Lindberg and his wide Ann Morrow Lindberg who used this floatplane aircraft to explore prospective commercial air travel routes around the world during the mid 1930s.

This happy happenchance coincided nicely with the month's *Master Models* feature that reviews Paul 'Limey' Rice's model of the Supermarine S6B, the final winner of the Schneider Trophy race series - yet another of Paul's scale creations have featured before in FSM's pages.

This model jogged the editorial memory of the ambitious *'Coppa Schneider'* model waterplane event series that took place at Lake Varese in Italy from 1979 to 1985 or 1986 and a rummage through the editorial loft space yielded a vast wodge of photographs of this memorable event - more than enough for a flashback feature. Unfortunately, space limitations have precluded its inclusion in this issue, so it will need to wait a month.


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ROSE PARAKEET

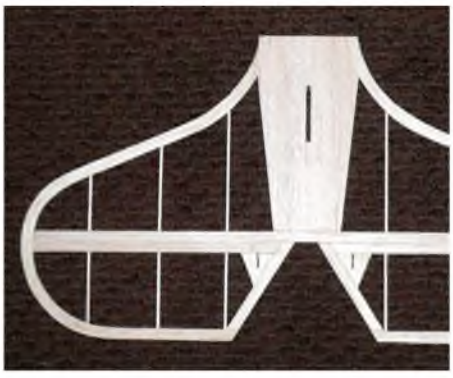
Concluding the construction of Peter Rake's 1/6th scale, 40 inch wingspan model of a 1930s American home-build biplane designed for electric power with the prototype models built by Glenn Lewis and Dan Hiser.

Firstly I must apologise to Dan. I knew more than one model had been started, and that I had photographs of more than one model, but forgot that a second prototype had actually been completed. So, sorry Dan, hopefully this will make up for my tardiness last month.
With the apologies out of the way, let's get straight back to the build. Before getting into the most complicated part, the fuselage, let's get the easy part out of the way. *(P.R)*

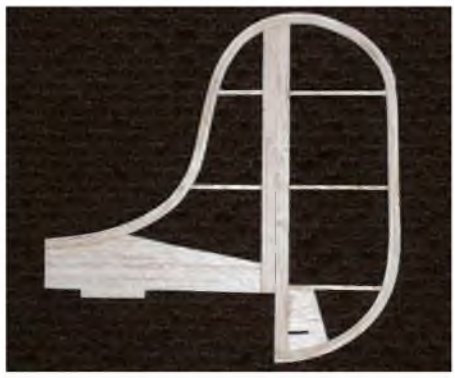
Climbing away for another flight, the model has proved smooth flying but with the ability to 'entertain' when the mood takes.

You should, unless I'm very much mistaken, find that any numbered parts (T1, T2, etc.) are part of the laser cut short kit. It isn't vital to use the kit parts, but since the publisher has been kind enough to make them available, it would seen churlish not to take advantage of them. They're likely to be far more accurate than anything you can cut by hand - and an awful lot quicker. Everything else on the tail surfaces is just strip balsa, laminated as required for the outlines.

To laminate those outlines don't be tempted to use strip wood that is too soft. Use medium balsa and soak it well before attempting to pull it round the formers. I like to use 3mm Depron from which to cut the formers, with the edges waxed (candle) to prevent the parts sticking to the foam. Pin the former to a flat, cling-film covered board, then make yourself a whole load of little pieces of waxed scrap



As you can see, the hardest part of building the tailplane and elevators is laminating the outlines from strip balsa.



The fin and rudder are even simpler because there are fewer parts involved.

Glenn uses just pins to hold the laminations around the Depron formers but it's worth reading the author's thoughts on the subject.

Totally traditional, the fuselage begins with building two side frames over the plan.

It's more accurate to assemble the basic fuselage with the wires and tubes already attached to the formers.

How Glenn built up one of his alternative hatches, instead of using block balsa. This was then planked with balsa strip, so the end effect is the same.

balsa. Using PVA (white glue) applied thinly to each strip, glue the still-soggy balsa strips together, align them and use one of the waxed pieces of scrap to hold them securely against one end of the former.

Pull the laminations around the former using more pieces of the scrap to hold them firmly in place as you proceed around the former. Once your laminations are in place, allow them ample time for the glue to dry COMPLETELY before removing them from the board.

Some people simply make a 'fence' of pins around the outline, and use more pins to hold the laminations against the fence. I don't like this technique because there's far too much chance of the pins putting grooves in the softened balsa strips, thereby potentially introducing weak points in the outlines. Whilst laminated outlines are much stronger than a similar size strip or cut outline, these do need to be made from intact, undamaged pieces of strip if they are to achieve this goal.

Once the outlines are prepared, then the building of the tail surfaces is actually simplicity itself. Assemble them over the plan (suitably protected to prevent sticking) and allow to dry. Sand overall, round off the edges and join the elevators with the 18 swg wire joiner. They are then ready to set aside for covering.

FUSELAGE

Fuselage construction follows the 'traditional' route of building two side frames over the plan, joining them with formers and then building up the shape from there. Whilst Dan did use the carved and sanded balsa block upper and lower nose-pieces, Glenn opted for a slightly different variation. Rather than use block, he made these sections from built-up, stringered and sheeted assemblies. Either method works just fine, but it's just a matter of personal choice as to which method you use. Glenn did find it complicated some subsequent areas of the build, but he was able to work things out easily enough.

With the basic side frames built, mark the former positions on the inside of both sides and score and crack where the sides angle in at the nose. A shallow vee cut into the inside and filled with glue before the sides are set at the correct angles is often easier than attempting this step after the F2 former is glued in place. Once it has been, and if you feel the need, a fillet of glue between side and former will further reinforce the joint. PVA white glue works better for this stage as it will soak into the wood and result in a joint that really doesn't need the reinforcing fillet - providing you cut the vee accurately in the first place.

Now glue in the formers to join the sides, ensuring that everything remains straight and square as the glue dries. Although some might consider it sacrilege, I like to spot the formers accurately in place using CA and then, once everything is lined up correctly, reinforce all the joints using PVA. It gets the assembly held together well enough to align over the plan (because the CA grabs quickly) and results in an accurate, strong structure after the PVA has set completely.

While it is all aligned over the plan, F1 can be firmly glued in place with epoxy to ensure you don't end up with a free-flight motor. If in any doubt, this is definitely one area that can be reinforced with scrap fillets.

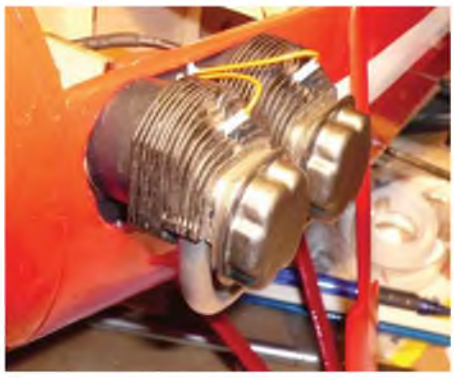
If you feel capable of working on the fuselage with bits of wire sticking out, it's more accurate if you can bind and glue the struts, tubes etc. in place before installing the formers. Then you can position the formers over the plan to check alignment of such items before they are securely glued to the former. Anything that passes through the fuselage sides will help with accurate former positioning.

So, with the fuselage still securely positioned over the drawings, it's time to pull in the tail, glue and fit the cross braces. Once dry, remove from the plan and add the doublers D1, remaining formers, permanent side blocks, stringers, parts WS (laminated), exit tube doublers and sheet balsa decking. Tack glue the balsa blocks and N3 in place, but permanently glue part N3A to the nose. Laminate the nose parts N1, N2, N1A and N2A and permanently glue them to N3/N3A. N3 may be permanently glued to the top block, but only spot glued to the actual fuselage structure since it will eventually form part of the motor access hatch. Only tack glue the lower nose block at this stage because you will need to remove it so the strap holding the u/c tube can be fitted

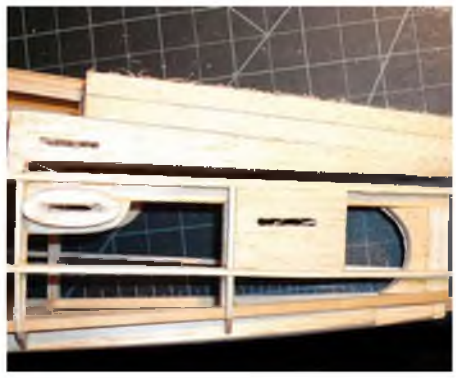
After lots of trimming, planing and sanding, with the wing seat and exit tube doublers shaped to follow the covering line, you should be looking at a basically finished fuselage. Remove the hatch sections and lower nose block, relieve the block for the brass strap and fit the u/c tube/ rear undercarriage leg. Permanently glue the lower nose block in place AFTER you have the motor mount fitted - unless you fitted it to the former before gluing the former in place.

The final task is to fit the front u/c leg

Yes, there are an awful lot of parts in the dummy engine that Glenn made up for his model.



Despite all the work involved, the engine certainly looks good hanging out of the nose.



Those exit doublers glued in place. These will ultimately be shaped to follow the line of the covering.

From Glenn.

"While this is only my second of Pete's designs, both flew 'right off the board' and are fun to fly. The Parakeet does fly like a trainer, slow and stable. Kick it in the butt, and it'll go pretty good too."

From Dan.

"It was a long process for me to get this one done, but I'm very pleased with the results and have a really beautiful flyer. I agree with you on the aileron trainer bit. This plane can certainly handle some wind, I was fighting some strange phantom wind gusts while doing some low field passes and never felt like I couldn't just power out, even late into the flight.

It slows down so well and has no tip stall tendencies that I could find.'

and split pin, but the main legs are easier to install after the covering is complete. At least, it simplifies covering slightly if you go that route.

COVERING AND FINISHING

We all have our favourite covering materials and this model is ideally suited to film covering. Glenn covered his model using *Parklite*, but *Solarfilm* or any other iron on film would work just as well. When covering, it's a good idea to make sure all soldering around the centre section struts is complete before there's covering film to melt getting in the way. The main undercarriage legs can be fitted and soldered up once the covering is complete.

The scale three-view, As far as I could figure out, the scale three-view from which the model was drawn shows an early form of the engine. Glenn made up a superb version of a later variant for his model. Which way you go isn't important, just as long as you fit a dummy engine. There isn't that much detail that can be fitted to this model so a dummy engine is pretty much vital if it's to look the part. Dummy engine, some tail bracing and a pilot figure are the obvious detail items, but an instrument panel and the various cowl bulges and panel lines all add to the character and there are several attractive colour schemes available to choose from. Although, of course, no matter how much work you put into your model, there will always be some fool ask if it's an RTF and where he can get one.

Once all the trimming and sanding is complete this is pretty much what your fuselage should look like.

RADIO INSTALLATION

When installing the equipment, remember that there isn't that much nose on this model, but quite a long tail. Both Glenn and Dan found it necessary to add a substantial amount of nose weight in order to get their models to balance at the point indicated on the plans. With this in mind, don't be tempted to use standard-size servos, nor should you mount the servos too far aft or use heavy control linkages. The model is intended for closed loop rudder and elevator linkages and these are not only the lightest form of linkage, but are also scale for the model.

If you can get it to fit, a good way of providing nose weight is to use the largest capacity battery pack you can cram into the nose. I'm not sure what size was used in the prototype models, other than that Glenn used a 3S pack. Use of an over-capacity power pack has a dual advantage. Not only does it provide longer flight times, it also means you are never likely to over stress the battery pack in normal use. If you can't get a single high capacity pack to fit, possibly two smaller packs, wired in parallel, will do the job nicely; lots of capacity and extra nose weight. Much as LiPo cells are an improvement over Ni-Cads, we never used to have balancing problems with 12 ounces of battery to play with.

So, as regards motor, Glenn found that anything less powerful than the *BP Hobbies* 2410-9 simply didn't cut it. With this motor, and his 3S pack, combined with a 10 x 4.7 prop, the model was just about right, but without a great reserve of power. This is pretty much how the model was intended to be set up, but if you like more reserve on tap you know what not to do.

As shown, the motor is set up with two degrees down and two degrees of right thrust. If using a lot more power you may need more of both to compensate. However, remember what was said at the beginning of part one of this article, you really can have too much power.

Those little wire loops make for easy adjustment of closed loop cables.

Aluminium tube crimps and a spot of thin CA secure the cables at both servo arms and control horns.

Glenn's model, with the higher thrust line, swoops past for the camera.

ASSEMBLY

Bearing in mind that this is intended as a one-piece model, assembly isn't too difficult.

Align the inverted fuselage over the to wing and mark the position of the centre section strut stubs. Make sure it is really accurately aligned. Make up and solder in place your P-Clips and reposition the strut ends over your previous marks. Mark the screw positions, drill pilot holes and screw the top wing to the struts.

Slip the lower wing panels onto the wing dowels, feeding the aileron leads through the fuselage sides and gluing the wing panels to the fuselage sides. Glue in the interplane struts, ensuring that you don't induce any warps as you do so. A good method of checking this is to strap a straight piece of strip below each wing, extending about a foot or so in front of each wing. Now, eyeing across these strips will instantly show up if they are out of alignment or not. Adjust the wings until the strips align precisely and allow the glue to dry. Now you have the ideal guide for when it comes to gluing in place the tail surfaces.

Make up your linkages, adjust as required and your model is just about ready for test flying - after you've checked that it hangs just a hint nose low when supported under the balance point. Always remember the old adage about nose heavy models not flying very well, but tail heavy ones not flying very long - before turning itself back into a kit of parts.

FLYING

As I mentioned, Glenn found that, originally, he didn't have enough power. It flew just fine, but was at the limits of what power was available. With the motor replaced as already indicated, the model took off well, had lots of control authority and proved a pleasure to fly. Loops, stall turns and rolls are all possible with the little Parakeet. Rather than ramble on, I'll just include a quote from Glenn and another from Dan. They pretty much tell the tale far better than I could. ■

Dan's model depicts the earlier, low thrust line version. Both variants fly equally well.

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ROSE PARAKEET

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ABC ROBIN

A 56" (1422mm) wingspan 1:5.5 scale model of a 1920s lightweight single-seater designed by the late David Boddington, with prototype model built by Brian Hewitt and test proven by Ken Sheppard. For four function R/C and .25 - .40 size engines.

EDITOR'S INTRODUCTION

David Boddington was the launch editor of *Flying Scale Models* and first drew this plan in the early nineties, but never published the design despite prototype test models having been built by the late Brian Hewitt and Dermot Phelan - surprising, since Boddo, every the prolific designer of all types of models, was never one to let a good design go to waste!.

David died in April 2010 and in September that year, Ken Sheppard approached Boddo's son Andrew (now editor of *AeroModeller*), if there was an existing scale model of Boddo's design that Ihecould fly at the forthcoming DB Memorial Day at Old Warden, schedule for May 2011.

Among the Boddington designed scale airframes remaining in David's workshop were two models of the ABC Robin, one one larger that the other. As part of this search, Andrew also found inked plans for both models, together with a file containing assorted documentation, photos of the model and an *'Aeroplane'* article about the full-size, plus a series of letters from Brian Hewitt to Boddo, keeping him informed of progress of the build of the prototype test model that Brian had undertaken to produce and the problems he had

encountered working to Boddo's plan.

What follows are extracts from a draft of an article in Boddo's own words, together with Brian's description of how the model went together and - more importantly, perhaps - how the model performed. The latter aspect i.e. the flying, was initially disappointing and although the original model (the large version) did fly, in Brian's view it turned out to be a bit of a handful. Boddo did actually fly the Robin himself sometime later, but it may well be that he wasn't fully comfortable with it, which is why it remained stored in his workshop unused, together with Dermot's smaller version, and unpublished.

Finally, as part of the exercise to resurrect, refurbish and then fly the larger of the two models, Ken added a little something himself to the ABC Robin plot, by revising the fin and rudder shape to that was applied to the one and only ABC Robin airframe fitted to the aircraft in its Robin 2 incarnation.

The flight report of the full-size aircraft back in 1928 said that the prototype Robin was "...too light on the controls..." and that after a larger fin/rudder had been fitted, control was improved. Brian Hewitt's's description of his models's first flight attempts, tended to suggest that the initial handling problems of the full size might well have been replicated in the model due to inadequate fin and rudder area.

In addition, the critical fore/aft balance could be due to the small size of the tail. So, that's the reason for this additional output. To maintain scale fidelity, Ken included details of the revised windshield to that of the Robin 2, which had been shortened, quite sensibly, to put the petrol and oil tank caps outside the cabin - but maintaining the tailplane area the same (you could increase it by 25% to desensitize the CG position, if you wanted - no one could tell!). Thus midified to Robin 2 guise, Brian and Boddo's ABC Robin flies most pleasingly.

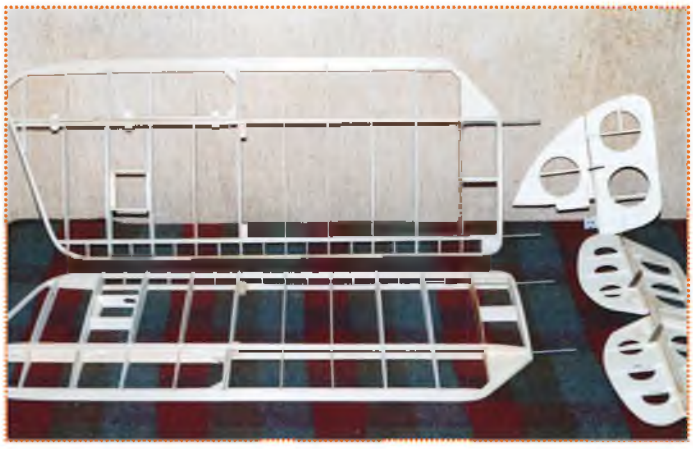
A WORD FROM THE MASTER: DAVID BODDINGTON

One of my reasons for selecting the Robin in the first place was a remark from the designers of the Vega four-stroke engines. "Design us a scale model suitable for the Vega 50T twin and we will build the model" they asked. The Vega 50T was a four-stroke, sideport glow engine and the ABC Robin (the full-size was powered by a Scorpion flat opposed twin engine), was a natural contender.

DESIGN FEATURES

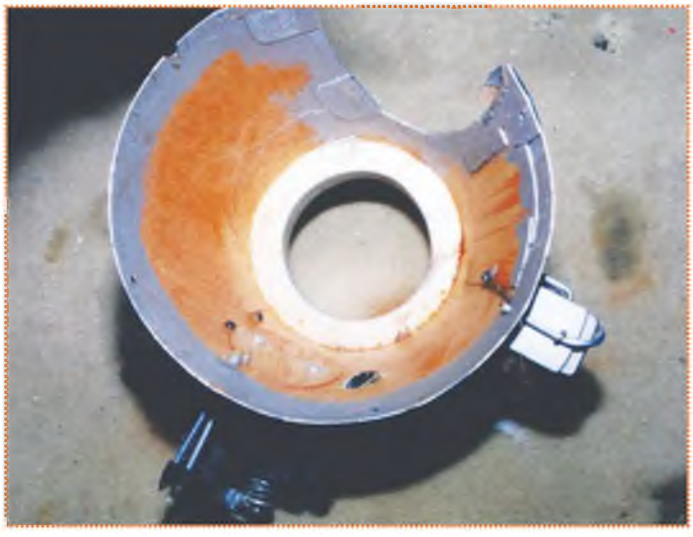
The tail surfaces are operated by scale closed loop wires linked to servos mounted under the pilot's seat position, together with the throttle servo (more on the throttle linkage in Brian Hewitt's build notes). A hatch on the fuselage bottom between the firewall and the bottom strut fitting gives access to the servos, receiver and the back of the fuel tank. The wings (fitted with individual aileron mini servos) are retained to the fuselage by piano wire joiners with brass tubes bound to the fuselage formers - the wing struts hold the wings in position. The cowling is formed from thin ply, cut to clear the engine, with a ply nose ring. Like the full-size, the fuselage sides are covered in thin ply over a traditional longeron/crosspiece built-up frame. The undercarriage consists of a

THE PROTOTYPRE MODEL MODIFIED TO ROBIN 2 VERSION WITH ITS REVISED TAIL AND WINDSHIELD.

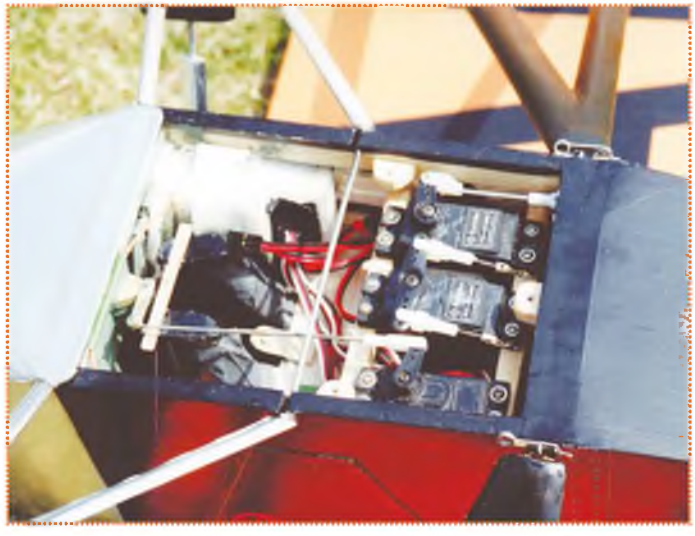


Not very many build photos exist of Brian Hewitt's prototype model, but here's the flying surface construction, before covering.

The fuselage showing the thin ply sheet covering on the sides.



Brian Hewitt made the cowl from thin ply sheet, with a circular nose ring and sheet reinforcing plates for the retaining screws.



Detail of the fuselage mounted servos, the bottom of the throttle link rod and the rear undercarriage leg wire. Note the clips retaining the bottom of the strut to the fuselage longerons.

normal 'V' strut from the bottom longeron, with a longer strut (rubber ring dampening on the full-size) reaching from the wheel axle up to a bracket fitted to the side of the fuselage, adjacent to the bottom of the side windshield.

A sprung tailskid is shown on the plan (although Brian thought this was a bit over the top and fitted a rigid skid to the model after an initial mishap).

The tail surfaces (scale-size) are built using a lightened sheet balsa core with balsa ribs and sternpost facings, sanded to an airfoil section. The very clearly visible external fuselage reinforcement strips are reproduced by gluing thin strips of ply on the skin surfaces, and by simulating bolt heads with blobs of PVA glue.

FINISHING

Although intended to be put into production, the prototype, G AAID, was the only Robin built. This is quoted to having been finished in Cellon black and orange - the fuselage, struts and undercarriage being black, the fixed and moving surfaces being all over orange. The nose/cowl panelling was left natural aluminium, the fuselage registration was orange and the wing reg (underside only) were presumably black (surmised by studying B/W photos). Carried on the port side only, under the side window, was door was on the starboard side.

BUILD NOTES - BRIAN HEWITT

The O.S.26FS shown in the top view of the plan resulted in the needle valve fouling the firewall position, so I moved the former F2 back by 1/2", increasing its size to suit (the plan presented here incorporates this adjustment) and adding a 1/2" thick balsa ring in front of it. I also replaced the balsa cowl rings with a cowl made of 1/32" ply. The cowl screws onto the 1/2" balsa disc already mentioned. This revised cowl makes

The dum my Scorpion engine cylinder fitted to the side of the cowl opposite the O.S.26 Surpass.

The top of the cabin showing the instrument and pilot through the clear roof panels and the dummy baggage storage hatch.

The underside of the tail sh closed loop elevator contr

engine installation and maintenance much easier. On my O.S. 26FS, the throttle lever is on top when the engine is mounted sidewinder and the angle of the throttle pushrod seemed much too acute for the low-positioned servo.

I took a rod straight back (above the tank) into the cockpit, through a slot in the instrument panel, to a vertical 18swg rod down to the bottom for the servo, operated by two bellcrank arms (see Fig.1). The sprung tailskid seems OTT - mine broke at the first take off - the replacement is NOT sprung!

Also, the wings, although retained by the struts do pull away from the root rib a little during flight, so I have fitted a little dural plate under the wing, attached to either side of the fuselage in line with the front edge of the side window (see photo), with a hole drilled in it to accept a small dome head woodscrew that fits through the plate and a small ply plate inset into the sheet balsa infill at the wing panel root leading edge. This prevents the wing from pulling away from the fuselage and is easy to release when the wings are removed.

Brian's control surface throws:-

Ailerons
High: 12mm up/down
Low: 7mm up/down

Rudder
High: 15mm left/right
Low: 8mm left/right
CAR coupling: 50%

Elevator
High: 10mm up/down
Low: 7mm up/down
CG position first set at 29% of average chord, but progressively moved forward during flight trails to 24.5%.

ROBIN 2 - KEN SHEPPARD

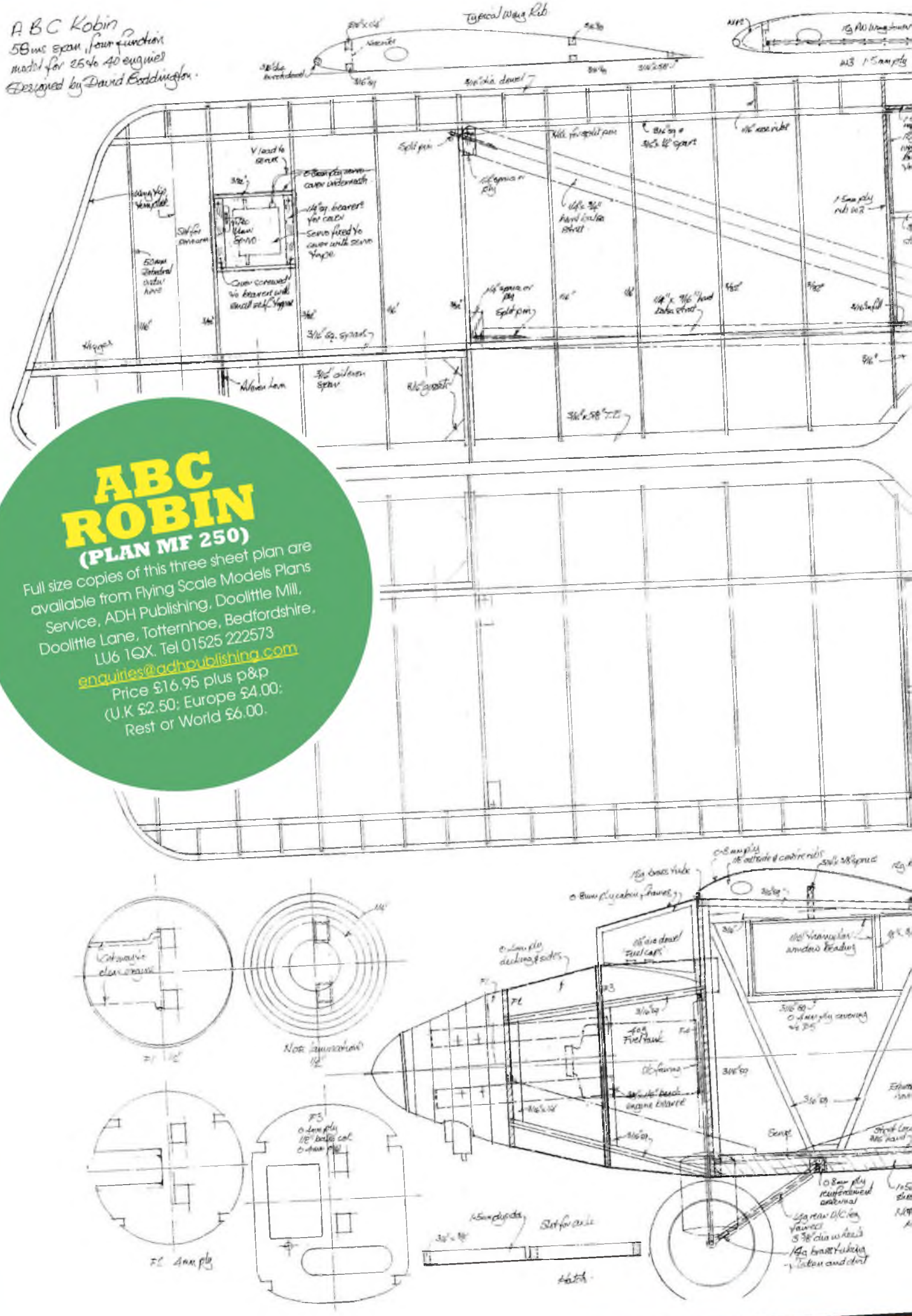
The tailpiece to this article is that Brian's model of the Robin, built to Boddo's plan (the plan shown here incorporates ALL of Brian's recommendations) has now been modified to the Robin 2 specification, i.e. taller fin/rudder and shortened windshield. We have included here a full-size addendum plan for the revised fin and rudder, together with sketches of the revised windshield to retain the Robin 2 scale fidelity (Figs 2 & 3). Note also that one of the flying shorts of the full size Robin 2 clearly shows that the registration G-AAID was added to the top wing surface on the Robin 2 - so at last the Boddo/Brian Hewitt model is accurately scale!

FLYING TEST WITH REVISED FIN & RUDDER

To prepare the Robin 2 for flight after all that storage time - and the previous uninspiring flight testing - a careful check of the flying surfaces revealed several warps that had to be addressed - the main wing panels were OK, but one tailplane blade needed twisting (while gently reheating the heatshrink covering) as did one aileron. Anticipating the adverse yaw (as previously reported by Brian) when turning with ailerons, I replaced the fitted aileron Y-lead with two individual leads and used the Rx Aux 1 channel (I replaced the 35mHz five channel Rx with a 2.4GHz seven channel Rx) so that I could mix in some aileron differential (I know, I could have done it mechanically by adjusting the servo arm

owingthe ali tube struts and ols.

A view of the O.S. 26 installation, showing lead noseweight bolted to the bearers as far forward as possible.



ABC ROBIN
(PLAN MF 250)

Full size copies of this three sheet plan are available from Flying Scale Models Plans Service, ADH Publishing, Doolittle Mill, Doolittle Lane, Totternhoe, Bedfordshire, LU6 1QX. Tel 01525 222573
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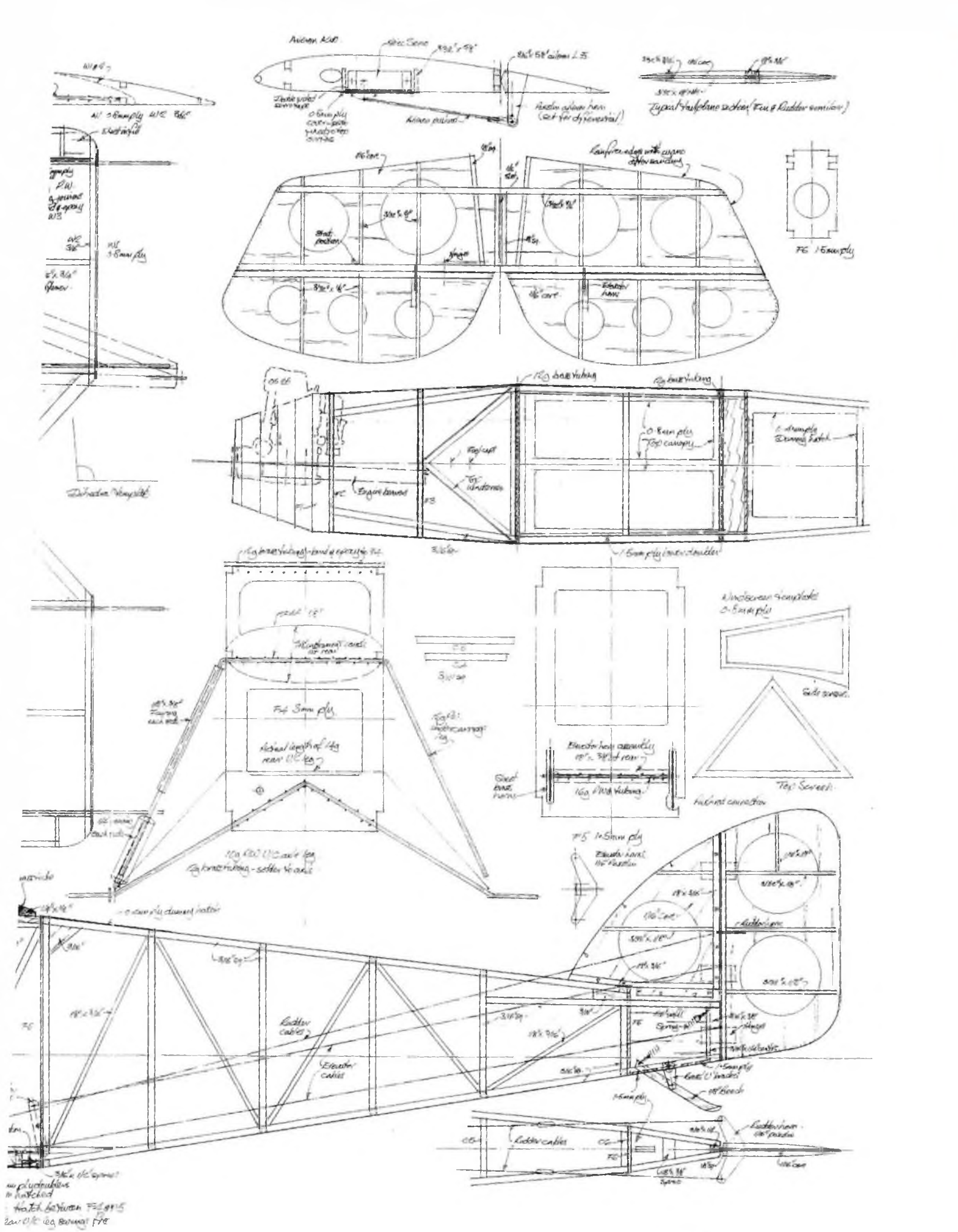


INTIAL FLIGHT TESTING -

BRIAN HEWIT

With throws set as listed, but no aileron/rudder coupling and the CG set at 29% average chord, the robin tried to flick on take-off, but I managed to save it. For the second attempt with longer take off run, I got her into the air, but with a fairly steep left hand banking turn. At a safe height, I applied right aileron to try and get the wings level but there was no response to small stick input followed by opposite yaw with larger stick inputs.

So I reverted to right rudder control, but the model as also out of trim longitudinally and I was too busy fighting with the rudder and ailerons to put feed in down elevator trim.

In this state, the model would flick violently to left and right and was once briefly inverted. Throttled back, there was little change, although the indications were that the rudder would turn the Robin better than the ailerons, so I decided to get her down, closing the throttle and descending with little lateral control and was lucky to get her down with minimal damage to the tailplane.

Before the next outing, with the tail repaired, I moved the CG forward by 3/4" to 24.5% by moving the battery forward to a position under the tank and by adding just over an ounce of lead to the front of the engine bearers. I also set both ailerons 'up' by 1/8".

Two flights followed gradually increasing some CAR coupling which improved the turns, but the model was still twitchy - easily flicking into a spin, but recovering hands off.

Brian's last communication (that we could find) to Boddo at the beginning of 1995, finishes:-

"As regards the Robin, I don't give up easily! You may have seen in the current RCM&E (Jan 1995) where Philip Kent has received yet more correspondence about the Robin's stability (or lack of it!) and it seems the 'ugly fin' (Robin 2) would be worth trying, as you, yourself, suggested some time ago. From the 'Aeroplane' photos that you sent me at the outset, I can't see very much difference in the total areas, but the revised tail is certainly taller and perhaps not 'blanketted' so much by the deep fuselage at take off.

If you can find the time to overdraw the revised tail, I'll have a go. I hate to be beaten, but I am afraid of writing the model off before we have proved anything!"

Unfortunately, neither action was taken - Boddo didn't redraw the tail to the Robin 2 configuration and so Brian wasn't able to modify the model and there the story ends, as far as we can tell - until now, that is...

The prototype model as originally flown by Brian Hewit seen here flying with the original Robin fin/rudder shape.

The late Brian Hewitt preps the Robin at Old Warden in 1994.

geometry, but that would have required remaking the aileron pushrods, so why bother...).

Reminded of the 'one thing at a time' method of trimming, I retained Brian's control surface throws, except for reducing the 'down' aileron throw by 50% to achieve an up/down differential. (The same differential that works for Piper Cub models) and applied aileron/rudder coupling (CAR) via a Tx switch, so that I could introduce CAR quickly if I needed too, as I normally prefer to manually input rudder with aileron - but hey, once bitten...

Having retained the original horizontal tailplane (I was prepared to increase the area by adding a strip of clear plastic sheet along the leading edge of the, upping the area by about 20%, but, as I said, one thing at a time...).

But then I ignored my own advice and also moved the CG further forward to 23% of wing chord, by adding a little more lead to the engine bearers - on the assumption that even if now the model proved a little nose heavy, the weight could easily come off again! With that done, I reckoned it was time to test fly.

ROBIN 2 FLYING

The first outing was frustrated by the fact that the little O.S. Surpass engine refused to start; not surprising really, as it had been sat around for quite a few years unused after the last flight! The afternoon was perfect and too good to waste, so I stripped the engine out of the model, and took off the needle assembly, giving it a good blow through to remove any congealed goo that might be blocking the jet.

Ten minutes later, the motor was back in the model and purring away very smoothly. The revs were a bit on the low side I thought, probably because the prop I had fitted was either too large or overpitched (I'm not used to such small engines), but the thrust felt OK and as there was no wind to speak of, I carried the Robin out to the line, took a few deep breaths and gradually opened up the throttle.

The acceleration wasn't great, but she was moving forward over the grass and with a dab of right rudder to keep her straight, she got up to flying speed and lifted off without twitchiness or flicks, into a steady climbout, needing only a little right aileron to keep the wings level.

Checking out the responses at height, the elevator was quite positive, but not at all sensitive as I was expecting from that small tail. Ailerons felt a little soggy, but there was no adverse yaw, so the differential had worked its magic. Switching on the CAR, turns were much more positive - she wasflying very well. Then the motor stopped (wrong prop) - but the resulting glide and trouble free landing showed that this model I aerodynamically sound!

SUMMARY

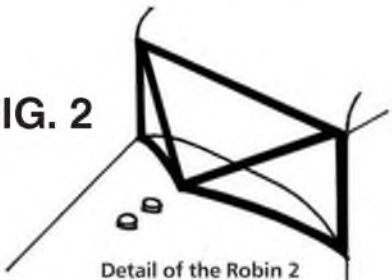
Boddo and Brian may not have had a sweet flying ABC Robin as originally built but, had they pursued it to the logical step of fitting the larger fin, and tried more aileron differential, we would have seen this plan published a lot earlier. As it is, I enjoyed finally proving the design, by turning Brian's excellent test model into a more practical flier.

Accompanying this construction feature is a Type History of the Robin, that will help you build as accurate a scale model as Brian did all those years ago!

Now you have the choice of both Robin 1 and Robin 2!

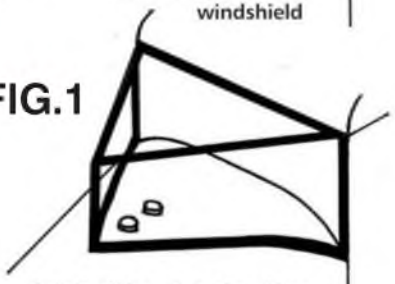
The replacement fin and rudder prior to covering.

FIG. 2



Detail of the Robin 2 windshield

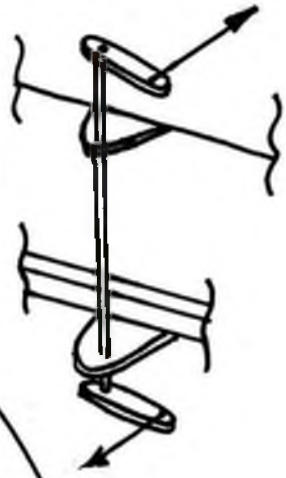
FIG.1



Detail of the original and top-hinged Robin windshield

FIG. 3

Detail of the throttle linkage on Brian's model fixed the bottom of the dashboard and the bottom cross strut - top rod to throttle, bottom rod to servo arm.



SAND TO PROFILE
WICK THIN CYANO INTO
L.E. & T.E. TO STRENGTHEN
ADD MYLAR HINGES-3off.

Mk2 Robin

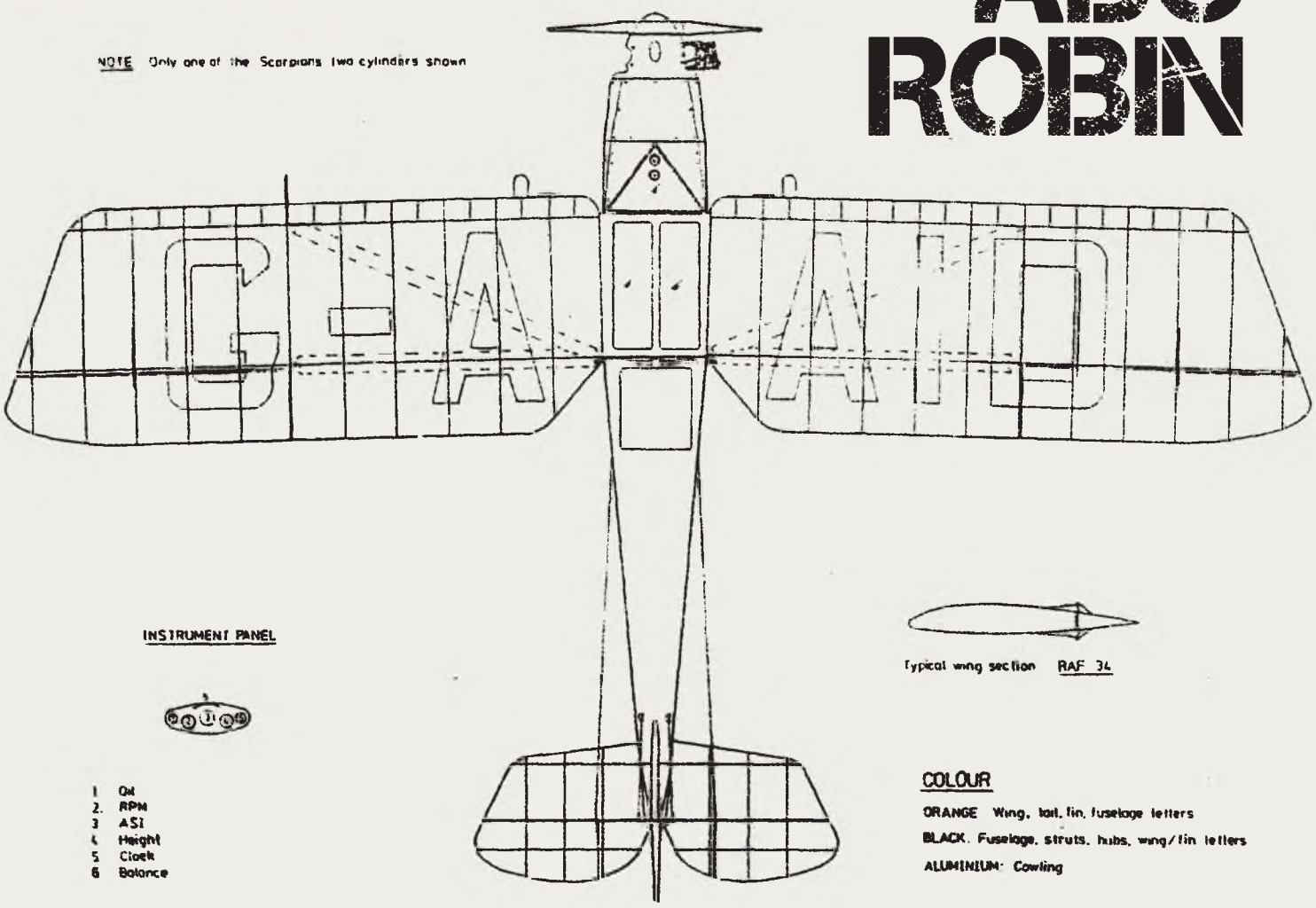
Fin/Rudder

FULL SIZE IMAGE

SCALE 1:40

ABC ROBIN

NOTE Only one of the Scorpions two cylinders shown



INSTRUMENT PANEL

1 Oil
2. RPM
3 ASI
4 Height
5 Clock
6 Balance

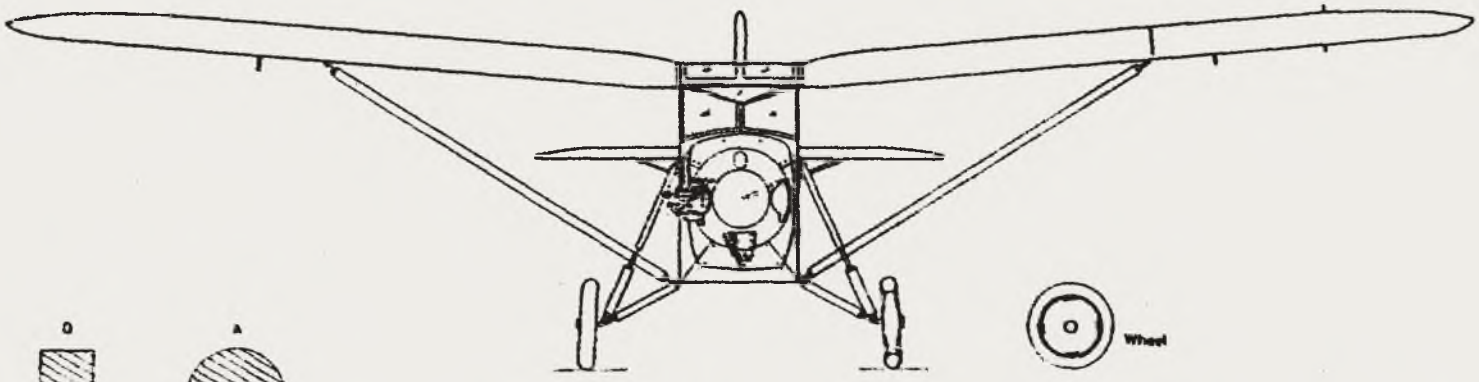
Typical wing section RAF 34

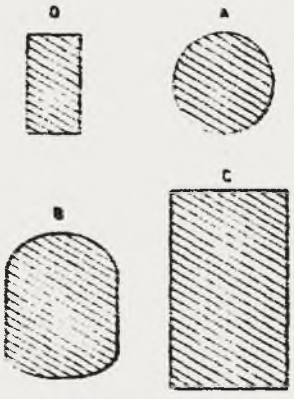
COLOUR

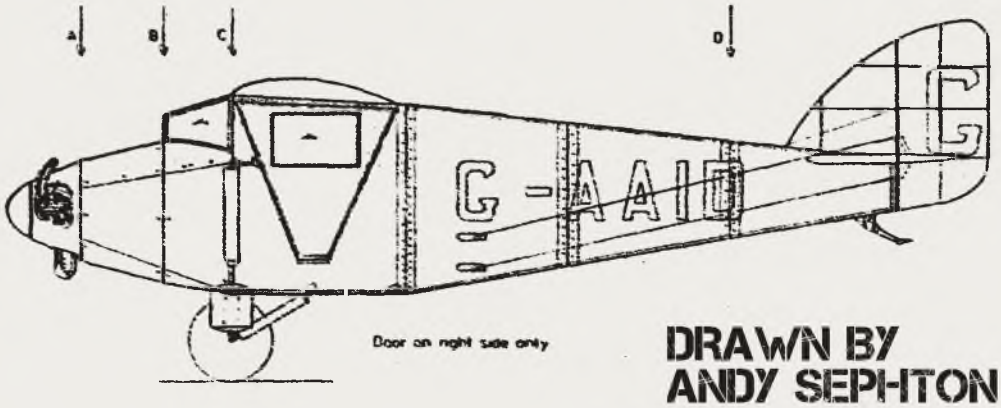
ORANGE Wing, tail, fin, fuselage letters

BLACK. Fuselage, struts, hubs, wing/fin letters

ALUMINIUM: Cowling







Door on right side only

DRAWN BY
ANDY SEPHTON

The Robin had fabric-covered wings and tailplane but the fuselage was of wooden box construction covered with a thin plywood veneer.

ABC ROBIN

DESIGNED FOR PRIVATE RECREATIONAL FLYING, THE COMMERCIAL FAILURE OF THIS ATTRACTIVE LITTLE AIRCRAFT COULD, PERHAPS, HAVE BEEN DUE TO ITS SINGLE SEAT CONFIGURATION

The single-seat ABC Robin in the course of construction at the Walton-on-Thames factory in May 1929 before installation of the ABC Scorpion but showing in detail the engine mounting.

ABC Motors Limited was an engine manufacturer that started business in 1910, based at Redbridge, Hampshire. During WW1, ABC produced several aero engines from the 40hp Gnat to the 320hp Dragonfly, which was probably the best known. After the Armistice, the company changed its focus to car and motorcycle engine manufacture, but interest in aviation powerplants was revived by the first Light Aeroplane Trials at Lympne in 1924.

One of the aircraft entered was powered by to one of the then new ABC Scorpion, a 30 hp adaption of the Company's car engine. The entry did not distinguish itself, but a subsequent development of the Scorpion into the 40 hp Scorpion II was proving to be very popular in Germany, Poland, France and even in U.S.A., there didn't seem to be a market for a cheap,

low-price, single-seat aircraft, despite the the popularity of the Lympne trials, which seemed to create a lot of interest in this form of aircraft.

In 1928, ABC made the decision to design their own aircraft around the Scorpion II, and the designer, A A Fletcher, was brought in from Westlands in Yeovil where he had been working on the Wizard fighter. Fletcher's design was unique in that pilot comfort was a prime consideration and his single-seater was the first to have a fully enclosed cabin, allowing all-year-round flying without a heavily insulated flying suit.

Behind the pilot, in a bay accessed by a hatch on the top of the fuselage, there was room for two suitcases. Access for the pilot was via a small door in the right hand side of the fuselage under the wing, with a top opening hatch that allowed the pilot to position himself comfortably into the seat. The wings were foldable at the trailing edge, lying alongside the fuselage to minimise the aircraft's width for transportation or storage (a Lympne Trial requisite).

Construction details

The Robin was constructed mainly from wood, with some metal fittings and high stressed parts. The fuselage was basically a spruce strip box type, covered with thin ply sheets on top, bottom and sides. Rectangular formers placed along the fuselage length retained the box shape.

Designed to completely enclose the pilot, the fuselage was, of necessity deep. Ahead of the front cabin former, the decking dropped considerably to give the pilot forward vision, the result being that the top longerons to the firewall were short from this forward frame. In between the front cabin frame and the firewall, above the pilot's legs sat the eight gallon, gravity-feed fuel tank, covered by the curved top decking. The cowl profile changed from rectangular at the cabin to circular at the engine drive boss, culminating with a two bladed wooden propeller, fitted with a small pointed spinner, giving a neat streamlinedline to the front end. The windshield was a flat plate, hinged triangular assembly that could be raised to give access to the petrol and oil filler caps, which for some reason were on the cabin side of the windshield.

The top of the Robin's fuselage was fabric covered except for the plywood surround of the upward hinging skylight which also doubled as an escape hatch. The aircraft was entered via a door on the starboard side.

The main undercarriage comprised of short 'V' legs fixed to the bottom longeron, with a telescopic leg between the wheel axle and the top fuselage longeron fixed at the front cabin frame. The tailskid was sprung and non-steerable.

The tail surfaces were wood with steel tube trailing edges to rudder and elevators and the tailplane incidence was adjustable on the ground. The wings were hinged at the fuselage top corners and braced by a V strut on either side, the top ends of the struts attached to steel straps fitted around the wing spars, the bottom end of each strut

The tail of the Robin was of orthodox construction and design.

The clean lines of the Robin are evident in this full frontal view of the uncovered airframe.

The yet unmarked Robin during an early test flight in mid-1929.

The Robin was modified at Brooklands in late 1929, and is seen here showing the revised windscreen, moved back so that the fuel and filler caps were located in front rather than behind it. In order to improve the handling characteristics the fin and rudder increased in area - also revealed here. The Robin was doped in the distinctive black and orange colours of Hanworth-based National Flying Services in anticipation of a large order that never materialised.

The Robin in June 1929 in its original complete form and doped in National Flying Services orange and black paint scheme.

Tail-end view of the Robin, now with the revised fin/rudder shape, numbered 95, competed in the 1930 King's Cup race and was the fourth of 88 aircraft to take off from the Hanworth start. Engine revs were well down and the Robin later force-landed at Old Sarum near Salisbury.

being attached to a single steel tension plate that spanned the bottom of the fuselage, taking the flying loads.

Flight figures

The ABC Robin first flew in 1929 and it exceeded Fletcher's projected performance figures. The price set by ABC was £375, including the £85 Scorpion II engine. Flight magazine described it as *"...one of the prettiest machines we have seen..."* and the ABC CEO, CG Grey was full of praise for little little aircraft, although he privately voiced doubts that a market for the Robin existed.

Initial flight trials revealed that the Robin was too light on the controls and G-AIDD returned to Brooklands for modification.

Close-up of the engine installation in the Robin before modification.

Emerging as the Robin 2, the Robin featured a larger fin and rudder, notably taller, and the windscreen had been shortened so that the fumes from oil and petrol caps were eliminated from the cabin.

The Robin in its original form with weighed 415lb empty, over a quarter of which was the engine, and the gross weight including the pilot, two suitcases and enough fuel for four hours flying at cruising speed was. Flying at the recommended cruising speed of 85mph, the fuel consumption was very low at 40 miles per gallon, which in 1929, cost 8.5p in today's money! The top speed was 105mph and landing speed was 40mph. The initial climb rate was 750ft/min and its service ceiling was 17,000ft.

Plans were drawn up to manufacture Robins at SE Saunders at Cowes, as it was not the policy of ABC to build aircraft, but despite whole page adverts in *Flight* magazine and *Aeroplane*, no orders were forthcoming and the plans came to nothing, G-AIDD remaining the only example of the type.

A short life

A C of A wasn't granted until 1930, just in time for that year's King's Air Cup Air Race, seen as another chance to show off the Robin's potential, but things did not go well. Spectators reported that the Robin's take off run was very long and that the engine revs were well down.

The race ended for the Robin after it was forced to land at Old Sarum, near Salisbury. It was also noted that the other ABC-engined entry that year, the prototype Comper Swift, G-AARX also had engine problems. The ABC Scorpion II aero engine continued to power several other British light aircraft of the time, but sadly for the Robin, the end of the line came in 1932 at Brooklands, where it was scrapped after its Certificate of Airworthiness expired.

Bashing through the chop on the way back to the launch ramp.

Schneider Victor: THE SUPERMARINE S6B

Alex Whittaker is invited to a private viewing of a very special flying scale model

It is no wonder that the Supermarine S6B fascinates so many scale modellers. It is an extremely beautiful and harmonised design. However there might be another reason. It may be because a direct bloodline can be traced forward to the legendary Supermarine Spitfire and its illustrious Rolls Royce Merlin engine.

Schneider Trophy

Between 1913 and 1931, The Schneider Trophy was offered to the winner of a prestigious race for seaplanes and flying boats. It attracted teams from Europe and the USA, and it prompted the rapid development of high-speed maritime aviation. Britain had done well in the series of races, and a third win would secure the Scheneider Trophy outright.

There was immense popular interest in this contest in the UK, and to begin with, Ramsay MacDonald's Government offered support. When, two months later the Government rescinded its financial commitment, a private benefactor stepped in. This was Lady Houston, whose handsome gift of £100,000 to the project stung the Government into reinstating its support. Time was now short, so Mitchell had to revisit the existing S6 airframe which won the previous 1929 event. He also gave Rolls Royce the task of improving the performance of their existing R-Type engine.

Many improvements were made to the airframe, including extending the S6s floats by a full three feet. For their part, Rolls Royce added no less than 400hp to the power of the engine that now developing 2,300hp. The RAF High Speed Flight supplied the pilots for the challenge.

In addition, as well as the Trophy attempt proper, there was to be a further attempt on the World Air Speed Record. Preparations were made, and a triangular course was set up over the Solent. On the appointed day, RAF Flt. Lt. John N. Boothman completed his seven laps immaculately in his S6B (Serial Number: S1595). He lead the field at a speed

Wetwings Club members were on hand to assist!

1: The underside of the S6B before the undercarriage was fitted. Note how slender is the fuselage. 2: Wing almost finished, with rivets and tiny hatches being applied. 3: Mass balances on the ailerons. 4: Nose cowl looks suitably metallic. No unsightly extra apertures are required with an electric motor. 5: Aerofoil can be coaxed around compound curves like this top hatch and the cowl. 6: The top rocker-box cover just slots in.

She appears to be dragging her port float.

The Schneider Trophy Winner is an undeniably elegant aircraft. Plan is by Jim Pepino (USA).

of 340.08 mph. The Schneider Trophy was retained! Seventeen days later, RAF Flt. Lt. George Stanforth flew a different S6B (Serial Number: S1596) and secured the World Speed Record of 407.5 mph. These technical triumphs contributed directly to the development of the famous Supermarine Spitfire and the Rolls Royce Merlin engine. Scale modellers have been attracted to the S6B ever since.

Paul 'Limey' Rice

Paul Rice is a celebrated scale modeller on both sides of the Atlantic. FSM readers will be familiar with Limey from his scale models featured in these pages. Readers may also remember our visits to his workshop to look at specific modelling techniques. Paul now runs his own concern making scale flying models for customers.

A well as his bespoke scratch-built service, he also builds customer's kits. However, the background to this particular commission is intriguing. An anonymous client bought a 'short kit' of Belair laser-cut parts for the S6B, and asked Paul to both construct and test-fly the finished model. The client has connections with historic maritime aviation, but wished to remain strictly un-named. Once the model was built and flown but once, it was to go into the pilot's private collection.

The Model

This S6B model is traditionally built and spans 100". It weighs 28lbs and is powered by an electric motor that delelops a thrust broadly equivalent to a Zenoah 62 petrol engine. This Turnigy 80kV motor, was sourced via Mick Reeves Models, and drives a 24"x12" propeller.

Plan

The model is built to the quarter scale plan by Jim Pepino. The plan is believed to date back to the 1980s.

Documentation

Paul based his research on first hand examination of the actual airframe at RAF Hendon. He also worked from original blueprints and documentation.

Construction

The model is of traditional all-wood construction, mostly balsa and plywood, skinned with 3/32" and 2mm balsa. Paul used formers and ribs from a short kit of CNC-cut parts originally supplied to the client by Belair Kits some years before.

http://www.belairkits.com

Fuselage

Lite-ply formers and light balsa were used to build the fuselage.

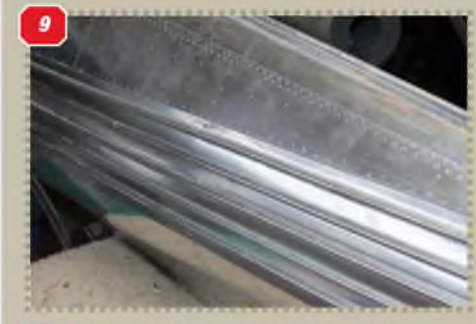
Wings & tail surfaces

These are of balsa construction with some plywood as hard points for the rigging wires and float fitting plates.

The tailplane and fin/rudder are both sheeted construction, in balsa

Motor

Turnigy C80100 electric motor with a Turnigy 250A ESC and four Turnigy



7: The Aerofoil finish can be applied over fine detailing. 8: The electrical installation lives under the top forward hatch. 9: All the rivet detail is present and correct. Paul used his own-design rivet layout tool. Note sheepskin base to protect foil finish. 10: Hitec HS 645 MG (metal geared) servos on rudder and elevator. 11: Almost finished pilot looks unperturbed at what might face him. 12: Aerofoil is available from Meister Plans.

13: The first ESC let out The Magic Smoke. The second was fine. 14: The first ESC got charred. 15: Almost finished float assembly stored on white foam to protect finished surfaces. 16: Strut fixings: note hard point for clevis end to the brace and the faired-in strut end. 17: Wooden engine extension mount is simple and straightforward. 18: Turnigy C80100 electric motor sourced from Mick Reeves Models. 19: This was the original ESC which gave up the ghost. 20: Model requires a Turnigy 250A ESC and four Turnigy 5000mAh 6 cell packs.

5000mAh six cell packs. There were problems with the original 160A ESC, so a larger Turnigy 250A unit was fitted and this functioned perfectly. Paul quotes the maximum revs at 6,400 on her flying 24" x 12" prop.

Floats

The distinctive floats were built on lite ply formers with a 2mm medium balsa skin, and then covered with 3/4 oz glass cloth, followed by two coats of ZAP finishing resin.

Covering

The remarkable metal skin finish was simulated with a commercial product called 'Aerofoil', sourced from Meister Scale Plans. It is a lightweight aluminium self-adhesive backed foil.

For scale fidelity, Paul reproduced the skinning panel-for-panel to replicate the original and used clay modelling tools to snub down and burnish the foil.

Waterproofing

Wilkinson DIY Draught Proofing Tape was used to seal the fuselage / wing join from the ingress of water, while Vaseline was applied to waterproof the rudder pushrod exit. The other controls are internal.

Painting

Paul used cellulose car aerosol paints for the coloured parts of the scheme.

Scale Details

All rivets were applied using a scale plastic template which Paul made especially for the job. This ensures that the spacing is the same in each direction, to match the scale of the original aircraft. The flush rivets were emphasised with a brass tube lightly twisted into the foil.

Flight Tests

Testing was conducted on two separate occasions at Carr Mill Dam. There were problems with the model being reluctant to leave the water. Floats were adjusted, control throws carefully tuned, and alignments checked. and re-checked.

were exactly as per plan, but the model, although clearly possessing enough power, stubbornly refused to unstick. Then on one taxi test, the ESC went up in smoke. Only swift action by Paul stopped the model from catching fire. The ESC was upgraded for the next test flight, and that particular problem was solved.

However, the issue with the floats remained. She appeared to be digging in her port float. On the final test run she did manage a very brief flight, but then dug in hard damaging her tail and the float rigging.

Paul quickly repaired the model back in the workshop, after which

COUPE D' AVIATION MARITIME

The Schneider Trophy international maritime aviation competition was held twelve times between the years 1913 and 193. British, French, Italian, and American Teams participated in a number of the events. Some of these competitions attracted more than 200,000 spectators. Britain won The Schneider Trophy outright in 1931.

the owner decided to discontinue with the test flight programme, and she is now safely on display in the owner's collection.

Acknowledgements

FSM magazine is grateful to Paul's Anonymous Client for allowing access to this astounding model. Special thanks also go to colleagues at the Lancashire Powerboat Racing Club at St. Helens, and the Wetwings Model Club. They very kindly made their water available to us on two separate occasions for the test flights.

www.lancashirepowerboat.com
www.wetwingsmfc@hotmail.com ■

SPECIFICATIONS:

Supermarine S6B

Scale:	1: 4
Wingspan:	100"
Weight:	28lbs
Motor:	Electric 80 kV (equivalent to Zenoah 62cc petrol engine)
Prop:	24"/12"

Spectacular splash but all was well.

Techno Scale

Mike Evatt en

The LeVier 'Cosmic Wind' was a small single engine, single-seat racing monoplane designed and built by staff of the Lockheed Corporation in 1947. It did not race successfully in the US, but one won the premier cross-country competition in the UK in 1964. The prototype still flies today. **The Vintage Model Co.** at www.vintagemodelcompany.com has a Levier Cosmic Wind model aircraft kit. It is made to order in the UK using top quality materials and precision laser-cutting. This is available in short or full kit versions and is an ideal introduction to the world of rubber powered balsa wood kits.

The new **online photographic reference** for model makers is available a www.glue-it.co.uk

Click on Aircraft Images to see their collection of photographs listed by manufacturer and model. They will gradually be adding their collection of aircraft images, which to date has more than 8700 images of more than 500 different aircraft. Browse through their aircraft images based on Manufacturer and Models or based on type: Monoplanes, Biplanes, Civil, Military or Gliders. It includes the LeVier Cosmic Wind as shown in the screen-shot.

The **Avro Lincoln** was a development of the famous Lancaster. Entering operational service in August 1945 the Lincoln was too late to see action in the Second World War. It did however see action with the RAF during the 1950's in Kenya, Malaya and Aden. The type was also used by the Royal Australian Air Force and Argentinian Air Force. The Lincoln also served a useful role as a test bed and research airframe which means that there are a number of interesting options for the modeller. The **RAM Models** version can be found on their website at www.rammodels.co.uk Spanning an impressive 157 inches the model is designed for four Speed 600 or equivalent electric motors.

Effective as an escort fighter, interceptor, fighter-bomber, and ground attack aircraft the **Republic P-47** was one of the most versatile aircraft of the Second World War. Although the bubble canopies of later models would become very popular with the USAAC and later airshow crowds, it was the original models with the 'razorback' canopies that really did the heavy lifting. On **Top Flite's** website at www.top-flite.com you will find an outstanding giant scale version. This monster has a wingspan of 85ins and requires a radio system with a minimum of 6 channels and 11-12 servos. In addition it needs power system, either a 50-61cc gasoline engine or brushless electric 80-85 160kV motor.

AMT Netherlands with a web presence at www.amtjets.com designs and manufactures small gas turbines for the propulsion of radio-controlled flying aircraft, experimental aircraft development, sound studies and full size gliders. Their turbines are also used in many kinds of research and education projects at universities all over the world. They now have a 'High Performance' version of our original Mercury turbine. The main difference is in the thrust which is now uprated to 9kg (19.8 lbs), representing an increase of some 25% over the 'original' motors, this extra performance being achieved by internal redesign and development.

Draline announces the launch of a new revolutionary product on the sailplane market, the **PSR Jet System**. New sailplanes can be equipped with this system and it is also possible to retrofit sailplanes with the PSR Jet System. It allows a glider pilot to

The LeVier 'Cosmic Wind' was a small single engine, single-seat racing monoplane.

The LeVier Cosmic Wind by www.glue-it.co.uk

RAM Models version of the Avro Lincoln.

A Classic P-47 giant scale from Top Flite.

The Mercury HP from AMT Netherlands now has 9kg of thrust!

Draline announces the launch of a new revolutionary product on the sailplane market.

ters webspace for more TechnoScale Topics...

extend the range of the sailplane. This auxiliary engine significantly reduces the risk of 'outlandings' and increases the ability to fly to regions that cannot be reached without auxiliary engine power. You can use this engine to climb and switch it off after your sailplane has gained sufficient altitude. Check it out at www.psr-jet-system.com

Searching for a big flat four to power that next model? Then look at the 3W-112 iB4 CS from **3W-Modellmotoren GmbH** at www.3w-modellmotoren.com The four cylinders and the five ball bearings ensure a soft running mode which is amazing. Vibration level is very low which helps to increase the lifetime of the model's airframe and the on-board electronics. 3W-CS-Series is characterised by better performance, throttle response and more power and torque. The microprocessor controlled ignition promotes easy starting.

Belair use the latest laser cutting technology to produce Parts Sets from most of the world's top model designers, including Nick Ziroli, Wendell Hostetler, Don Smith, Jerry Bates and others. However although their claim to do nothing else, but cut kits! Their website at www.belairkits.com says otherwise! They produce Scale Pinked Tapes in various scales! These tapes are laser cut in Natural Solartex. The tapes are a scale version of the full-size 2" wide with 5 peaks per inch. They are available in four scales: 1/3, 1/4, 1/5, 1/6. Each pinked strip set has 20 strips x 36" long, plus 4 double width and 2 half width strips. Apply as standard Solartex over scale stitching or anywhere else, that pinked tape is used on full size aircraft.

T&J Models at www.tnjmodels.rchomepage.com are dedicated to promoting the building aspect of your hobby by producing a line of plans and short kits of historic and unique aircraft. They pride themselves on their innovative designs and the quality of their kits, such as the Hughes H-1 Racer Short Kit. In 1935 Howard Hughes built what would become the world's fastest, single engine land aircraft, the Hughes H-1 Racer. It was developed for one purpose - to be the fastest land plane in the world. It achieved this design goal on September 13, 1935 when it set a new world speed record of 353.322mph at the hand of Howard Hughes himself.

Log-on to **RC-Tronics-Topp-Rippin e.K** at https://ssl-id.de/www.rc-tronics-topp-rippin.de/Shop and be delighted. Here you will find a 196cm wingspan FW 44 Stieglitz (Goldfinch). The Focke-Wulf Fw 44 is a 1930s German two-seat biplane known as the Stieglitz. It was produced by the Focke-Wulf company as a pilot training and sport flying aircraft. It was also eventually built under license in several other countries. This scale replica is a beautiful vintage biplane. The Goldfinch is very good-natured during take-off and landing and can be mastered quickly by less experienced pilots.

Gordon 'Tim' McKay maintains 'Indoor Flying Model' webpages at http://indoorflyingmodel.com

Here he discusses a wide range of topics relating to indoor radio control model airplane flight. The site contains over 210 pages of original content reflecting his 40 years of flying, building and design experiences. The screen-shot shows a 1912 Blackburn build photos. This was constructed to 36 inch wingspan rather than the 44 inches shown on the plans. Interestingly it didn't use the three part rib design but converted to a one piece rib, with the drilled spar holes to use more modern and high tech tubular spars! ■

3W- Modellmotoren GmbH have a very substantial flat four engine!

Laser Cut Pinked Tapes in various scales from Belair.

The unusual Hughes H-1 Racer.

The delightful Focke-Wulf FW 44 Stieglitz (Goldfinch).

This 1912 Blackburn uses hi-tech tubular spars!

That's all there is time for from me this month so light up the screen and if you find something out there of interest that might be good to share, email me at:

mikeevatt@hotmail.com

SUPERMARINE S6B

LAST OF THE BRIISH SCHNEIDER TROPHY RACERS OF 1929 AND 1931 FTH THEIR ROLLS ROYCE ENGINES WERE A TECHNICAL PRELUDE TO A FAR MORE DEADLY 'RACE' A LITTLE LESS THAT A DECADE LATER.

For the British team to fly in the 1929 Schneider contest, four new racers were ordered, two of them from Superrnarine. Rolls Royce entered the scene to power these S.6s, and were undoubtedly at the heart of the Schneider victory, but when the word to go was given, there was insufficient time to design a new engine. Accordingly, the 825 h.p Buzzard became the basis from which the "R" engine was developed to give 1,900 h.p. for the 1929 contest.

The first Rolls Royce/Supermarine S.6 was N247, and initially there was great take-off trouble due to the enormous torque causing a powerful take-off swing. After most of the fuel had been transferred to the other float, a take-off was made on August 10, 1929, and a further cure was then made by lengthening the port float.

To cool the engine, the whole of the wing upper and lower surfaces were doubled-skinned to form a water radiator, but this was not enough, so small scoops were fitted to take air inside the wing, and floats gained patches of extra radiator. This enabled full throttle to be used. The second S.6, N248, flew on August 25 that year and was later modified as N247, but with slightly less radiator area on the floats. With a contest load of 124 gallons the S.6's could not accelerate, the solution to which was to increase power and reduce pitch.

On Sept. 7, '29, N247 (race No.2) flown by F/O Waghorn won the contest at 328 m.p.h., and F/O Archerley was disqualified for missing a pylon. With a different prop.

Winner of the 1929 Schneider Trophy event held at Calshow, UK, Supermarine S.6 serial N.247 flown by F/O H.R.D> Waghorn at an average speed of 328.63 mph.

Supermarine S.6B serial S1596 on it's beaching trolley won thw final walk-over Schneider Trophy event at Calshot in 1939 at an everage speed pf 340 mph.

S.6B serial S.1596 again, seen being launched from its pontoon barge.

N247 made world speed records of 355.8 on September 10th and 357.7 m.p.h. on September 12; '29, flown by S/L Orlebar.

For the next contest in 1931 Rolls Royce squeezed 2,300 h.p. out of the 'R' engine, increasing the weight by only 100 lb., and the first of these was installed in N248. For the newest engine, the S.6s were fitted with longer 22-foot floats with combined radiator patches on noses and sides to become S.6As. In this form N247 encountered tail flutter so severe that the rear fuselage was buckled and, subsequently, large external mass balances were fitted to rudder and ailerons.

Two S.6Bs were built for the 1931 Contest and differed from the S.6As mainly in having longer and broader floats, of which the entire top surface was radiator area; more fuel and oil were carried and the airframes were strengthened to take the increased weight.

Like the S.6, the S.6B was fraught with take-off troubles. The swing to port was out of hand, but the first S.6B, S1595, flew for the first time on July 29, 1931. The new 8 ft. 3 in. prop. had been the trouble, but a 9 ft. 1 in. diameter was successful, although the S.6B remained quite a handful on take-off.

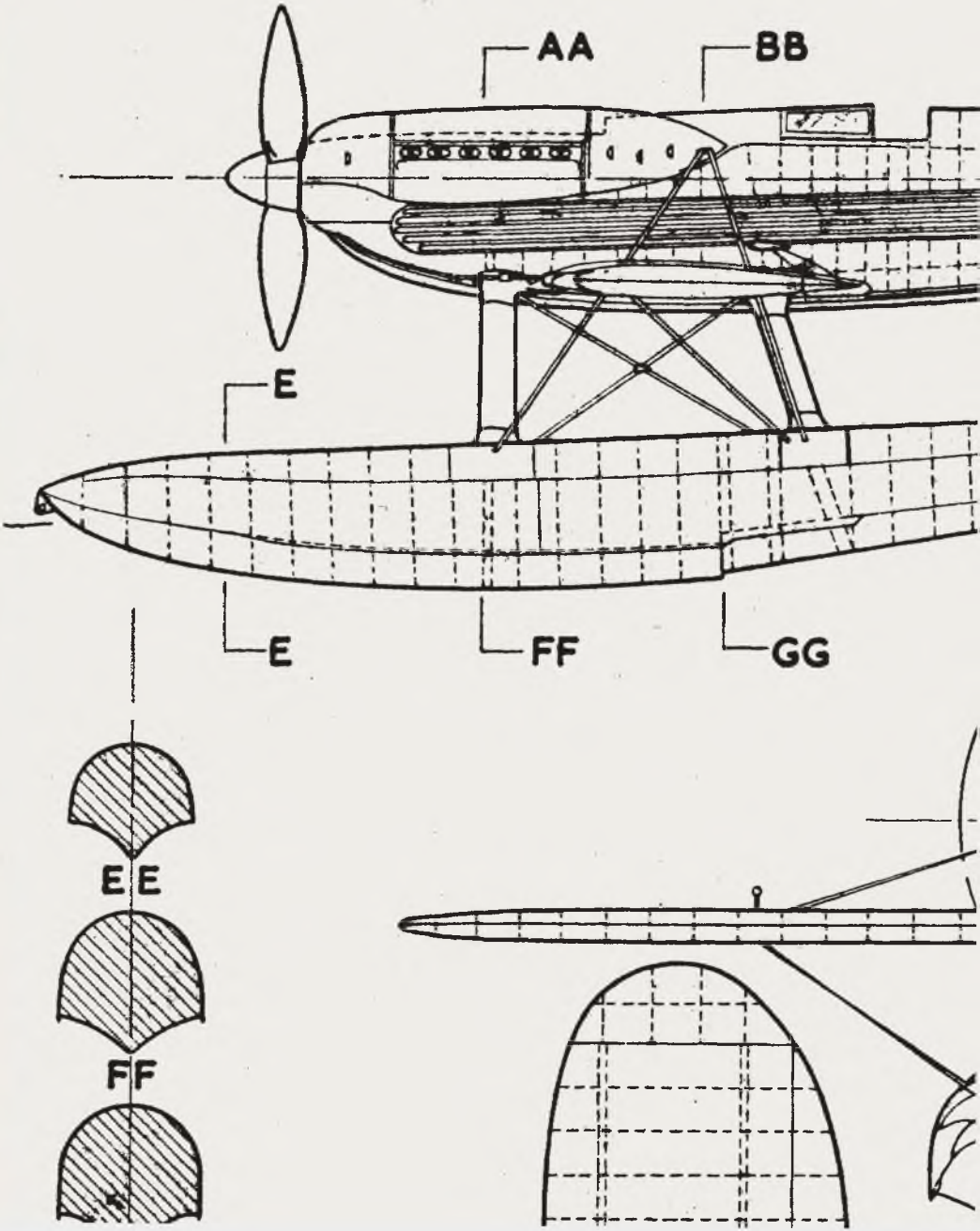
Stability in turns was improved by weights in the nose of the floats and by replacing the metal skinned rudder with a fabric one.

Neither France nor Italy were ready in time for the 1931 contest, so on September 13th, only F /L Bootham flew round the course in S1595 (race No.1) to win the Schneider Trophy outright at 340 m.p.h. On the same day F/L Stainforth raised the Record to 379.05-m.p.h. in S1596 (No.7). On Sept. 16 this machine's flying ended on landing when Stainforth's heel jammed under the rudder bar, causing the S.6B to cartwheel and sink.

S1595 took over for a further record attempt with a sprint 'R' engine of 2,550 h.p. and on Sept. 29, Stainforth set the record at 408 m.p.h.

So ended the active career of the Supermaine S.6's - a sensitive but great quartet of tremendously powerful, full-blooded machines which were, in their day, the ultimate in refinement, bred of Rolls Royce and Mitchell of Supennarine. ■

Rolling back to the hangar at Calshot, S.1596 with it's primary handling crew. In the background also, are RAF uniformer 'minders' - fascinating to seen that as late as 1931, 'puttees' were stillstandard part of RAF uniform.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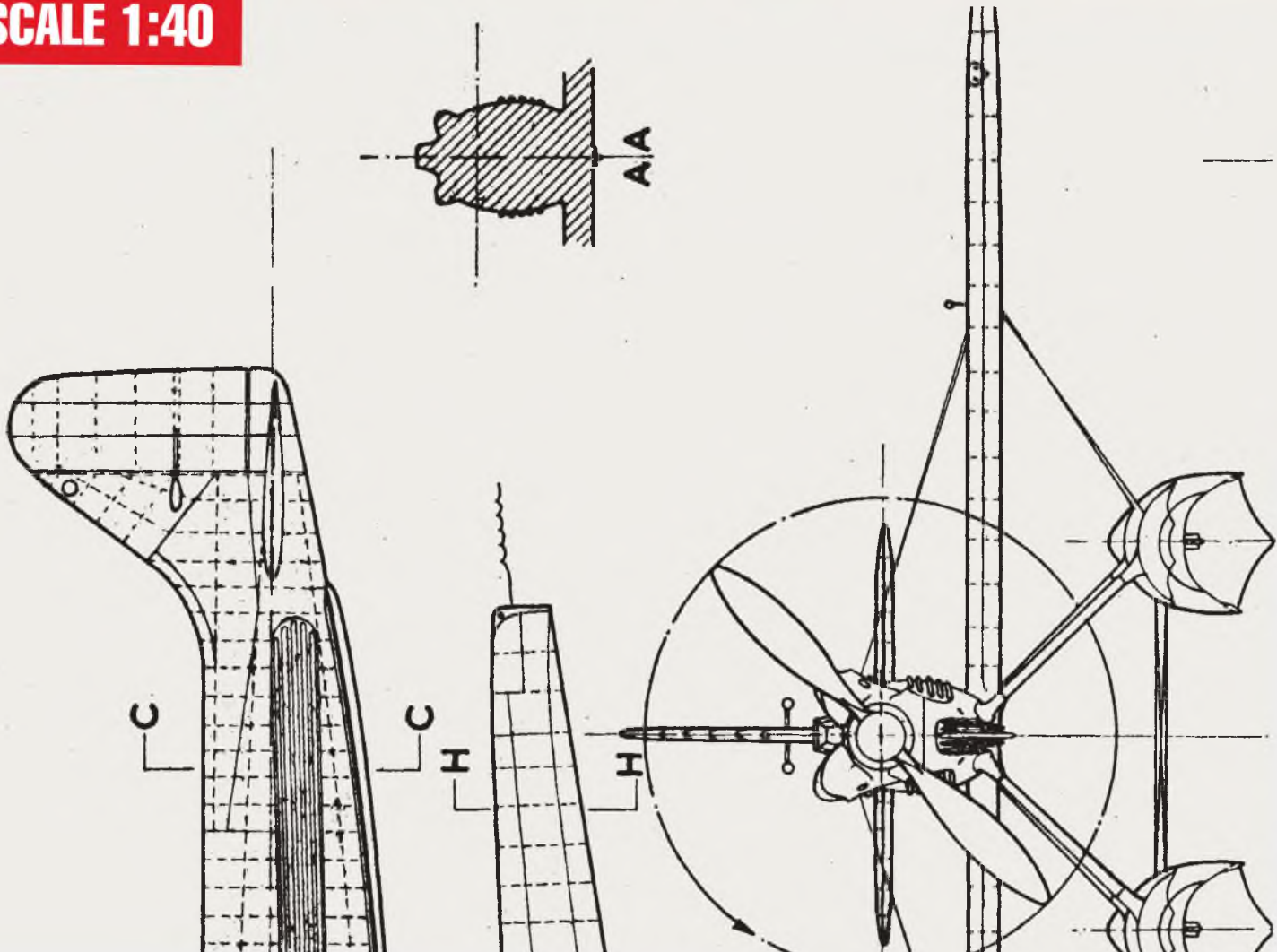
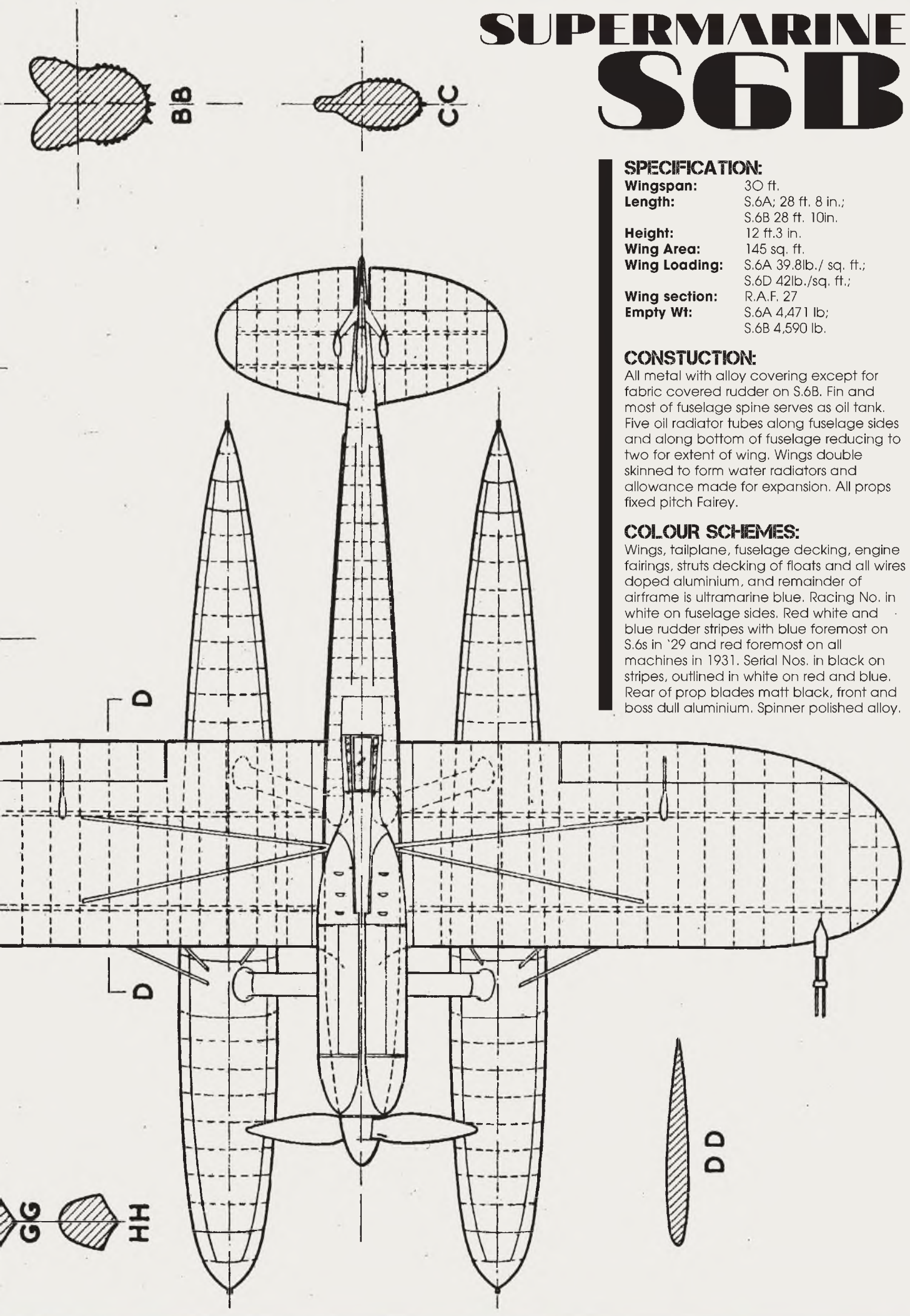


SUPERMARINE S6B



SPECIFICATION:

Wingspan:	3O ft.
Length:	S.6A; 28 ft. 8 in.; S.6B 28 ft. 10in.
Height:	12 ft.3 in.
Wing Area:	145 sq. ft.
Wing Loading:	S.6A 39.8lb./ sq. ft.; S.6D 42lb./sq. ft.;
Wing section:	R.A.F. 27
Empty Wt:	S.6A 4,471 lb; S.6B 4,590 lb.

CONSTUCTION:

All metal with alloy covering except for fabric covered rudder on S.6B. Fin and most of fuselage spine serves as oil tank. Five oil radiator tubes along fuselage sides and along bottom of fuselage reducing to two for extent of wing. Wings double skinned to form water radiators and allowance made for expansion. All props fixed pitch Fairey.

COLOUR SCHEMES:

Wings, tailplane, fuselage decking, engine fairings, struts decking of floats and all wires doped aluminium, and remainder of airframe is ultramarine blue. Racing No. in white on fuselage sides. Red white and blue rudder stripes with blue foremost on S.6s in '29 and red foremost on all machines in 1931. Serial Nos. in black on stripes, outlined in white on red and blue. Rear of prop blades matt black, front and boss dull aluminium. Spinner polished alloy.

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LOCKHEED SIRIUS

A Golden Era floatplane, sleek and beautiful, immortalised by Charles Lindbergh. Designed and built by Ken Marsh. Described by Ken Sheppard

The Lockheed Model 8 Sirius was a radial-engined, propeller-driven monoplane designed and built by Jack Northrop and Gerard Vultee while they were engineers working at Lockheed in 1929, at the request of Charles Lindbergh. Both Northrop and Vultee later each went on to form successful aircraft manufacturing organizations of their own, and bearing their names.

Two versions of the same basic design were built for the United States Army Air Corps , one made largely of wood with a fixed landing gear, and one with a metal skin and retractable landing gear, designated Y1C-25 and Y1C-23, respectively. Its basic role was intended to be as a utility transport.

Fifteen examples of the Sirius were constructed between 1929 and 1930, the first and best-known one being bought by Lindbergh and retrofitted with floats in 1931. He and his wife Anne (Morow) flew it to the Far East, where she wrote a book about their experiences there entitled *North to the Orient*. However, the aircraft was damaged in Hankou, China when it accidentally capsized while being lowered off the aircraft carrier HMS Hermes, and had to be sent back to Lockheed to be repaired.

In 1931, György Endresz and Sándor Magyar made a successful USA - Hungary transatlantic flight with a Lockheed Sirius 8A plane named *'Justice for Hungary'*.

Then, in 1933, the Lindberghs set out again with the plane, now upgraded

Ken Marsh with his Sirius when newly built and flown off water.

SPECIFICATIONS

	Full-size	Model
Wingspan:	42 ft 9 1/4 in (13.037 m)	67" (1708mm)
Empty weight:	4,289 lb (1,945 kg)	10.6lb. (4.8kg)
Powerplant:	1 x Pratt & Whitney Wasp 450 hp (340 kW)	OS MAX 61
Maximum speed:	185 mph (298 km/h)	
Cruise speed:	150 mph (241 km/h)	20mph (?)

with a more powerful engine, a new directional gyro, and an artificial horizon. This time their route would take them across the northern Atlantic, with no particular destination, but primarily to scout for potential new airline routes for the American airline Pan Am.

While at a refueling stop in Angmagssalik, Greenland, the native Inuit people of the area gave the plane a nickname, *Tingmissartoq* or "one who flies like a bird".

The Lindberghs continued on their flight and travelled to many stops in Europe, Russia, then south to Africa, back across the southern Atlantic to Brazil and appeared back over the skies of New York City at the end of 1933, after flying 30,000 miles through 21 countries, where droves of people turned out to greet them as they landed.

The aircraft was in the American Museum of Natural History in New York City until 1955, when ownership of it was transferred to the National Museum of the United States Air Force in Dayton, Ohio. It was then eventually passed on to the Smithsonian Institution, Washington in 1959, and it went on display at the National Air and Space Museum when the original facility opened on the National Mall in 1976.

The model

This model was designed and built by Ken Marsh back in 19 and was flown off water regularly at Stubbers Lake near Upminster, Essex and a few times at the Billings Aquadrome in Northamptonshire - both regularly used by aeromodellers with an interest in flying models off water. it flew like a dream and, as can be seen from the accompanying photos, looks great, too, even after all these years.

I was planning to build a bigger Sirius myself a little while ago and was casting around for plans, accurate three-views and documenting photos, when I received a letter from Ken, telling me about his model - and that it was still airworthy in his loft workshop! The opportunity was too good to miss, so a few phone calls later and a trip to his house on London, I was introduced to the model and Ken's original working drawings.

He had forgotten many details about the build, it was so long ago, but he had an album of photographs that showed the key stages of the build and set-up of

The wing almost ready for top sheeting showing the aileron linkage method.

Mating the wing to the fuselage to drill the retaining dowel and bolt holes.

The basic fuselage box, showing the wing seat area, prior to fitting the tail surfaces.

With tail fitted, planking the fuselage begins, using narrow sheet balsa strips.

Planking progresses in four separate areas to speed up the process as the glue dries out.

The planked fuselage ready for planning and sanding for a super smooth surface.

The first step in float build, preparing the top plates and mounting points.

The floats are built inverted - note the fluted bottoms of the forward sections.

To accurately align the floats when mounting, Ken devised this simple jig to hold the fuse/wing assembly in the right position.

Fitting the float struts and brackets. All bolted together for strength and removerability.

The cowl is formed on this simple jig.

the model. With very little persuasion, he allowed me to take the drawings, photos - and the model back home with me, in order to pull it all together and present the model as a plan feature in FSM. I pored over the drawings and made a few additions to the notes on it which I thought would help would-be builders and when happy that everything seemed to be covered, sent the drawings off to FSM's long-time draughtsman, Mike Reynolds, to ink it up into the plan you see presented here.

Whilst waiting for Mike to do his stuff, the temptation of having a fully flyable scale model in my possession proved too much! After all, we needed flying shots, didn't we? Another call to Ken and he graciously allowed me to fly it, on the "...you bend it, you fix it, or buy it..." condition.

Not being close to any flyable water - and not wanting to risk dunking it (as per my previous experiences with flying off water), I made up a temporary fixed undercarriage taped to the float crossmember struts, using a pair of large diameter vintage style wheels, substituting the water rudders with a castoring 'tailwheel' on the rear of the port float. Apart from this mod, plus freeing up the O.S.60 two-stroke with a few squirts of fuel, she was ready to fly, having substituted the original Futaba 35MHz Rx with a modern 2.4GHz unit and having replaced the original NiCad flight battery with a larger capacity NiMH pack.

The ensuing test flights were pure enjoyment and I can report that - as the photos here confirm - she was a real pleasure to fly, rock steady and very smooth through some gentle aerobatics, as well as some low, fast passes and figure eights. The biggest surprise, though was the O.S. engine, having been 'ungummed' after having been standing idle for many years, started with just a few applications of the electric starter and ran reliably throughout the flight on Ken's home made muffler unit - amazing!

What follows is a build description written by studying the plan and Ken's build photos - and from picking Ken's memory!

Building the Sirius

Ken (Marsh) started by building the wing first. Each panel was built flat on the building board, but with the trailing edge packed up at the tip by a tapered strip running the length of the wing panel from root to tip. The lower main spar was positioned over the plan and the wing ribs added, followed by the top main spar and the top rear spar.

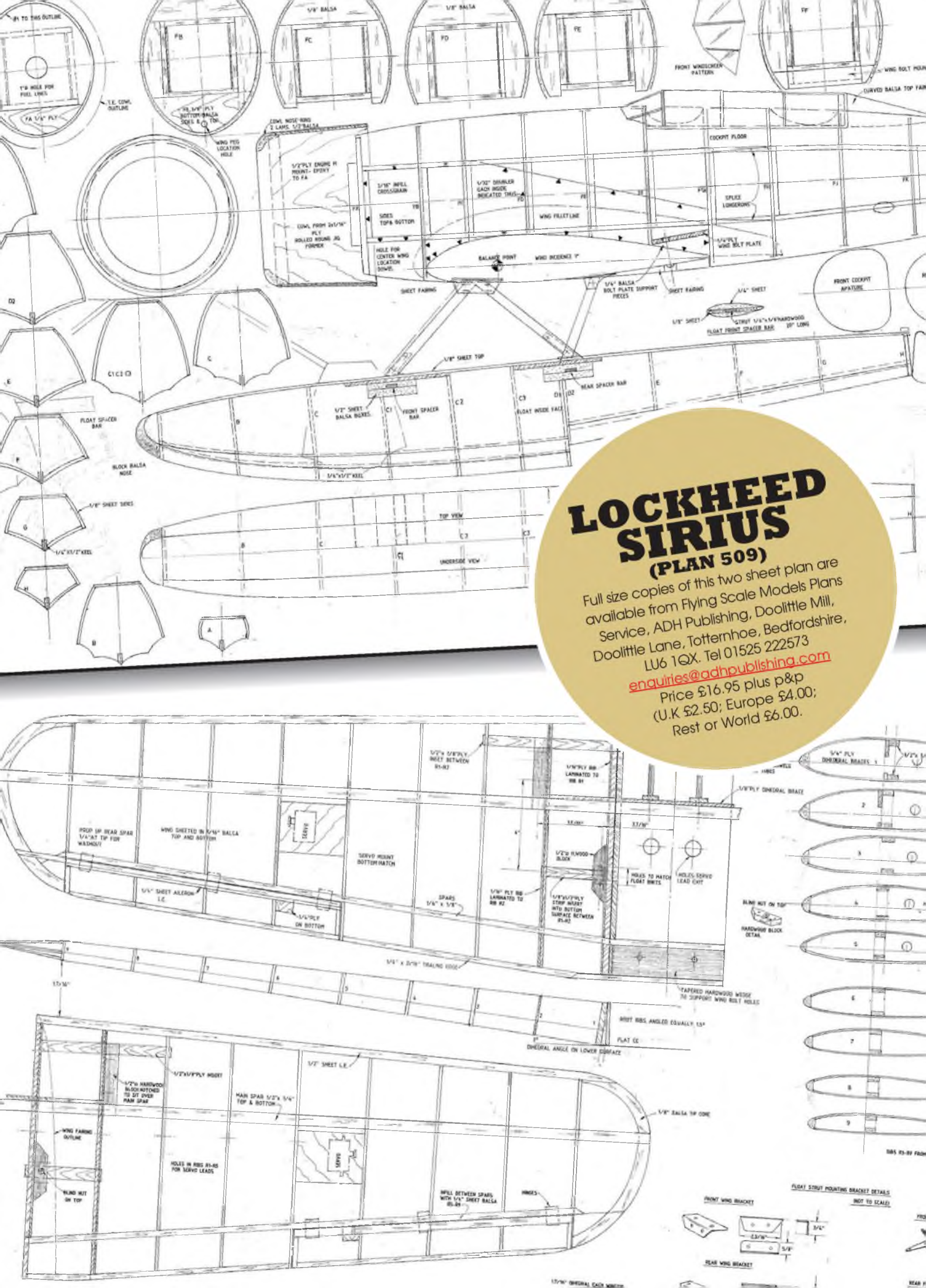
The sheet strip leading edge was added and chamfered to match the curvature at the front of each rib along the wing panel span. Vertical-grain spar webbing was added between each rib and, when completely dry, the panel was released from the board so that the lower rear spar could be added and the lower edge of the panel leading edge chamfered to match the ribs as before.

Next, the float-mounting ply strips and hardwood blocks needed to be fitted to the ribs as shown on the plan. Being careful to maintain the washout built into the panel, the lower surface is then sheeted in 1/16" balsa sheet, including the aileron area. When dry, the wing is placed back on the plan and rear tapered strip and the aileron front sub spar fitted, together with aileron end ribs.

The trailing edge can then be chamfered to blend with the rib profiles, given a thin edge to the lower sheeting, before gluing in position the trailing edge sheet strip, the front edge of which is positioned in the centre of the top rear spar, giving sufficient gluing area for the remainder of the top sheeting, which is added later, after the aileron hinge blocks have been fitted, the aileron cut lines marked on the top and bottom wing sheeting and the outer panel finally joined to the centre section. Omit the lower front skin sheeting on the centre section, to give access for drilling and fitting the wing location dowels.

The front of the top wing surface sheeting can now be added, again, the rear edge positioned mid-width of the front spar. At this time also, the aileron control mounting needs to be decided and suitable mountings fitted to the relevant ribs. Ken used the centrally mounted servo option, using a piano wire pushrod passing through each rib, connected to a 90° bellcrank, operating a wire pushrod that exits the lower wing surface. Given the numerous mini servos available now, individual servos can be alternatively fitted, with the holes in the ribs enlarged to allow a servo lead connector to pass through. Ken specifically designed the Sirius for off-water flying, so the central location of a standard servo offers the best water ingress protection, being fully enclosed in the wing centre-section.

With both panels built to this stage, the centre section can be assemble in much the same way as the panels and the outer panels joined to it, using the full depth ply dihedral joiner, fitted in front of the mainspars. The 1/2" sheet leading edge strip can be cut to approximate depth and glued to the wing, in preparation for


LOCKHEED
SIRIUS
(PLAN 509)
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The layers of the cowl awaiting the glue to cure, before removal from the jig.

The OS Max 61 mounted on a metal mount with a needle extension to fit outside the cowl. Note the additional lead weight behind the cylinder head.

positioning the wing on the fuselage wing seat and fitting the retaining dowels and wing bolts, which takes place after stage one of the fuselage build - which is next on the board.

Fuselage

Study the plan and you will see that the core of the fuselage is a simple square-sectioned, four-longeron box with square strip uprights and crosspieces, with 1/4" sheet wing seat plates and internal thin ply doublers to each fuselage side. For the front couple of bays, there is 1/4" sheet (vertical grain) infill to provide a solid sided fuel tank bay and motor mounting box.

The elliptical shape of the fuselage is formed by adding sheet former pieces to a simple balsa strip box, the former parts being glued to the uprights and cross pieces. With this basic structure done, Ken mounted the wing and fitted the aluminium tube front dowels and drilled for the rear mounting bolts. This then allowed the wing sheeting be completed and the leading edge to be shaped, ready for sheeting the fuselage around the wing seat. But before that, the tail surfaces were built and fitted to the fuselage complete with internal rudder/elevator pushrods and control horns.

Tail

The tailplane, elevators, fin and rudder are built on central sheet cores and covered in thin balsa sheet. The tailplane is a flat section, although Ken has said that if he would built it again, he would give it a symmetrical section, like the fin, to be more to scale. Ken used small pinned hinges throughout and dry fitted all the surfaces before gluing the tail and fin in place on the bare fuselage structure,

Ken made up this special tinplate muffler to fit within the cowl.

Detail of the float mounting bolt holes in the lower wing surface. Note also the rudder servo arm that operates the water rudders.

The radio bay with everything fitted well forward. The flight battery fits under the tank. If operating off water, the wing fuselage joint needs to be waterproof.

having fitted the wing in place to check the alignment of the tail surfaces - use one-hour epoxy to glue the tail, as this gives plenty of time to check and double-check the alignment of the tail surfaces to the wing and that the fin is perpendicular to the tailplane top surface.

Fuselage planking

The oval section compound curvature of the fuselage doesn't lend itself to using panels of sheet for planking, so the time-honoured method of using narrow strips of water-soaked sheet along the full length of the fuselage was used, as can be seen in a few of the photos hereabouts. Thicker balsa sheet inserts were added at the wing seat leading edge and trailing edge to form a strong support area for the wing, with thin ply strips being used to form the bottom of the fairings at the interface between the wing and fuselage.

Small blocks of soft balsa were glued and shaped to form the fairings, with filler in any gaps, sanded into a smooth concave shape blending the fuselage sides to the top wing surface.

Engine cowling

A simple jig was made to allow the cowl to be moulded from two laminations of thin ply covered with a skin of balsa sheet. The profile of the cowl changes from elliptical at the rear to circular at the front, while the rounded cowl leading edge is laminated from arcs of sheet balsa, carved and sanded to section and glued onto the front of the fully-cured, moulded cowl. The finished unit is retained by four screws through the rear edge of the cowl, picking up little aluminium brackets bolted to the firewall, thus allowing plenty of exit area for cooling air to pass through the cowl.

Silencer

Ken couldn't find a commercial silencer/muffler that would fit comfortably in the cowl and so, as he didn't want to have anything sticking out to spoil the Sirius' classic lines, he made up his own thin, rectangular unit from metal plate and silver solder, with a single exhaust stub exiting the bottom of the cowl. It is sectioned to give maximum volume inside the cowl, and works fairly effectively - not exactly quiet, but not excessively loud either. As it turned out, the Sirius can comfortably cruise on less than full throttle, so the noise is reduced that way, too.

Floats

Ken had decided from the outset that the Sirius was going to be a floatplane, so no details of the alternative scale fixed undercarriage are given on the plan, but fitting a wheeled undercarriage wouldn't be too difficult for experienced builders.

The temporary 'taped-on'

"The Sirius was, for its time, a really streamlined beast, so very little surface detailing is needed"

wheeled undercarriage that I made up, was specially built to get the Sirius off the deck for this article, whilst retaining the Sirius in Ken's original set-up. These temporary rise-of ground 'rollers' worked really well, being fitted or removed in a matter of a few moments - so it might be the best solution if you want to get the best of both worlds, land or water flying!

A close look at the flying shots show the large diameter 'vintage' type wheels that I used, the wire frame taped to the crosspieces and the single castoring tailwheel on the rear of one of the floats.

Regarding the float assembly, the photos show the method better than I could describe. Note however the unusual 'fluted' bottom to the floats. These are easily formed by using well-soaked strips of balsa sheet, used grain lengthwise, with the nose of each float being carved from block or laminated sheet balsa. Use a waterproof glue throughout the float build!

The plan sheets detail the method of attaching the floats to the wing. Ken used a metal baking tray as a source of the metal bracket material and the actual legs are rectangular strip sectioned aluminium (available from a DIY superstore near you!). What is crucial is the jig that Ken devised to set up the floats in the correct alignment to the fuselage - again, the photos show how it is done. Set it up carefully and check that the floats are aligned as shown on the plan, before finally cutting the struts to length and drilling the holes for the retaining bolts.

The water rudders at the end of each float are operated by a servo fitted inside the wing centre section, with just the servo arm protruding from the lower wing surface, routing double operating wires down the strut legs and along the top of the rear end of each float to the rudder. I say wires, in fact Ken used a strong waterproof thread - fishing trace of sufficient strength would be equally as good.

Finishing

The Sirius was, for its time, a really streamlined beast, so very little surface detailing is needed. I've already mentioned the wing-to-fuselage fairings, and the fin is also faired into the fuselage with a wrap-around fairing strip at the leading edge base, as is the tailplane on either side of the fuselage.

Apart from ensuring you have a super smooth surface finish, the only detailing needed is the provision of the two cockpit apertures, and internal detailing you desire (it must have Mr. and Mrs. Lindbergh in place, surely!), the canopy and the fairing aft of the rear cockpit.

Ken covered the entire airframe in glass cloth and epoxy to give a super slick surface, which was then primed and sprayed up using automotive aerosol cans. The fuselage pinstripe is straightforward to mask up and if your fine brush painting isn't up to scratch, then make some waterslide decals for the Lockheed insignia (using a computer, printer and waterslide decal paper). Don't forget the name *Tingmissartoq* on either side of the nose (your local vinyl-cutting decal service can do the white lettering, of course).

I have found that modern automotive paints are proof against low nitro glow fuel, but anything above 5% would benefit the airframe being given a coat of two-part fuel proofer before test running the engine!

Set up

The important part is to balance the model exactly where shown on the plan. Those floats are quite draggy and sit way below the airframe, so it needs to be spot on (some lead nose weight was needed on Ken's prototype) and use the throws as advised on the plan for initial flights - everyone's flying style is different and so you may need to tweek the throws to suit your preferences.

Remember, however, that although this Sirius is quite capable of some aerobatics, for scale flying, a more sedate flight plan is advised! Low, fast passes, eights and even a stall turn or two are the order of the day - and not at full out speed, either (although, I bet you won't be able to resist bending the throttle stick a little bit!). Have fun, fly safe!

SOPWITH 5F.1 DOLPHIN

CLOSE UP WITH THE EXAMPLE AT THE RAF MUSEUM, HENDON

Space limitations in last month's issue of FSM squeezed out this close-up detail study of Sopwith's late WW1 fighter and ground attack aircraft aircraft.

1 & 2: Cockpit viewed from the pilot's seat. A tight fit! 3: Wing bracing wire crossover. 4: Anchor point for wing bracing wire that passes through lower wing surfaces to attachment lug on main undercarriage attachment. 5: Fuselage rear, showing elevator control runs. 6: Tailplane-to-rudder bracing wiring ttachments to rudder. 7: Fin/tailplane bracing wire attachment and rudder hinge. 8: Stearable tailskid. 9: Fuselage top deck panel at rear of cockpit, right side. 10: Same panel, left side showing showing hinged access panel and cockpit mounting stirrup. 11: Control wire runs to rudder and elevator. 12: Elevator control run exits in fuselage side. 13: Typical lacing runs on the rear fuselage fabric covering panels. 14: Lower wing leading edge access panel for aileron control run. Also shows front wing strut anchor point. 15: Lower wing rear strut anchor point and wire link from lower to upper wing ailerons. 16: Lower wing undersurface showing control horn and tie-down ring.

17: Main unercarriage, typical WW1 Sopwith practice.

18: Further detail showing the spreader bar.

19: Close-up of the bungee cord landing shock absorber.

20: Main undercarriage wheel.

21 & 22: Two wires of the main undercarriage anchor points and cross bracing.

23: Fuselage top surface panel behind cabane struts and the cockpit, showing the pilot's hand grab.

24: Cockpit mounting stirrop and filler cap.

25: Cabane struts and cross brace, right fuselage side.

26 & 27: Two views of the fuselage side radiators.

28: Another detail of lacing to fuselage fabiic covering.

29: Spur-gear for the machnine gun inerruptor gear

30: Exhaust stack, left fuselage side.

31: Propeller boss.

32 & 33: Fuselage access panel on right side of the fuselage, just ahead of the cockpit.

34: Top wing upper surface aileron control horn.


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35: Inner interplane struts. Outer bay struts are similar.

36: Pitot head mounted on right, outer front interplane strut.

37: Top of the same interplane stuts showing the piping to the pitot head.

38 & 39: Bottom wing detail showing themetal shoe anchor point for the strut and attachments for bacing wire clevises.

40: Upper wing undersurface wing strut anchor point shoe.

41: General arrangement of the interplane struts.

42: Bracing wire anchor point tag on the tailplane

43: Fabric access patch on at the tailplane trailing edge.

44: Elevator and rudder control wire and control horns.

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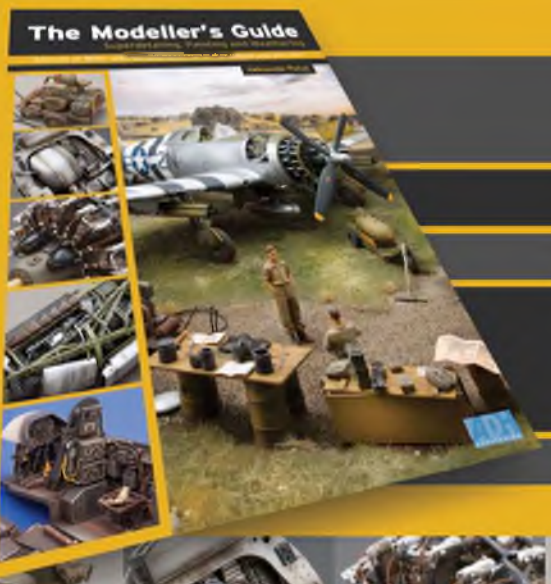

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SCALE FROM SCRATCH

WANT TO TAKE A STEP BEYOND KITS AND ARTFS? KEN SHEPPARD CONTINUES HIS SERIES TO ENCOURAGE OWN-DESIGN SCALE MODELS

PART 7: FUSELAGE PLANKING AND MOTOR MANAGEMENT, AND A PRACTICAL EP/IC MOTOR CONTROL SYSTEM

Last month saw the Dornier Do335 come together, joining wings and fuselage for the first time. The next logical step is to skin the fuselage, build the fin/rudders, cowl the IC motor and fit the wing and belly fairings. At the same time, it would be a good idea to build the moulding blanks for the canopies and air intake fairings, which can be vac-formed. I say canopies (plural), because I decided that I would build the two-seater Do335 (Ant-eater) trainer version, which has a raised canopy on top of the fuselage behind the main cockpit. (Why? - because I think it looks more interesting, that's why).

MOTOR CONTROL

Before starting the fuselage planking, it is a good time to fit the rest of the radio gear, control runs, electric motor harness and ESC, finalise the battery position - and work out an effective motor control management system! My original plan was to couple the IC motor throttle servo with the EP ESC lead (non-BEC) via a 'Y'-lead. I planned to introduce a switch in the ESC lead, so that the electric outrunner (25 size) could be isolated whilst starting and warming up the IC motor (RCV 58CD), with the throttle stick moved to about 25% IC revs, beyond which the EP motor then switched in - the esc would recognise the throttle stick position as being 'closed', which would mean that closing the throttle to IC tickover would stop the EP motor completely, giving me the ability to cut the EP source on landing, but give instant 'power on' response if I needed to 'go around'.

I duly wired up the outrunner accordingly **(see fig.1)** plaiting the three EP motor leads together (to prevent induced fields which could cause interference on 35MHz - this was before 2.4GHz). Consensus of opinion said that the ESC should be kept close to the battery and not the motor, and so the latter was placed in the tray as far forward as it would go, with the ESC placed alongside it in the cockpit area.

An assessment of the likely balance point indicated that even with the ten-cell flight pack placed right forward, the model was still likely to be tail heavy and so the Rx battery pack (6v) was positioned immediately behind the firewall under the fuel tank, to minimise

ALMOST READY FOR COVERING AND FINISHING. THE DO.335 HAS BECOME THE TRAINER VERSION BY THE ADDITION OF A SECOND COCKPIT. UGLY, BUT SOMEHOW ATTRACTIVE, THE 'ANTEATER' WAS DESTINED TO BE A NIGHTFIGHTER/BOMBER.

Needing just a top hatch, wing leading edge fairings at the root and wing seat, construction is pretty well complete - got to make the blanks now for the glazing moulds!

the likely tail weight.

I decided to test the rear motor circuitry before covering it all up with balsa planking, so put the fuselage on a stand and fitted a 11" x 6" prop. I used a standard tractor prop, even though I didn't know which way the motor was wired up - this is no problem, as if the rotation is wrong, it can be reversed by swapping over two leads at the motor. I couldn't run the IC motor of course, but I could check the throttle servo arm direction. Ideally, this last point needs to be checked before finalising the throttle servo position, as it may be necessary to move the servo arm to the other side to get the correct direction of the throttle pushrod (the Tx reversing facility must be used to reverse the throttle stick direction to match the ESC, if necessary).

I charged up the ten-cell pack, connected it up, switched on the Tx, then moved the stick to about 25% open and switched on the Rx. Before switching in the motor isolation switch, I firmly held the model with one hand and checked that nothing was in the way of the prop. I was prepared for the ESC being connected in reverse, but as it recognises the 'stop' position when first switched on, there was no worry that the motor would start immediately - luckily the ESC/stick direction was correct - and nothing happened!

Gradually opening the throttle,

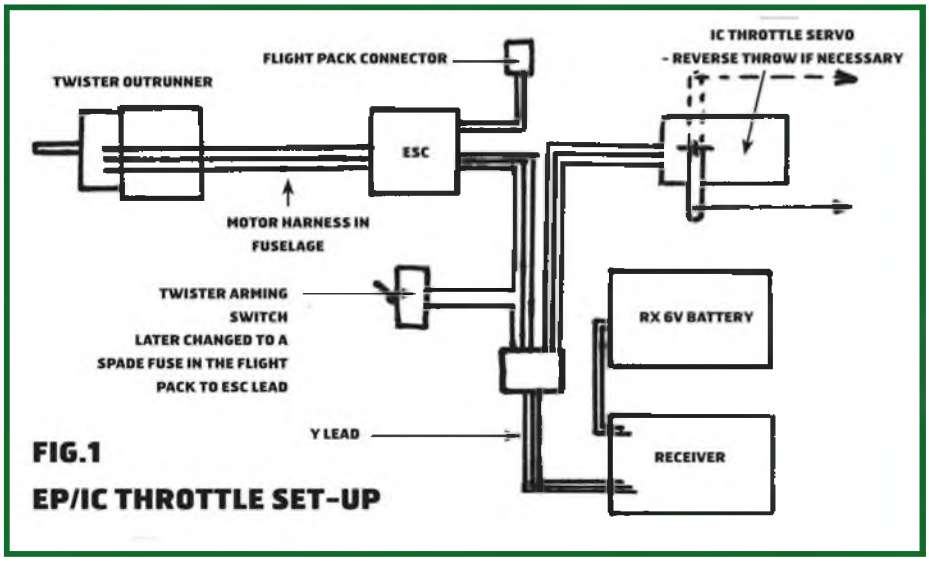
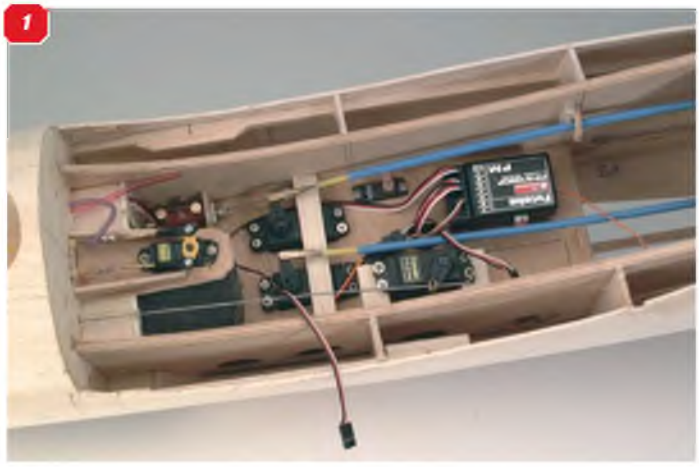
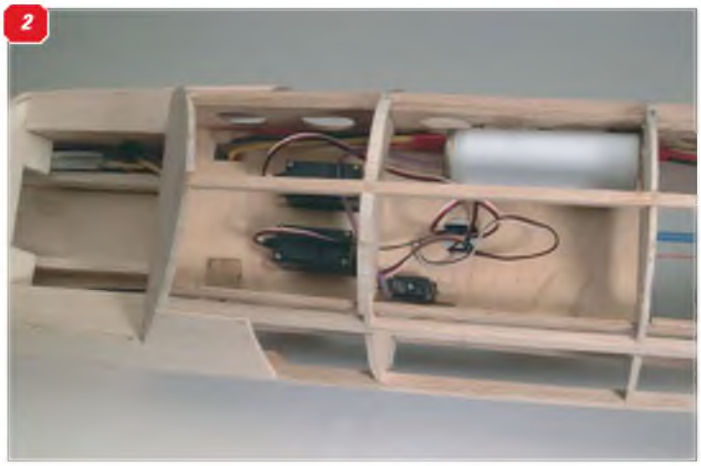


FIG.1

EP/IC THROTTLE SET-UP

The fin and rudders are conventional build - the lower fin has a sheet core for extra strength (minimal ground clearance!). The outrunner is wired up and the harness run through the rear fuselage.





1: The radio bay is almost fully equipped (retract piping still to be done). The nosewheel steering is via a separate servo and 'Y' lead with the rudder servo. 2: Under the radio tray (top of the fuselage) is the retract tank. The motor harness wires are taped together and routed as far away from the Rx as possible, to prevent interference. Note the esc position in the front cockpit alongside the motor battery tray.

however, released the whirlwind! At full throttle the thrust was awesome, with the propwash blowing a picture off the wall and spreading newspaper pages all over the room! PHEW! Close the throttle and get the heartbeat under control!

The second burst confirmed three things - the power output was phenomenal, the torque of even an 11" x 6" was sufficient to cause the fuselage to flex quite alarmingly (planking would help to reduce this) and the IC throttle servo throw was, in fact reversed.

This 'twisting' of the fuselage did give me some cause for alarm - as already stated, 3/32" balsa planking would certainly stiffen up the fuselage - but would it be enough? The only other thing I could do at this late stage was to fit internal bracing struts (1/4" square balsa) in the tradition of a stick balsa Wakefield rubber fuselage - so I did **(see fig. 2)**. Unfortunately, this adds even more weight to the aft CG - but rather than, than fuselage that twists itself up like a rubber band!

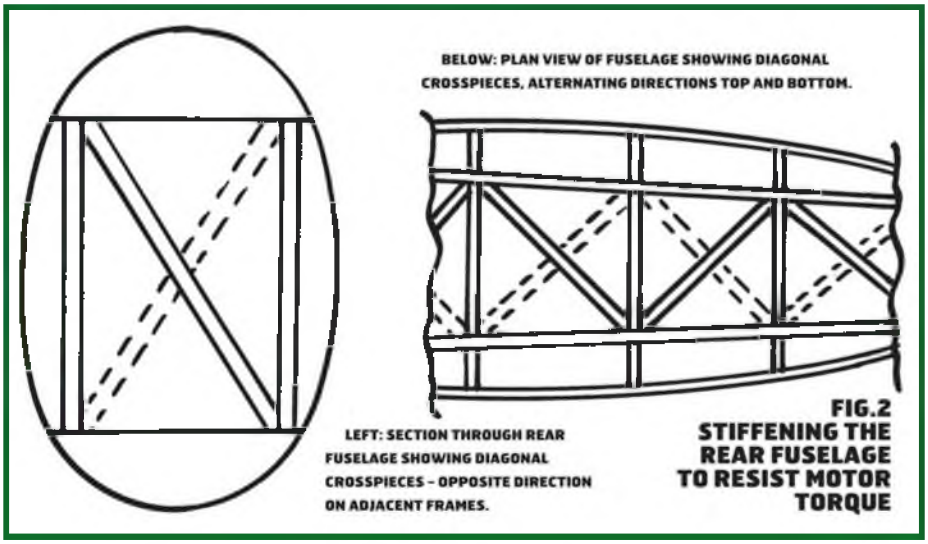


FIG.2 STIFFENING THE REAR FUSELAGE TO RESIST MOTOR TORQUE

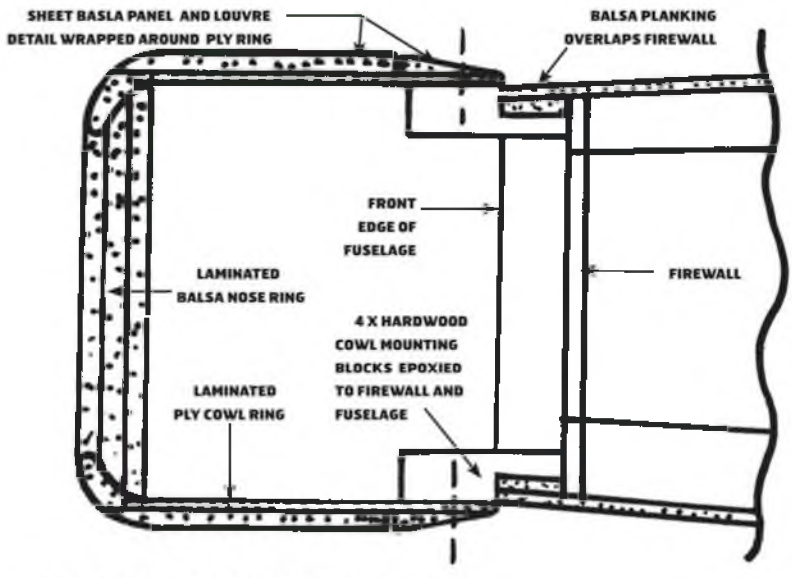


FIG.3 IC MOTOR COWL CONSTRUCTION

CONTRA-ROTATION

Then another thought occurred - I had wired the motor to run counter-clockwise to use a standard tractor prop - this effectively doubled the rolling torque to the left (clockwise viewed from the front) - fine for left hand rolls, but making it very difficult for rolls in the opposite direction? The answer would be to have the props contra rotating to even out the rolling torque - great idea, but then, that's a long fuselage between opposing torque sources - consider holding a towel with one end in each hand and twisting the ends in opposite directions - after a few turns the soft towel becomes rock hard! The two contra-acting prop torques would be trying to wind up the fuselage like that towel! A short fuselage would minimise this 'twist', but what about a long fuselage like that of the Do335?

One great advantage of electric power is that you can change the direction of the motor by just by swapping over two cables at the motor - all easily accessible and easily done.

PLANKING

Having tried to think through that particular can of worms, I started to plan the planking of the fuselage. I wanted to use as few full-width sheets of 4" balsa to maintain the highest twist resistance - lots of little pieces would be less resistant to twist, I reckoned - so I added a few extra stringers along the length of the fuselage, in straight runs, to give a gluing support to the panel edges (one above, and one below the

3: The nose skinned - the hole in the side is for cooling air to the esc/battery (scale position of an air intake). The exhaust stub box is flush-mounted, ready for the moulding. 4: The planked rear fuselage with the sheet panel lines highlighted. Well-soaked in water, the soft sheet easily took the double curvatures.

existing centre line datum stringer).

A couple of the photos show the panel edges highlighted, giving an idea just how many pieces were used to cover the fuselage. Soaking each plank/sheet in water for about half an hour made the 3/32" sheet pliable enough to go round the gentle double curvature and the sheet is thick enough to allow material to be sanded off at the joint lines to give a smoothly contoured surface - use lightweight filler to close any small gaps along the edges, when the glue and the soaked wood have dried out, and the fuselage has been sanded.

Due to the short length of the scale cowl, the nose planking was extended 3/4" forward of the front firewall, reinforced with an extra layer of 3/32" sheet, cut cross grain and glued inside the skin extension **(Fig. 3)**. The cowl was made from three layers of thin ply glued and wrapped around an appropriately sized round former (in my case, an *Ikea* uplighter lamp) - if you soak the ply, leave it for a few days to thoroughly dry out before removing it from the former, it holds the curvature nicely. The front of the cowl is formed from three ring laminations of 1/4" balsa sheet sanded to section, while the cowl is retained by csk screws though the ply, picking up four hardwood blocks, positioned evenly around the firewall periphery.

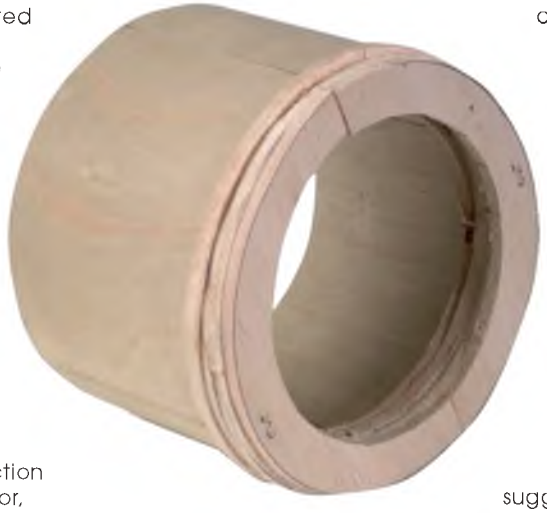
The final job at this stage was to introduce cooling duct holes in the skin that will be covered by the two scale fuselage air intakes. The purpose of these ducts are to direct cooling air into the fuselage - the front one to cool the battery and ESC, the rear on to direct air through the rear of the fuselage to cool the rotating motor can. The ducts are made from rolled and glued paper, cut flush to the outer skin surface.

I also built in the balsa exhaust stub 'boxes' (from 1/16" sheet), in scale positions on the skin, to take the moulded exhaust stubs I intend to make (as you've got to make four, it's worth making a mould master!)

PROPORTIONAL THROTTLE OPERATION

When I operated the outrunner motor to check out the control circuitry (and scaring myself with all that rear-mounted power), it occurred to me that the outrunner increase in revs was not proportional to the stick movement - i.e. full power seemed to be achieved before the throttle stick was fully opened. When used in conjunction with the IC motor, would this be a problem? Ideally, it would be nice to have the revs increase at the same rate for both the IC and EP motors.

From our own test results on the RCV 58CD, running on an 11" x 6" prop, we could expect revs of 10.6 - 10.7K, whilst an outrunner on ten cells - reportedly gave 8.9K revs, so there was bound to be a speed differential across the throttle extremes, anyway. On a conventional twin (side-by-side) one uses identical engines and props, with the throttles adjusted to give an identical transition (as far as possible), by having identical linkage set-up geometry. This is not possible with an IC/EP hybrid, nor (possibly) is it absolutely necessary, being a push-pull configuration - but I guess, at the very least, it will sound very strange. So, perhaps, having the slower turning EP motor getting to full chat before the IC motor reaches top revs is the optimum arrangement after all. What is needed is a method of adjusting the rev curve of the outrunner to match that of the IC four-stroke, to harmonise the rev increase.



The cowl base is ply wrapped around a former, with a laminated balsa nose ring.

Then someone suggested using the Tx in heli mode and use the throttle, throttle hold and pitch switching to facilitate this harmonisation. Not being at all heli-literate, I didn't fully understand the proposed set-up, but they seemed to think that it would work. I still want to use the normal fixed wing controls with flaps and retracts (not to mention using Channel 7 for aileron differential), but as I couldn't get my head round how to set it up, one of my heli clubmates offered to help out when I was ready to run both motors together. ■

NEXT MONTH...

Solving the torque, twist, thrust and rev curve synchronisation (I hope), and finishing the structure build - and covering/finish options.

All the way from Switzerland, Team Schaerer, (Andi and Tim) gave us a stunning glider display.

INSET: Impressive pilot in Andi Schaerer's glider.

SCALE @ WESTON PARK

BIGGER, BETTER, AND EVEN MORE FUN

Pat Cuss's brand new scratch built 1/3rd scale Bristol M1C, flew well. Full details soon.

Assault Glider Trust's Stewart Mcfarlane aerotowed his Invasion Striped Waco glider.

Florian Keilwitz 's Fairchild A-10 Warthog. Twin JetCentral Rabbit turbines, weighs 24.3 kgs.

You need reliable gear to fly in the driving rain. Florian Keilwitz's very, very wet transmitter.

Before I go any further, let me say that although we had a lot of rain on the Saturday when I attended, I can't remember having so much fun at a big show for years. Weston Park is always good for 'scale', but it really has changed up a gear this year. It is always a good show, with a nice family feel, but this year it was on a much grander scale, with much more to see.

So it was non-stop action, despite the odd bit of precipitation. We did manage to enjoy some sunny periods, but frankly, no one minded the weather. Mind you, in some of the photos you can see that the rain was denser than the models! Unfortunately my notebook did not fare so well in the downpours. It ended up an indecipherable pulpy mass.

Big trade presence

I reckon that we scale folk want three main things from a good summer show: scale action in the air, scale inspiration in the pits, and scale friendly shopping.

At Weston 2015 we got them all in spades. I stocked up on fuel, covering, fastenings, balsa wood, and accessories. I even spotted one or two affordable Scale Kits. For example, how about these nifty and traditional scale kits spotted on the *Balsa Cabin* stand? The 53" span Mosquito costs £84.99, and the 37" span Me 163 Komet is just £49.99. Keeping with simple scale kits, *Cambria Funfighters* are back in business, and their Display team was a gas. Many of us of a certain scale vintage have built at least one of these quick-build warbirds.

Air Action

Weston is a very broad show, aimed as much at the family audience as we scale fanciers, but the flightline did not disappoint. It had its fair share of independent scale modellers as well as Trade Teams hawking their scale wares. Just for example, there were scale gliders from Switzerland, German Display Teams with commercial scale models, and the UK *Horizon Hobby* Team aremed with Citabria Decathlons. Naturally we also had The Bishop Reds Duo of BAe Hawks. The list could be continued to the next page. However, the fore-mentioned Cambria Funfighters Team, and the utterly reliable TJD Display team were the most to my taste.

Dawn Patrol Bristol

Always great value, I greatly enjoyed the Dawn Patrol slots with their one-third scale WWI models. The big news here was famed Pat Dare's latest Bristol, this in a superb blue scheme. Readers will remember his previous very colourful Turnbury Trainer schemed M1c.
One-third scale is such a satisfying size for these models. More details of Pat's triumph soon.

I must mention here the harrying

Balsa USA Dawn Patrol one-third scale Sopwith "Bobs" on a very low pass.

The bumptious crosswind harried the Dawn Patrol models. This Balsa USA one-third scale / 120" span Fokker DVII did well under the circumstances. Zenoah 62cc geared petrol engine.

Father and son team Paul and Luke Metcalf with their brand new English Electric Lightning.

Ian Redshaw's Fokker DR1 Scout, 1/3rd scale, 96" span, weighs around 38 lbs. Zenoajh 38cc geared drive.

Ian Redshaw's 1/3rd scale Fokker Triplane ended up in a tree but survived unscathed.

crosswind that played havoc with one of the Dawn Patrol flying slots. At one point the models were arriving back from patrol and almost being blown into each other. No damage, but very hairy.

Pilotless scale models

Of course, being an aeromodeller I did enjoy the Dutch Pulse Jets and many other non-scale flying items. I enjoyed the aerobatics slots, and especially the scale choppers, but any scale aerobatic model being flown without a pilot under its large canopy leaves me cold. Why do they do it?

A-10

Visitor Florian Keilwitz flew a superb slot with his beautifully detailed Fairchild/Republic A-10 Warthog. This is fitted with twin *JetCentral* Rabbit gas turbines, and weighs 24.3 kgs. The rain was like stair-rods yet he turned in a very considered and scale-like display. The Weston crowd love Florian, and he delivered one of the best displays of the show.

EE Lightning

Father and son team Paul and Luke Metcalf flew their new English Electric Lightning. Young Luke is one of the most impressive scale pilots drawn from the upper echelons of UK scale. The immaculate Lightning had effortless power, and really carved up the sky. On low fast passes - followed by typical Lightning interceptor climbs - she proved peerless.

Full size aircraft

As usual at Weston, there were full size glider and piston-engined aircraft displays and some of these machines parked up at the top of the field. We were able to get a good close look of Rich Goodwin's Pitts Special and a very nice Piper Pawnee 250.

Both are evergreen scale subjects and rightly so. I spent a pleasant fifteen minutes giving them a good dose of looking at. I think the 'added value' of this full size component to a model show is a fine touch.

Avro Anson Mk.1

We have seen her before, and she has been on the circuit on and off for many years, but when Steve Holland flew the ex-Sid King Faithful Annie, time stood still. This is a lovely large scale model, She is finished in the favoured Airfix kit colours, not the commercial scheme of the Shuttleworth example - but then, the Shuttleworth's is a Mk.20.

Super Smoker

One new product on display would work very well with a scale warbird. This was the

Hangar 9 / Horizon Hobbies version of The Beast full-size aerobatic bipe. 89" span, around 26-28lbs in weight, for DA 100 or EVO 80 tuned pipe.

As usual there was full-size presence at Weston, including this Rich Goodwin's Pitts. One of three on the day.

Traditional scale kits on the Balsa Cabin stand. Mosquito (left) and the 37" Me 163 Komet.

This rather fine full-size Piper Pawnee 250 was on aerotowing duties at Weston.

Stewart "Fighter Factory" Clifford wheels out his unusually schemed Spitfire. 1/4 scale, built from the Mick Reeves plan. Fibreglass fuselage.

The Dawn Patrol Team in action.

innovative EL Smoke System on Gunther Zielke's model. In forty-odd years of show-gawping I have never seen smoke like it. This system seems to "structure" the smoke so that it comes from the unit in continuous, densely packed, super-white 'rods'. These stayed 'tight and white', not going grey or dissipating, and extended hundreds of yards for the the length of flight line. Wow!

Imagine a shot-up Focke Wulf 190D limping home, its engine grottling and popping, and this plume of smoke emanating from its engine cowling! Truly spectacular. Starter sets are available direct from Germany From 339 Euros.

http://www.smokeel-shop.de/

Just fancy that...

Flying scale models within the confines of an arboretum can have consequences of the 'tree-model-interface' kind. Ace show pilot and keen scalista Ian Redshaw was flying his one third scale Dawn Patrol Fokker Triplane when I saw it dip behind the canopy of trees, then burst through the branches. It rested there, about forty feet from the ground.

The Dawn Patrollers are a resourceful bunch though. They arranged a big tarpaulin held taught below the model to catch it, then Ian climbed up into the branches to free it. The Tripe fell nose-down safely into the tarp and all was well. No significant damage at all.

Weston Air War

Finally, it was time for the famed late afternoon technicolor 'Weston Air War'. Complete with scale bombers, fighters, and extremely loud detonations, this was wonderfully vivid. Watching the swarms

Andy Johnstone's one third scale Dawn Patrol Team Sopwith Pup "Chin Chow". Zenoah 62 petrol power, 28"x10" prop.

There was a good bit of hot sunshine too!

Jex Harris's Nieuport briefly catches the sunlight.

Jez Harris's 1/3rd scale Nieuport, 107" span, weighs 27lbs.

Smoke On! Gunther Zielke's impressive new system. Un-retouched photo.

flying through the flames was oddly satisfying. In fact, that was not the end of the day's proceedings, since the show flying actually continued after dark, with a separate announcer. Punters certainly got value for money!

The Verdict

A number of scale events have been cancelled, or have suffered duff weather this year, so I was really looking forward to Weston. I clearly was not the only one.

Attendance was greatly increased, with noticeably more modellers camping and caravanning on site. The car parks were pronounced full by mid-morning, and overspill had to be quickly arranged. Everywhere there was undoubtedly a "feel good" factor. DB Sound's effortless commentating skill retained the crowd on the flight line watching the scale action even when the rain occasionally rolled in. The Trade Village was very comprehensive, and it felt like the shows before the recent recession. There were modellers everywhere carrying kits and goodies back to their cars, just like the good old days. Here it was - almost high summer - but I could not resist stocking up for the coming winter on wood, covering, accessories, and fuel. Overall, a superb day out for scale fans. ■

Dave Johnson's 1/4 scale DH Vampire in training colours looked superb scything through the rain.

Mirror flying from two of the Horizon Hobby Trade Teams' Decathlons.

Phew! The Horizon Hobby Decathlon Team getting up close and personal.

THE QUIET ZONE

R/C SCALE ELECTRICS WITH PETER RAKE

MORE SCALE DETAIL TECHNIQUE, THIS TIME CONCENTRATING ON REPLICATING METAL-CLAD FUSELAGE NOSE SECTIONS AND PLYWOOD GRAIN SKIN PANELS.

Okay then, where did we leave things last time? Give me a few minutes to check and then we can get on with concluding this series of articles. Blah, blah, blahdy blah, right, just about got where we were up to. Although I had intended to finish with metal clad noses last time, as usual I ran out of space.

It's amazing how much you (I) can ramble on when you're enjoying the subject. Let's face it, it must be approaching 20 years that I've been making you lot suffer. It feels more like 120 years, but you can't have everything. Anyway, off we go again with other methods of representing metal nose areas on your models.

EVEN MORE NOSEY

Not too surprisingly, the best way to represent metal is to use metal. No, not sheets of steel and shipbuilding rivets, but aluminium sheet. Although it's becoming more difficult to find, as technologies change, lithoplate has always been the obvious source for this. If you can find the thicker varieties, they tend to be softer and more malleable than the thinner types. Naturally, this makes them easier to work with when it comes to shaping, cutting louvers, etc. However, it isn't too difficult a task to anneal should it become too hard through working.

The main disadvantage of this material is that for tasks such as compound curved panels, or cowlings, it requires a hardwood former around which to shape it. Obviously, this can often take more effort than actually forming the panel. So, if you don't mind putting in the time and effort, it's absolutely unbeatable for polished metal areas, but it does take a lot of getting there. Add in that a minor ding may well mean making another panel (it dents very easily) and you can see why it may not be the ideal solution for your needs.

MUCH EASIER

Just because lithoplate requires a lot of

Just how effective a faked wood and vac-formed plastic finish can look. Stunning, isn't it?

How the 'wood grain' tool is used to apply the finish to a board before it is transferred to waxed paper and then to the model.

The masked fuselage with the first few panels of grain applied.

These relatively simple lithoplate panels on the Pat Lynch Ansaldo demonstrate how well it can be persuaded to simulate aluminium panelling.

Simple pull mouldings trimmed and fitted to Pat's Fokker DVII represent metal well after painting.

effort doesn't mean you're restricted to lots of filling, priming and painting. Because all we actually need to represent metal areas is something smooth, grain free and easily workable, an obvious choice is thin plastic sheet. It's easily available, relatively cheap and comes in a whole range of different thicknesses. You don't even need any special equipment to work with it. Just as we were able to use simple shapes to produce dummy engine parts, a similar process can be applied to producing nose panels for our latest creation.

As mentioned previously, whilst vac-forming equipment is a nice refinement, it's far from essential unless you are attempting to produce very deep items (like cowlings for WW1 models). These can be done without vac-forming, but it takes a lot of experiment to determine the best thickness of plastic, get the temperature right and then manage a successful moulding.

So, while cowls might not suit this particular method, general panel detail suits it admirably. You can even use your actual model as the former. Pat lynch used the technique to really good advantage on his 1/6th scale Fokker D.VII. IIRC, the lower nose pan, top decking around the guns and engine and the cowl (a shallow one on this particular prototype) were all produced using this method.

Because there isn't that much strength in the formed plastic, you still need to produce the underlying structure in the usual manner. On the D.VII, this meant sheet balsa decking and carved balsa block for the nose pan and cowl. Precisely as you'd do if you were planning to simply seal, prime and paint the surface, so no extra work is involved to get to this stage. Just bear in mind that any moulding you make will only be as good as the surface over which you are forming it. You'll still need to do a little experimenting with plastic thickness and temperature, but is really isn't that difficult.

On Pat's model, the nose area was all smoothed and sanded to his satisfaction, and the fuselage firmly held down on the bench. Then a piece of plastic sheet was clamped into a frame (so you have something to hold it by while doing the moulding). For some of the shapes Pat was producing, this involved nothing more than a handle on the two edges of the sheet.

The plastic was then heated (a camping gas stove) until it went nicely floppy, and then pulled over the area of model for which he needed the panel. Allow it to cool under tension and you have your basic, compound curved panel. No grain to fill, no endless priming/sanding to do and the result is a panel all ready for trimming and gluing onto your model. If your model is a type with multiple panels and rivet detail, it a relatively simple process to score the plastic along the required panel lines and a piece of sharpened or heated (if you're careful) tube used to mark the rivets.

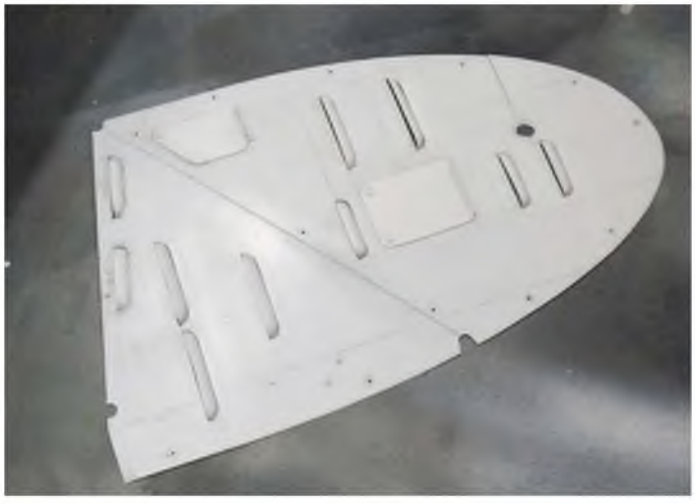
Should there be raised areas, such as scoops or bulges, these can be reproduced in the same way as the engine parts. Use a simple carved plug and press it into heated plastic to produce the part, trim it to shape and glue it onto you already fitted panel.

WOOD BITS

So, I think that about covers the most obvious options for metal clad noses (or anywhere else on the model) so let's take a look at wood panelled areas. The biggest problem we face here is scale. It's a relatively simple matter to scale a complete aeroplane, but not so easy to scale down the grain in wood panels. There are, however, some sneaky ways around this problem.

On his 1/6th scale Albatros D.Va, Darrin Covington needed to reproduce the ply panelled finish of pretty much the entire fuselage. Stained balsa just didn't look right because the grain was both too large and too straight. Actual plywood (1/64") was too dark and would have added a lot of weight to an already sheeted fuselage. Being the ingenious chap that he is, and having discovered the technique in his day job as a cabinet maker, Darrin took a totally unconventional route. The entire fuselage was primed, sealed, sanded perfectly smooth (no grain left at all) and painted with the basic straw yellow type colour seen on these types. Nice and smooth, and all one colour, but hardly a good representation of varnished ply panels.

Ah, but that's where it starts to get really



Flat panels can be further detailed with press moulded parts quite easily because they are easy to glue in place.

Considering its' very mundane ingredients, Colin Bedson's Mercedes results in just the type of detail that is absolutely vital on his Rumpler D1.

sneaky. Amongst his tools he had a wood grain patterned roller type affair. Obviously you can't use the roller directly onto the fuselage because of all the compound curves and it needs to be done onto a flat surface. At this point, a panel area was masked off and, using an oil based paint mixed to the correct shade, a sheet of waxed paper was used upon which to 'print' the grain. This was then carefully (very carefully) smoothed onto the masked area and the waxed paper peeled away leaving the 'grain' behind.

Yes, this is a very slow process because each panel has to be allowed to dry completely before adjoining panels can be masked, but that doesn't prevent you doing more than one panel at a time. These just need to be sufficiently far apart that working on one won't interfere with the other one. As you'll see from the photos, the technique works extremely well. IIRC, once the entire fuselage was grained, the panel lines were emphasised and little rows of screw heads applied using tiny cut vinyl circles. Supplemented with vac-formed plastic panels around the nose, the effect is totally convincing.

A BIT EASIER

Working on his own version of the same model, Jonathan Rider came up with another interesting technique for producing a ply panelled effect on his fuselage.

He discovered some very fine grained, self-adhesive veneer sheets that are available in a variety of wood types. At first he'd intended just to use the veneer, but the grain turned out to be just too fine and not enough like ply. However, these sheets are VERY thin (which is why he wanted them for that curvaceous fuselage shape), thin enough, in fact, to feed quite easily through his printer.

As such it was a relatively simple task to produce a grain template in the correct scale and print it onto the veneer sheets. These could then be cut up into panel size (and shape) sections and applied to the

Although 'basic' by some standards, Richard Sullivan has managed to include enough detail to produce a convincing model Halberstadt.

SHOWING JUST HOW EFFECTIVE SUCH A 'HUMBLE' DUMMY ENGINE CAN LOOK ON THE FINISHED MODEL..

ready sanded fuselage. After a coat of clear varnish they really look just right. The grain of the wood he chose is fine enough not to look out of place and his printed on grain reproduces the effect of ply nicely.

SMALLER

Okay then, whilst the above methods may be fine for larger models, they are a bit OTT on small ones. However, just dolloping on some brown paint doesn't really cut it in the scale model stakes. Paint is a possibility of course, but it needs a little refinement. A light base colour with the darker grain applied using the 'dry brush' method works well, but does require a certain amount of artistic talent.

Now, whilst I have been described as some sort of artist, I don't think it was meant in a complimentary way. As such I leave this technique to those far more artistically inclined than myself.

What I have found to work quite well, and without too much effort, is to start with a light base coat and then brush over that using that wood colour varnish you can get. You know the one, it does just what it says on the tin. Here, of course, the idea is NOT to remove the brush marks, but to apply the varnish thinly enough that you can actually use those brush marks to represent the grain.

If you're far better with a computer than I am it's also possible to produce you own wood grain effect decals. A good example of where this would work well is on the nose of a Morane Saulnier Type L. Here there are two nicely framed, varnished wood panels that just beg to be applied as a decal. Scale your wood panel in whatever program you favour, tart it up until you like the way it looks and then draw in the metal frame, bolt detail and the metal surrounds for the intakes. Add a little weathering and print yourself some 'instant' woodwork. Neat, tidy, as detailed as you like and very lightweight.

Obviously this topic has struck a chord with readers because I've received a couple of e-mails that fit in rather well with what we've been talking about. So, for the final part of this month's article we'll take a look at their models.

HALBERSTADT

This model was designed and built by Richard Sullivan of Brisbane. Richard obviously favours keeping things simple, but still retaining the atmosphere of the original aircraft. He likes his models to look the part without slavishly copying the scale construction or cramming in loads of detail. Enough detail to make it obvious what the model is meant to represent and realistic outlines are what work for him. Work very nicely too, I might add.

His Halberstadt D.IV spans 1.1 metres, uses an AXI 2212, 10x4 prop and 3S 1300 mAh LiPo for power and is covered using printed Modelspan - that's tissue for those not used to such terms.

Since the colour scheme doesn't actually depict any particular aircraft, but is just typical of the type, I suppose you'd call it 'generic scale'. Whatever, it's a very nice model, well built and it flies well to boot. You really can't ask much more than that from a model, it looks great, has enough detail to make it interesting and the builder is obviously very happy with the end result. I would be too.

BIGGER

This model, a Rumpler C.1 was built by Colin Bedson, who hails from Spain. Built about five years ago and still going strong, it spans 79", weighs in at 6.5 lbs and uses a D4250 600kv motor for power. With a 14x6 prop it cruises at less than half throttle.

As you can see from the photo, I think Colin's main point in contacting me was to prove the point I made about specialist equipment not being required to produce detail items for our models. His stunning Mercedes D.180 is, he says, made from nothing more than bits of balsa, cardboard, copper wire, ballpoint pen springs and aluminium tube. Whatever its humble origins, it looks great and really compliments his rather impressive model.

My thanks go out to both readers for taking the time to contact me, and helping me conclude this brief treatise on detailing models with 'proof of the pudding' photos.

Should you wish to see your model featured here, or just want to contact me, you'll find me at the usual place.
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