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Gary Sunderland's Fokker E.V stands rear for its first test flight, still at this stage without its scale propeller. 80" wingspan model is scale to quarter full size and suits engines 1.20 - 1.55 cu.in. Full construction feature with stage-by-stage pictorial. Plans available.

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CONTACT

50 YEARS OF 'OLD WARDEN' SCALE

In each issue of FSM, we try to limit outdoor event coverage to one per month. That can force some tricky selectivity during the outdoor flying season (I hesitate to call it 'summer' you'll understand!) as to which significant events get coverage when these events come thick and fast during a very short time window.

One of those, that our have-camera-will-travel man Alex Whittaker was forced to defer a bit was this year's ModelAir Shuttleworth Scale Weekend at Old Warden, which this year saw it's biggest scale flying gathering in truly excellent flying weather of many a year.

'Old Warden' as many of us, then-and-now tend to call it, was originally the *AeroModeller All-Scale Rally*, the prime mover being the late Ron Moulton, himself a great champion of all kinds of scale flying models.

A troll through my bound volumes of *AeroModeller* indicates that the first 'old Warden' took place in way back in 1966. I found the report of the 1968 event, billed as the 3rd, although there was nothing in either of the two preceding volumes for the 1st and 2nd. That 1968 event seems to have enjoyed flying conditions as good as this year's.

Back then, as one of the 'back room boys' at *AeroModeller*, I remember being part of the staff task force that had to get the airfield ready for the event. Back then, the succession of Shuttleworth 'managers' were not very enthusiastic about the invasion of modellers, who filled the car park to overflowing - but then they were happy to take the 'gate' money. Indeed, unco-operative might be a better word for it. Back then, the grass between the 'runways' was usually waist high and it was left to us troops to take along our own mowers during the days prior to the event and mow a take-off/landing patch for the radio control models.

Come the big day, we would find that any full size aircraft that chose to visit (no airfield air traffic control) would have 'priority'. Part way through the morning you would see some small single engine object circling low around the airfield determined to get it, but wondering how to get down when the airfield was everywhere covered in aeromodellers. The R/C models were reasonably easy to get down (although there were always those who were very hot under the collar about it), but the free flight boys happily enjoying their fun like ants, with their kit, all over the airfield, were more difficult to clear!

....and all for the sake of a single individual who had dropped in for 'lunch' at the (then) not very good airfield café! Sometimes, such an incident would occur two, or even three times during the day when there was so much demand for air time from the R/C flight line that you had to be booked in by 10 am and then might be lucky to get more than one flight during the whole day. There was so much to see though, that most seemed not to mind.

It's all different now of course; well cut grass and nicely wide runways on the much extended airfield, and a much expanded air museum from which to get inspiration for your next scale subject - or take close-up picture for one you have in progress.

So, with half a century of annual scale events, 'Old Warden Scale' is the one that started it all.

Hope you found at least some amusement in this month's opening rant ... Don't break anything 'Scale' in the month ahead!



BEST OF THE BEST AT OLD WARDEN 2016

Left to right: Richard Ginger - Hawker Cygnet (Shuttleworth Trophy); Paul Blakeborough - Waco YKC (RCMW Trophy -Best R/C Scratchbuilt Model); Gavin Barden -Nieuport 17 (Brian England Memorial Trophy - Best EP R/C model);Jaimie Cuff - Fairey Fantome (Flight Director's Trophy - Best R/C Flight).

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Guild of Aviation Artists

Aviation Paintings of the Year 2016

As all scale modellers know, replicating the shape of the subject aircraft correctly is vital. In scale aircraft modelling, one inevitably becomes more and more aware of the details of a particular aircraft's shape as one goes deeper and deeper in the project. Deviations, even very minor ones, stick out like a sore thumb.

It can be fairly said that the same applies in Aviation Art, where inaccuracies of shape and outline, wing dihedral and the like become immediately obvious to anyone with an intimate knowledge of a particular aircraft. So it is fair to say that anyone who can accurately capture, in art, the true shape of an aircraft in a convincing, true-to-life scene has an outstanding talent.

Surprisingly, there is a lot of that sort of talent about, confirmed every year in the works of the 181 *Members and Associates* of The Guild of Aviation Artists.



**'Typhoon Fury':
Hawker Typhoons
somewhere in
Europe, post-
D-Day,
by Phillip E. West.**





'Stanford Tuck meets a Duchess': Gloster Gladiator and LMS Locomotive by Roger Middlebrook.



'Superstars of '36': prototype Spitfire and Jaguar SS100 by Lee Lacey.



'Hun Hunters': Sopwith Camels vs. Gotha Bomber by Stephen Chard.



'James and the Whale': DH 2 attacks Roland C.II Walfish, by James Field.



'Rutland at Jutland 1916': Short 184. Lt. Rutland/ A P Trewin, by James Field.



'Black Pony and S Boats, Vietnam': Rockwell OV-10A by Michael Daley.



'Getting 'em ready': BE2c by Bruce Mackay.



'Safe Return': Hawker Hurricane Mk.1 close over the boundary fence, by Paul Thurston.



'Schneider Trophy Challengers'; Gloster VI 'Golden Arrows', by David Ellmood.



'North Side Departure': BOAC Lockheed Constellation and Boeing Stratocruiser at Heathrow by Martin Cairns.



'Sunset Start' & 'Sunset Return': Felixstowe F2a flying boat on patrol, by James Field.



'Training Sortie'; Avro Anson Mk.1, by Roy Garner.



'Hanno Resting'; Imperial Airways Handley Page HP42E after Croydon arrival, by John Cutts.



'High in the Sunlit Silence'; high performance 'glass ships' testing the lift. Superb perspective and depth! By Robbie Robertson.



'Nile Embarkation Scene, 1938': Short S.23 Empire Flying Boats, by David Ellmood.

exhibited annually at their 'Aviation Paintings of the Year' exhibition, which this year took place over the July 18-24th period at The Mall Galleries, in London.

This time, there were no less than 440 works on show, depicting all era of aviation.

Preferences in Art appreciation of any kind are subjective and what appeals to one person can leave the next quite cold. In any case, to show all the exhibits, would fill this entire magazine if illustrated at a decent size, so please excuse what's shown here as our 'Editor's Choice'.

This annual exhibition is highly recommended for scale modellers - why not make a date for next year's event, due at the same London venue over Monday July 17th to Saturday 22nd ■



'Twilight Thunder': English Electric Lightning F6, by Simon Mumford.



'Fleet Defender': De Havilland Sea Vixen FAW 2 No.893 squadron, RNAS.

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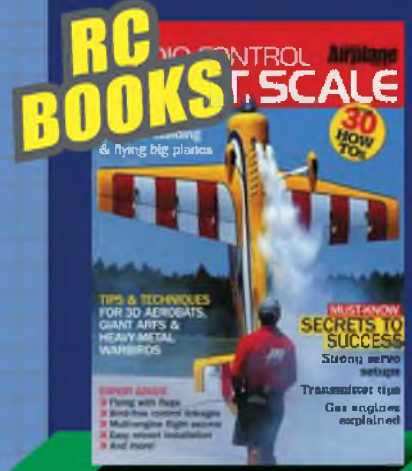
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With the indoor flying season now with us, test your building skills at next-to-nothing cost with Mike Roach's ultra-lightweight creation

My Sopwith SS3 featured back in the January 2005 issue of Flying Scale Models gave me a great deal of pleasure, performing equally well indoors or out. Its flying weight of just 3 oz. and a light wing loading (2 oz./sq. ft.) made slow flying very easy and

at 24" wingspan it could be left in the back of the car for those occasional calm sunny days. But I still hankered after a model that was unequivocally for indoor flying; slower and lighter, but still recognisably a scale model. Then I came across the 'No-Cal' approach to indoor profile scale in which the fuselage is just a

two dimensional flat plate and the penny dropped. A well decorated profile model still looks the part at indoor distances. The original model used the Falcon PU01 and R/C gear weighing about an ounce but as Peter Rake's writings in FSM have many times emphasised, the current widespread range of indoor R/C 'foamies' are a



perfect source of motors, power sources and R/C gear that will suit the model presented here - it's just a matter of personal ingenuity to match them to what is presented here as this month's full size free plan.

I fancied a change of aircraft, so chose the landplane conversion of the 1914 Sopwith Schneider Trophy winner; the Sopwith High-Speed, a rare bird indeed and never modelled before. But after making the tailplane and the wings, I realised that, taking the width of the Falcon motor and fittings into account, a profile fuselage would actually weigh very little less than a carefully constructed three-dimensional one. So that's the compromise which this model represents: No-Cal style wings and tail, but with a full-width fuselage, and it works very well indeed!

But please note: this is not a sturdy model like the SS3. It needs careful handling and must be fully rigged in order to fly. If you have never built this light before, you will discover whole new areas of clumsiness you didn't know you had, but it can be made in a couple of days and repairs take just a few minutes. And - the whole point of the exercise - it can fly VERY SLOWLY.

The real thing

The astonishing story of Sopwith's winner of the inaugural Schneider Trophy contest at Monaco in 1914 is a saga of its own, but what happened to it afterwards? As one of the most important aircraft in aviation history, does it hang in a museum somewhere, lovingly cared for by elderly Sopwith devotees? I'm afraid not. On its return from Monaco, Harry Hawker, Tom Sopwith and the boys stripped off the floats, retained the 100 h.p. engine, added a 'V' undercarriage and turned it into a racer.

There are pictures of it in the *Windsock Mini Datafile No. 9*, which show that some minor modifications were made to the Schneider's fuselage. There was a small inspection panel, probably some sort of transparent window, on the starboard side, and a new upper engine cowl was been fitted, to provide a couple of cooling slots and some beading on the centre line to add some stiffness.

Unlike the floatplane, it had a lower cowl fitted. There are subtle differences in the large 'Sopwith' logo on the starboard fuselage side, indicating that the aircraft was probably re-covered after its short life as a floatplane, but was repainted to look as much like the Trophy winner as possible and may even have been called the 'High-Speed'. It carried racing numbers on a white background on the fin and under the lower wing tips: '21' (Harold Barnwell) and subsequently '14' (Harry Hawker).

The aeroplane was destroyed soon afterwards in an incident that nearly cost Hawker his life; he was doing an impromptu display over Kingston-on-Thames when he went into an inverted spin after an engine-off loop and crashed into some trees. The wreckage was recovered to the Sopwith factory but nothing more is known of it. Is there somewhere a faded piece of linen covering that a sentimental employee rescued from the broken aeroplane, as a treasured memento?

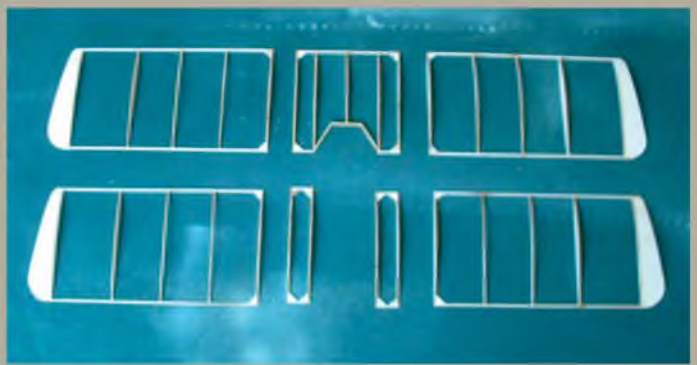
The Reduced-Cal principle

What is a 'No-Cal' model? No-Cals are minimal weight, recognizable scale models with a maximum wing span of 16", flown with rubber power. They typically have flat, profile bodies, covered on just one side. The wings and tails are also single surfaces and markings are placed on the tissue before the model is covered. In general, 'No-Cals' are easier to build and fly than 'Peanut' models. Outdoor flights of a minute (and models lost in thermals) and indoor flights of two minutes-plus are relatively easy to attain. A really good website with lots of No-Cal kits and plans can be found at <http://members.aol.com/adamps/nocal.html> This model is a typical British compromise that still tastes good but won't make you fat!

Things to bear in mind

The whole point of building this model is to make an airframe that weighs an ounce, covered and ready for the R/C gear. This takes some discipline on the builder's part, not to add unnecessary weight by reinforcement, scale detail or heavy materials.

My Schneider Racer was made with wood, paper and tissue, all out of my spares box. The wheels were made from Depron and the axle from very thin wire. Strength is added to



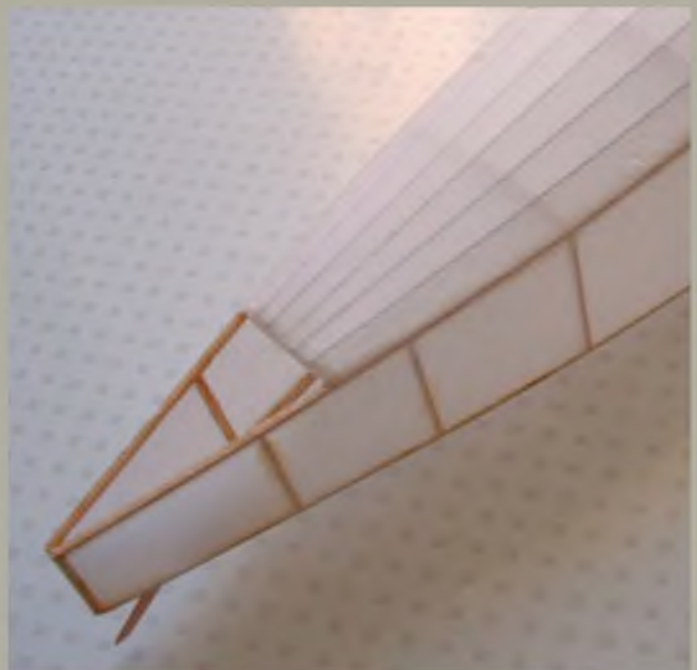
The wings are very simple and quick to build, but are fragile until covered.



The fuselage is just a 1/16" square box. Joining at the sternpost, then adding F3 and F2 is the easiest way to get a true structure, and the longeron curve will be to scale.



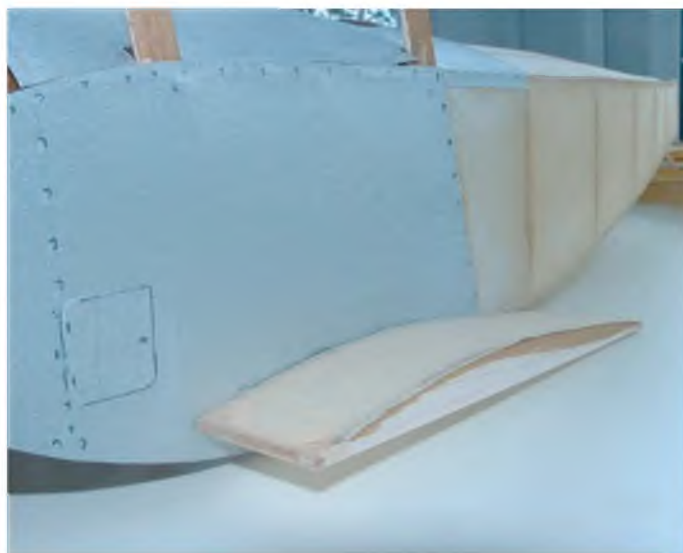
Once the formers are added, the motor dowels can be fitted and the motor taped to them to check its location is correct.



Cover the rear fuselage with lightweight tissue and water shrink.



Now the top and side panels can be added from copier paper. The access hatch is just a paper addition, while the inspection panel is cut out of the paper and backed with a patch of very thin acetate.



The stub wings are glued directly to the fuselage sides without further reinforcement.



The tailplane is covered on the top only, but the fin and rudder on both sides. A little shrinking is needed here!



The cowling was moulded from Easter egg packaging scrounged from a skip.

the structure by thread bracing and the thinnest ply parts where necessary. 30 grams is your top limit, but by using Esaki Lite tissue (get is from Free Flight Supplies www.freeflightsupplies.co.uk) and selecting the balsa more carefully, an even lighter model could be built. I re-learned an important lesson during the building, that no matter how flimsy the structure may seem when you pick it up off the board, the covering adds tremendously to the overall strength, so 'build light and fly right'!

The wings and tail

Since the wings only take a couple of hours to make and there is no tedious rib cutting, I suggest you start here and if you find that you can handle the wood sizes and covering techniques, then carry on with the rest of the model. Choose firm 1/16" square and pin down one set of leading and trailing edges over the plan. Use a template to cut out two full-depth and three profile ribs and glue them into place, making sure of 'perfect' joints. Reinforce the inner rib with two gussets and allow to dry, even if you used cyano. All four outer panels, the upper centre section and the two lower stub sections

should take an hour or so to make. Once off the plan, add the wing tips from light 1/32" balsa - or you could laminate some tips and use 1/32" ribs in scale positions if you preferred scale fidelity.

The tailplane, fin and rudder are very simply and quickly built using 1/16" strip and laminations of 1/32" x 1/16" for the leading edge and rudder outline. Don't forget that the fin sternpost extends the full depth of the fuselage: this adds tremendously to the strength of the fin/rudder assembly.

Covering

The main compromise over scale fidelity lies in only covering the upper surfaces of the wings and tailplane. This is very obvious on the ground, but not apparent when flying and saves a lot of time and effort - and some weight too! If you can pre-shrink the tissue (make a frame, tape the tissue over it and water-shrink) you will get a better finish than I did. The real thing was immaculately prepared and, to judge from the photographs, had no wrinkles or sagging at all!

The first thing to do is to stain the tissue to roughly the correct shade of 'pale primrose'. The rear cover of the Datafile

shows a very light brown/yellow colour, much like the sand on Avon Beach here on the south coast: this is easy to achieve. I use a 50/50 mix of thinners and Antique Pine Colron wood dye to do this. Lay the pre-cut white tissue on a clean paper kitchen towel, fold another sheet of KT into a pad and soak it with a little of the dye mixture, then rub the pad over the tissue. Try it on a spare off-cut first, to get the right dye/thinner mixture and a feel for the technique. It dries in a few minutes and does not affect the tissue at all. Do all the markings and numbers off the model using waterproof pens and you are ready to cover.

While you're at the wood dye, take time to stain all the structure with full-strength dye. It looks much more realistic than bare balsa and only takes a minute or two.

My method of attaching the tissue is to use white glue. It has no smell, so does not offend the more sensitive members of my home, and I have found it to be much faster and more effective than using dope. Accurately cut the tissue slightly oversize, by only a few mm. Thin some glue with 50% water and paint this round the outline of the structure AND over the full-depth wing ribs. Then just lay the tissue

over the top and gently smooth it into the glue. When that is dry (only a minute or two), flow a little more glue mixture over the edges and wrap the excess over just like covering with films. You must not water-shrink the covering on the wings, or they will warp and bend uncontrollably!

The fuselage

With the wings and tail complete, the fuselage will be easier to construct, using the same careful, weight-conscious approach. The sides are made from the same grade of firm 1/16" square as the wing leading and trailing edges, with sheet reinforcement for the wing roots and motor mount. The centre section struts are a lamination of two lots of 1/32" sheet, which is stronger than plain 1/16", but the interplane struts can be one thickness of 1/32". I used 3mm Depron to make the main formers, as it has a good gluing area and is light and easy to work with.

My preferred method of squaring up the fuselage is to glue the sternposts together, and join the sides with F2 and 3. When this is dry, add the remaining formers and reinforcement, with 0.5 carbon fibre rod (from Falcon) for the rear decking stringers. Now cover the rear of the fuselage with stained tissue, taking care over the overlaps. The white glue method works well here. The fuselage tissue may be water-shrunk on the model but need not be doped.

The 'alloy' side panels and top decking are best made from copier paper. I got some 100 grams/sq. metre paper from PC World for my printer and this works very well indeed, giving as good a finish as filled and sealed balsa for less weight. Start off by spraying an A4 sheet with Tamiya Flat Aluminium. I use the paint straight from the jar, not thinned, but very well shaken. A dense covering is not needed, as a slightly 'underdone' finish gives the impression of the whorled pattern on the real thing.

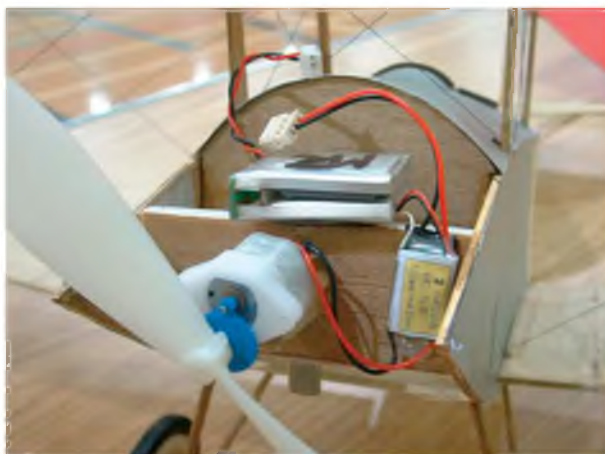
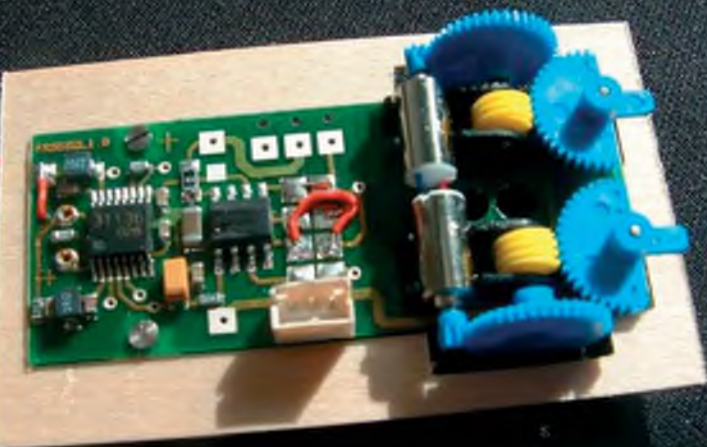
Cut out the top decking to the pattern on the plan and take some time to get the fit exactly right. Gently score the edges where they fold over the framework, then fix with white glue (not cyano - it stains through the paper) taking care to get the edges folded neatly. You may find it helps to join the rear section (aft of the cockpit) first to establish its curve before the final fitting.

The sides are much easier to make and fit and should only take a couple of minutes. The two access hatches are just more paper patterns and I cut out the inspection panel on the starboard side and glued a scrap of clear plastic behind it. The distinctive 'windcheater' fairing in front of the pilot can be made from paper, carefully glued onto the decking.

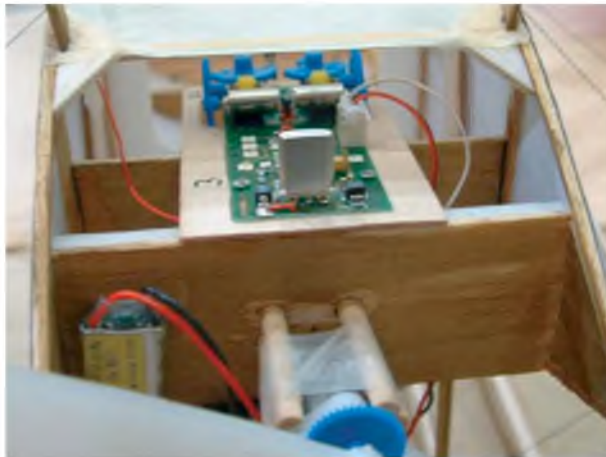
All 'Tabloids' had prominent rivets on the side panels and I added these with a pen, but glue dots would look better. I made the cockpit coaming from Depron. First sand the edge of a sheet of Depron to a half-round section and paint it a leathery colour (Tamiya Red Brown is good). Trim this painted edge off so you get a 1.5 mm strip of 'leather', then fix this round the cockpit opening with odourless cyano, keeping your fingers away from the glue - this is about the trickiest part of the whole model!

I used carbon fibre rod with wire ends for both rudder and elevator control. Fitting this is slightly easier than making thread closed-loop controls (but there's not much in it) and subsequent adjustment is not too difficult. I find it essential to have external adjustment when using Falcon servos, as the little output arms don't provide much in the way of trim.

Falcon's 'Breeze Block' receiver/servo module used on the prototype model screws onto on the 0.8 ply mounting. The current breed of on-board R/C systems that come with the present range of 'foamie' ready-to-fly indoor models are even more lightweight.



The motor, SC and battery fit easily under the cowl. After testing, I moved the battery back slightly to fit vertically against the face of F2.



Looking from the underside, the Breeze Block mounting plate glues up under F1 and F2. Careful with the glue here!



I tried to water-shrink the tissue on a wing panel, which promptly warped and curved. Pre-shrunk tissue is the answer, but plain unshrunk, pulled nice and taut, works well in a dry environment.



The previous Sopwith SS3 (left) and the Racer.



A one-ounce airframe (less R/C system) requires a really calm evening but outdoor flying is entirely possible, given the right conditions.

Rigging

You cannot fly this model without the rigging. Resist the temptation to glue the wings on for a few minutes, and fit the thread rigging to the centre section struts. It looks good and helps keep the model in one piece. The struts are wide enough to push a fine needle straight through, then pull the thread 'just tight' and secure with a drop of cyano. Using the same needle and thread, fit the lift and flying 'wires' to the fuselage and cabane struts and keep them out of the way while you glue on the wings. Start with the upper centre section, checking for squareness at every stage, then the two lower stub sections.

When fully dry, add the lower wings with interplane struts already fitted (use a card jig to get the correct angles), then the upper wings. A dihedral jig is useful for the lower wings, and if you have made the

interplane struts to the right length, the upper wings can just fit straight on top. Finish the thread rigging (only just tight enough), check the model from all aspects then cyano it up.

Cowling

A simple balsa former can be made from layers of soft sheet and carved and sanded to shape, then used to make a push moulding from Easter egg packaging or even from model shop acetate. The Schneider Racer cowl was slightly different from all the other Tabloid cowls and has distinctive beading and two cooling slots, which can be added later. Make a lower cowl and spray them both with the Tamiya Flat Aluminium you used earlier. The lower cowl is glued in place (after your first trimming flights, so you can get at the servos more easily) using Canopy Glue and the upper taped to it internally, leaving a narrow gap for the prop shaft. I merely tape my cowl in place, but a small magnet or catch may be used if you have some spare weight left over.

Flying - how do they compare?

After a short hop round the local cricket pitch to prove that it was roughly in trim, I took this model and the SS3 to a Club Indoor meeting. The SS3 flew first, at 3 oz. all-up weight. I had recently tightened up the thread control linkages and the more accurate centering made flying indoors much easier than before. The model takes off perfectly with just a touch of 'up' and cruises round the hall at running speed on full throttle, but can be slowed down to a brisk walk.

The Schneider Racer was next and, after a little trimming out, direct comparison was easily made. The lighter model is much more responsive and I was soon doing chandeliers and very tight turns in

one corner of the hall. Slow flight was very slow indeed, down to walking pace and looking very realistic.

The way to go

These little models are, in my opinion, the best way to enjoy scale indoor flying. They are not too difficult to make, even at a mere 28 grams for the model itself. Rigging is actually easier on the 'reduced-cal' model than the scale one and flying is just a joy! They will keep up with faster models if you want them to, but they are at their best in slow, graceful and realistic flight.

Scale manoeuvres are possible and even on the first flight of the Schneider Racer I felt confident enough to try a wingover or two. Most importantly, they make the average four-court sports hall feel much bigger as they cruise slowly round.

I waited until there was a completely still evening before flying out-of-doors and had a very enjoyable time at the local cricket pitch exploring the handling. Despite balancing at 30% mean chord (the balance point on the plan is slightly too far forward), I had to take some down-thrust off and add some side-thrust to get a nicely balanced flight pattern, ending up with perhaps one degree down and three or four degrees right as shown on the plan.

Then it flew hands-off in the evening sunshine, touch and goes were easy, slow flight was down to 2 or 3 m.p.h. in the very slight air movement. Of course, on the way home I gave in to my irresponsible 15-year-old alter ego and taxied it gently along the tarmac, took off and flew it backwards and forwards along the street until the battery started saying it was time for a charge. Perfect - why build larger models when you can have this much fun out of the spares box? ■

The markings were printed onto spare tissue on my DeskJet printer and glued onto the model with very thinned white glue.



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To compliment Chris Golds' 1:9.6 scale, 60" wingspan, electric powered construction feature presented last month, we wrap up the Rapide story with this Type History colour schemes and and close-up detail photo study

De Havilland D.H.89

Elegance of shape make this, perhaps, the most attractive of pre-WW2 biplane airliners

The early days of civil air transport must have been a real struggle for those trying to establish a commercially viable service with aircraft that were slow, noisy, uncomfortable and very weather dependent - a far cry from the bus-ride culture of today as we strap ourselves into the seats of Boeing 737, 777, Airbus etc on our way to a few weeks in the sun.

Among the early attempts at a small, viable airliner was the De Havilland DH 84 Dragon twin engine biplane, capable of carrying six passengers, which first flew in 1932. From this basic layout, the four



ABOVE: A 'Dominie', military version of the Dragon Rapide in full warpaint. The 'Dominie' name surfaced again, some three decades later, when the R.A.F. chose the BAe.125 as its modern-day equivalent of the Rapide. The '125 had started life as a product of the De Havilland drawing boards at Hatfield as the DH 125. **BELOW:** British European Airways 'Islander Service' fleet included G-AFEZ, used for runs between Lands End and Scilly Isles. Subsequently, it was sold overseas and saw service as F-LAAL in Loas, south east Asia. Final fate is unknown.





G-AGIF was made as a DH 89A Dominie, seen here in Scottish Airways Ltd. livery post WW2.



ABOVE LEFT: Made in 1944 (c/n 6801), Rapide G-AJSL started life as a military spec. Dominie NR713 until going on to the civil register with Field Aircraft Services Ltd. In 1952 it went to Eagle Aviation Ltd. as the personal hack transport of Sir Freddie Laker (later of Laker Airlines). After that, it moved around between several operators, before going to the Parachute Regiment Freetail Club in 1966. After several more owner/operators it went to Australia as VH-UXZ where it was last known undergoing restoration. **ABOVE RIGHT:** An aircraft with 'history'! Olley Air Service Ltd commenced operations in 1934 and operated this DH Rapide G-ACYR, but in July 1936, this aircraft was used by General Franco to fly from the Canary Island to Tetuan, Morocco, at the commencement of the Spanish Civil war. Beautifully restored, the aircraft is now on show at the Museo de Aire in Madrid.



engined DH86 was evolved a year later, using a six-cylinder development of the DH Gipsy engine capable of delivering 200 h.p.

The next move was to scale down again to a twin engined version using the six-cylinder engine to create the DH 89, which emerged in 1934, airborne in April that year at De Havilland's Hatfield airfield. The twin six cylinder engines resulted in the name 'Dragon Six' for the initial type, the first customer for which was Hillman Air services.

Aircraft designed for airline work are rarely used as racers, but in its debut year, the first production Dragon Six was

entered in the 1934 Kings Cup air race, where it did well in initial heats, but was forced to retire later due to damage caused by a hail storm.

A specially modified Dragon Six was flown in the celebrated 1934 MacRobertson England-to-Australia Air Race. With fuel tanks holding 230 Imperial gallons, this machine had a range of 1,000 miles, placing 6th overall even after crash damage and a forced landing along the way.

With production in full swing, the official name of the design was changed to Dragon Rapide. Military interest resulted in a coastal reconnaissance prototype

armed with a gun on a mounting ring in the upper fuselage, behind the cabin door, plus a forward gun installed to the right of the pilot's seat. However, in comparative trials against Avro's Type 652 Anson, the latter won the production contract.

Floats and skis

Back in 1935, when 'Empire' still meant a great deal, the Rapide found a ready market in Canada, with 16 examples sold through De Havilland's Canadian subsidiary. These had an extended dorsal fin shape and had an undercarriage arrangement that allowed



THE RAPIDE TODAY

It is still possible to see Rapides in action, as anyone who attends the regular summer air shows at the Imperial War Museum airfield, Duxford, Cambridgeshire will know ... and you can get a flight in one on any of those air show days.



either floats or skis to permit operation across the vast expanses of Canadian territory, conveniently spread with countless lakes to substitute for landing grounds and, with skis, to permit operation during the long, snow blanketed months of the Canadian winter.

Into uniform

Although it failed in the role of coastal reconnaissance, the Rapide found favour in the rapidly expanding R.A.F. as a communications aircraft during the Service's continued hectic build-up prior to the 1939 outbreak of WW2.

The first military spec. aircraft were taken on charge in late 1938, but further quasi-military Rapides were commissioned

under the R.A.F. pre-WW2 Expansion Scheme by which civil organisations took on the tasks of training, eventually being formally absorbed into the Service.

After declaration of war with Germany on 3rd September 1939, all UK civil flying ceased and many of the civilian registered Rapides were impressed into military service. At least 24 of these were used as courier aircraft between UK and France during the May/June 1940 'Battle of France'. Ten were lost, either due to enemy action or abandoned in the evacuation of British forces.

The war effort increased demand for aircraft of all types and De Havilland received an order for 150 military specification Rapide trainers in 1940. Given the official R.A.F. name of

Cockpit instrument panel and control column. No side-by-side pilot/co-pilot arrangement here - the pilot was seated centrally.



Rapide line-up on Duxford's grass in 2007, when those present were able to appreciate no less than five DH 89s, airborne in loose formation. A thrilling sight ... and amazingly quiet!



G-AGJG was originally a military spec Dominie, manufactured in 1941, but re-registered to Scottish Airways Ltd in 1943. Like all surviving Rapide/Dominies, it had a list of owner/operators as long as your arm, a progression halted in 1986 when Mark & David Miller acquired it and embarked on a long-term restoration in a superbly presented example, airworthy and a regular attendee at Duxford air shows where it provides 'Rapide Experience' flights around the local air space.

'Dominie', production continued until July 1946, by which time 523 had been built.

Back on Civvy Street

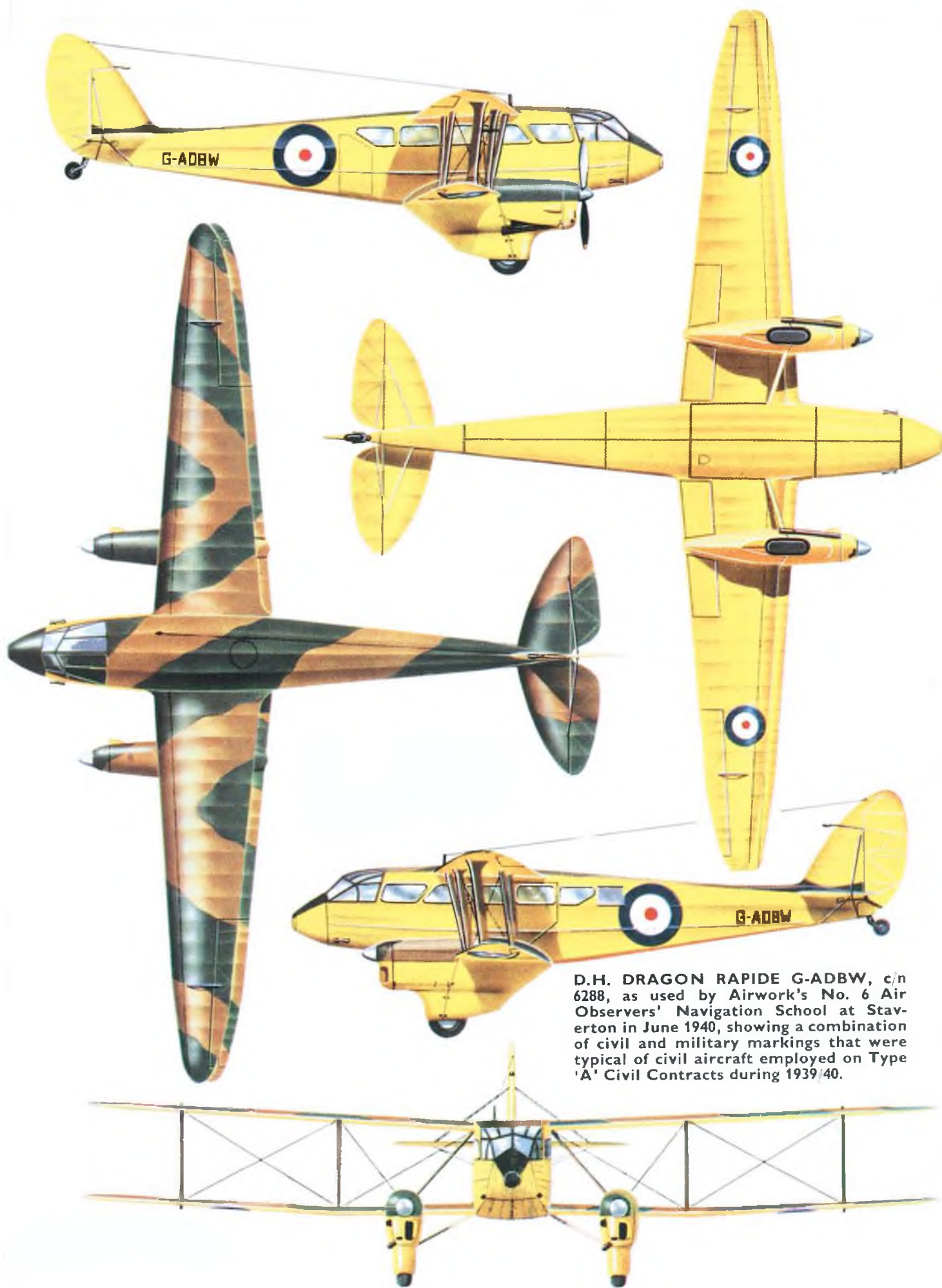
With the ending of WW2, vast numbers of military aircraft became surplus to requirements. Aircraft retained by the armed services were, inevitably, those that were the most modern, with the highest performances, while others were put up for disposal either to civilian

operators (non-combat types) or the breakers. The R.A.F phased out all Dominies during 1946/7, although the Royal Navy continued to use the type until 1960.

The Dutch airline KLM was the first to use war-surplus Dominies, renewing their operations in September 1945. A number of independent British operators also began to use the type, but quickly became victims of a government

wedded to the principle of Nationalisation on all fronts. Commercial restrictions were designed to channel all into State-sponsored entities and British European Airways, formed in 1946, became the beneficiary of domestic air routes, taking over some 39 Rapides/Dominies from the Independents to form an 'Islander Class' of aircraft serving Scottish, Scillies and Channel islands. ■

DH DRAGON RAPIDE FLYING COLOURS

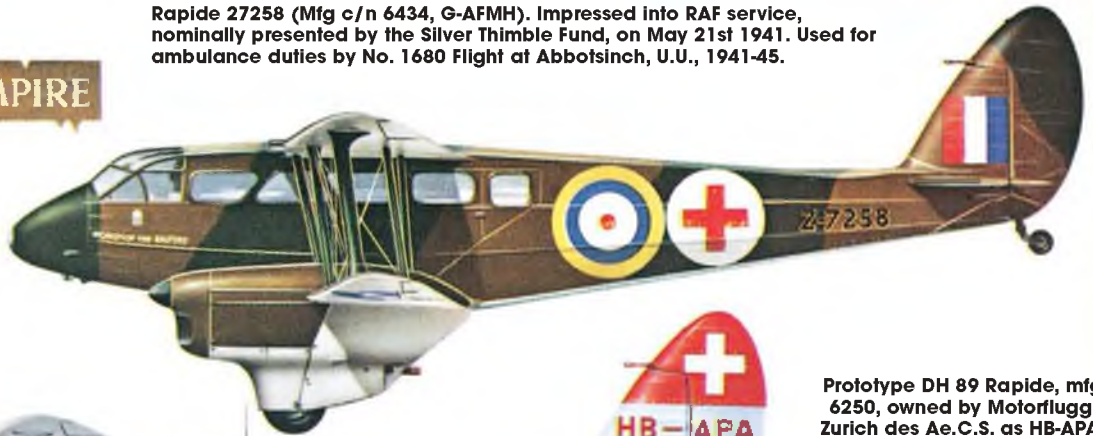


D.H. DRAGON RAPIDE G-ADBW, c/n 6288, as used by Airwork's No. 6 Air Observers' Navigation School at Staverton in June 1940, showing a combination of civil and military markings that were typical of civil aircraft employed on Type 'A' Civil Contracts during 1939/40.

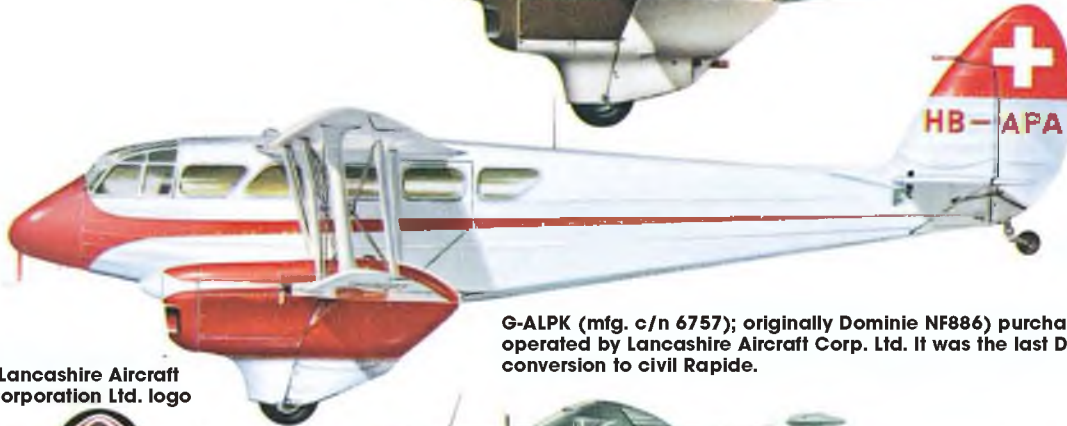
WOMEN OF THE EMPIRE

Nose art detail on 27258

Rapide 27258 (Mfg c/n 6434, G-AFMH). Impressed into RAF service, nominally presented by the Silver Thimble Fund, on May 21st 1941. Used for ambulance duties by No. 1680 Flight at Abbotsinch, U.U., 1941-45.

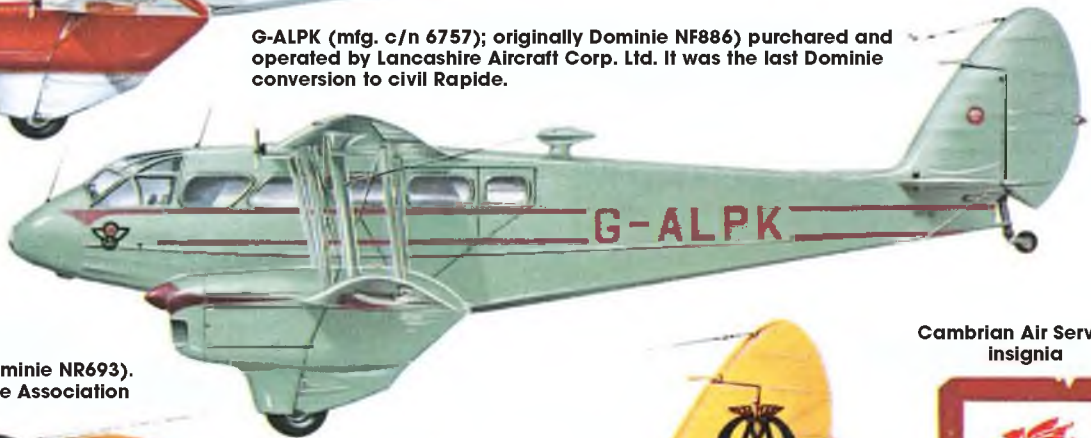


Prototype DH 89 Rapide, mfg. c/n 6250, owned by Motorfluggruppe Zurich des Ae.C.S. as HB-APA from 1955 and withdrawn from use, 1962.



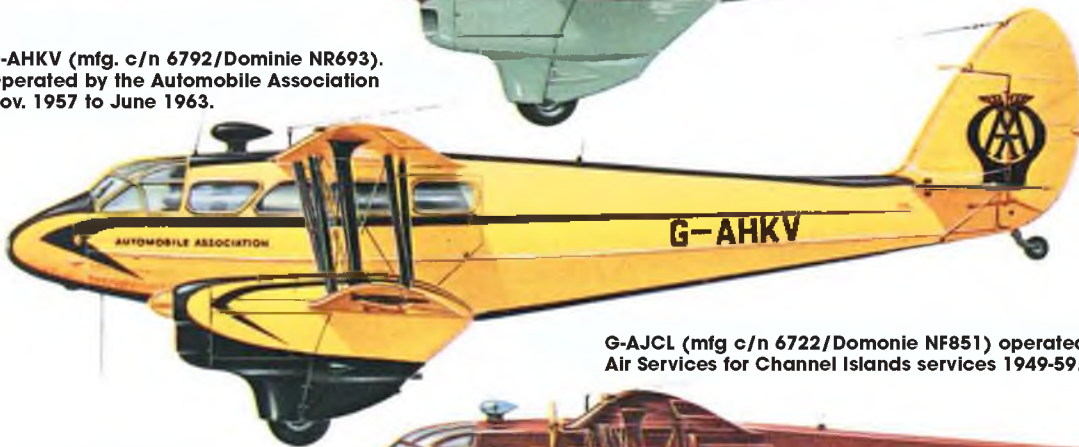
G-ALPK (mfg. c/n 6757); originally Dominie NF886) purchased and operated by Lancashire Aircraft Corp. Ltd. It was the last Dominie conversion to civil Rapide.

Lancashire Aircraft Corporation Ltd. logo



G-AHKV (mfg. c/n 6792/Dominie NR693). Operated by the Automobile Association Nov. 1957 to June 1963.

Cambrian Air Services insignia



G-AJCL (mfg c/n 6722/Dominie NF851) operated by Cambrian Air Services for Channel Islands services 1949-59.

Army Parachute Association insignia



Rothmans crest



G-AGTM (mfg. c/n 6746/Dominie NF875) donated by Rothmans of Pall Mall to the Army Parachute Association and used by the 'Red Devils' skydiving team. Shown here in 1966 colour scheme.

De Havilland D.H.89

CLOSE-UP PHOTO STUDY FOR THOSE WHO LIKE TO PILE ON THE DETAIL



1: Rear view of engine nacelle, also showing the nacelle-to-fuselage bracing struts. 2 & 3: The port side cabin door, also showing one of the passenger seats. 4: Front fuselage showing the glazed cockpit and passenger side window frames. 5: Engine nacelle ahead of the wing leading edge, showing inspection panels. 6: A full view of the engine nacelle, showing the integral fairing for the main undercarriage. 7, 8 & 9: Further rear views of the engine nacelle. 10: View of the mainwheel fairing from the rear. 11: The mainwheel fairing again, also showing bracing strut and exhaust. 12: The engine exhaust in close-up. 13: The distinctive De Havilland fin and rudder. 14: Mass balance on the rudder leading edge. 15: Navigation light midway up the fin trailing edge. 16 & 17: The tailwheel unit. 18: Elevator panel joiner that runs through the fin. 19: View of the fuselage rear. 20: Rear fuselage, showing tailplane underside wire braces. 21: Rudder horn and control wire run.







23

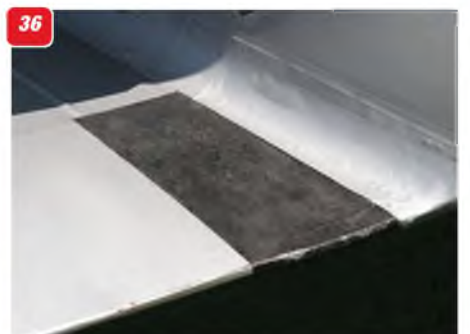


24



25





22: Interplane struts and bracing wires. **23:** Typical lower wing strut and wire brace anchor point.
24: Bracing strut anchor points under the upper wing root. **25:** Pitot head.
26: Detail of wing strut fairing shoe. **27 & 28:** Two further views of the pitot head, starboard wing.
29: Wing bracing wire cross-over. **30:** Prop-driven generator at the starboard wing leading edge.
31: Engine nacelle, wing underside view. **32:** Lower wing underside showing control horn link.
33: Upper wing upper surface showing aileron actuating horn/link.
34: Inner lower wing panel and fuselage side, showing the prominent wing rib and fuselage strake lines.
35: Undercarriage brace at lower wing root. **36:** Wing trailing edge cabin access tread panel.

AERONCA 11AC CHIEF ...and the Aeronca Story

Twenty years of uninterupted light aircraft design and production, commenced back in that 'Golden Aviation' era, produced some much loved personal 'aerial carriages' that have become favourites with scale modellers

Formed in late 1928, at Cincinnati, Ohio, the rather grandly named Aeronautical Corporation of America became the first company to build a commercially successful general aviation aircraft. Whilst the financial wherewithal came from the wealthy local Taft family (which included Senator Robert Taft), the nucleus of

design and engineering expertise was one Jean A. Roche a U.S. Army engineer at McCook Field airfield in Dayton, Ohio, who had developed an aircraft with automatic stability for which he was granted U. S. Patent No. 1,085,461.

Roche had published his engineering ideas for the aircraft in the U.S. aviation publication *Aerial Age Weekly* and also in

Slipstream Monthly magazines and prototype construction commenced in Ohio in 1923 with the assistance of fellow engineer Quieten Doshse. The aircraft used a triangular cross section welded steel tube fuselage which became the hallmark of early Aeronca light aircraft, with wooden wings, fabric covering, and used wire bracing throughout.



For power, a *Henderson* motorcycle engine was installed, but did not perform well, so a custom 29 hp two cylinder *Morehouse* engine was developed for the aircraft and on September 1, 1925 the aircraft was successfully test flown. Subsequently, many pilots including the air racer and WW2 Air Force General Jimmy Doolittle tried out the aircraft.

Aeronca production began in 1929 with the Aeronca C-2 monoplane following the general layout of Rocke's previously proven design, often called the 'Flying Bathtub'. The next model was the *Cadet* of 1931, a shorter wingspan, higher performance aircraft intended for more experienced pilot and, curiously, was designated the C-1. However, this variant got no further than prototype stage after a fatal crash during a demonstration flight.

That interruption was followed by the C-3 *Collegian* which sat pilot and passenger side-by-side in a restyle of the basic configuration, but still preserving the basic trade mark shape and led to further restyling in the form of the C-3 *Master*, featuring a drag-reducing fuselage shape with fully enclosed cockpit.

In 1937 there was a major flood at Cincinnati's Lunken Airport, resulting in the entire airport area being washed away. Aeronca's factory was destroyed, along with the tooling and almost all of the very early blueprints and drawings, so a decision was made to move the operation to a more stable area. Middletown, Ohio was chosen, and the company has remained there ever since.

All of the aircraft produced from the start of production in 1929 through to 1937 are known as the 'Lunken' Aeroncas. The first Aeronca built in Middletown was produced on June 5, 1940, and after this time all Aeroncas were built there right up until the cessation of aircraft production there in 1951.

By the late 1930s, aircraft industry everywhere was moving on from the somewhat 'wing-and-a-prayer', ultra low cost concept so successfully expressed in the Aeronca C-2/C-3. In any case, following a series of airborne airframe failures, new Civil Aeronautics Authority (CAA) requirements made it difficult for the basic Aeronca airframe structural concept to conform. Those aircraft manufacturers that had managed to survive the Great Depression era were moving on to more durable aircraft, to which Aeronca's responses were their high wing *Model K*, with much cleaner aerodynamic shape and their low wing, fully enclosed cabin, fully-trousered undercarriage *Model L*.

The *Model K*, the prototype of which first flew in mid 1937 was, in effect, the divergence from the C-2/C-3 ultra-basic format to the cute, attractively shaped homely looking series of high wing 'visual-flight-rules' (VFR) private light aircraft format that was carried over to be the hallmark of the post WW2 era Aeronca series.

The *K* series was progressively developed in quick succession during the late 1930s to Aeronca Chief, Aeronca Super Chief, Aeronca Tandem, Aeronca Scout, Aeronca Sea Scout, Aeronca Champion and Aeronca Defender, the



Jean A. Roche's original homebuilt aircraft, as first powered by a Henderson motorcycle engine. The shape, that led to the Aeronca C-2 and C-3 is clearly there.



Jean Roche refined his design to this stage, which served as the prototype for the Aeronca C-2.



The Aeronca C-3 went through a series styling improvements that cleaned up the shape to streamline the fuselage. This is the C-3 Master, with enclosed cabin.



The departure from the 'wire-and-fabric' style of the C-2 and C-3 came with the Aeronca Model K which, in one stride, looks far more of a modern aeroplane.



latter a military specification air observation and liaison variant.

First of the post-WW2 civvy-street offerings was the Model 7 *Champion* a well cleaned-up extension of the basic shape using a fair amount of components carried over from the Defender.

ENTER, THE CHIEF

The model 11 *Chief* shared its name with the pre-war models but the design was not a derivative. Rather, the post-war

11AC *Chief* was designed in parallel with the 7AC *Champion*, the *Chief* with side-by-side seating and yoke controls, and the *Champ* with tandem seating and joystick controls. The intention was to simplify production and control costs by building a pair of aircraft with a significant number of parts in common; in fact, the two designs share between 70% and 80% of their parts.

Tail surfaces, wings, ailerons, landing gear, and firewall forward, engine, most

accessories and cowling, were common to both aircraft. The *Chief* and the larger, elegant four-seat Aeronca Sedan introduced in 1948 also shared, selected parts; the control wheels, some control system parts, rudder pedals and control systems, so parts passed from plane to plane to save costs. Production costs and aircraft weights were tightly controlled and Aeronca was among the first to use a moving conveyor assembly line, with each stage taking about 30 minutes to

Concurrent with the high wing Model K, Aeronca introduced the far more racy looking low wing, radial engine Model L, with fully faired main undercarriage.



complete.

The 11AC Chief entered production at Aeronca in early 1946, with upgraded versions introduced as the 11BC (also called the 'Chief') and 11CC 'Super Chief' in June 1947 and 1948, respectively. Aeronca was, at the time, still headquartered at Middletown, Ohio, but production facilities there were heavily utilized with the 7AC Champion line so the model 11 aircraft were assembled at the Dayton Municipal Airport in Vandalia, Ohio. While the Vandalia location was first used only for the assembly of parts fabricated at Middletown, activities there later expanded to include some fabrication work. Only later, toward the end of production, did the Chief line return to Middletown.

Aeronca ceased all production of light aircraft in 1951. Production of the Chief, which had been outsold by its sibling the Champ by a margin of nearly 4 to 1, had already ended by 1950, with only a few examples produced in 1948-1949. This marked the last time the Chief design was built in the United States.

NEW OWNERSHIP ... AND SOME EXOTIC DIVERSIONS

Following cessation of Aeronca light aircraft production in 1951, in 1954 the Champion design right was sold to the new *Champion Aircraft Corporation* of Osceola, Wisconsin, which continued building variants of the Champion as well as the derivative design, the Citabria. The venerable aircraft design was acquired again by the *Bellanca Aircraft Company* in 1970 and again to *American Champion* in 1988, where it remains in production.

In the early 1970s, Aeronca was contracted by Bede Aircraft to assemble its first Bede BD-5J Microjet - the world's



When the Model K went into production, it had been cleaned up a little from the prototype, had more wing dihedral and greater wing area.

smallest jet airplane - but, after its experiences with the prototype, Aeronca declined to be further involved with the program.

In 1978 Aeronca planned to start aircraft production again with the introduction of a prototype very light business jet, the Foxjet ST600, but the project was eventually cancelled due to unavailability of the intended WR-44 engine.

THE NAME, NOT LOST...

In its 23-year history as a general aviation

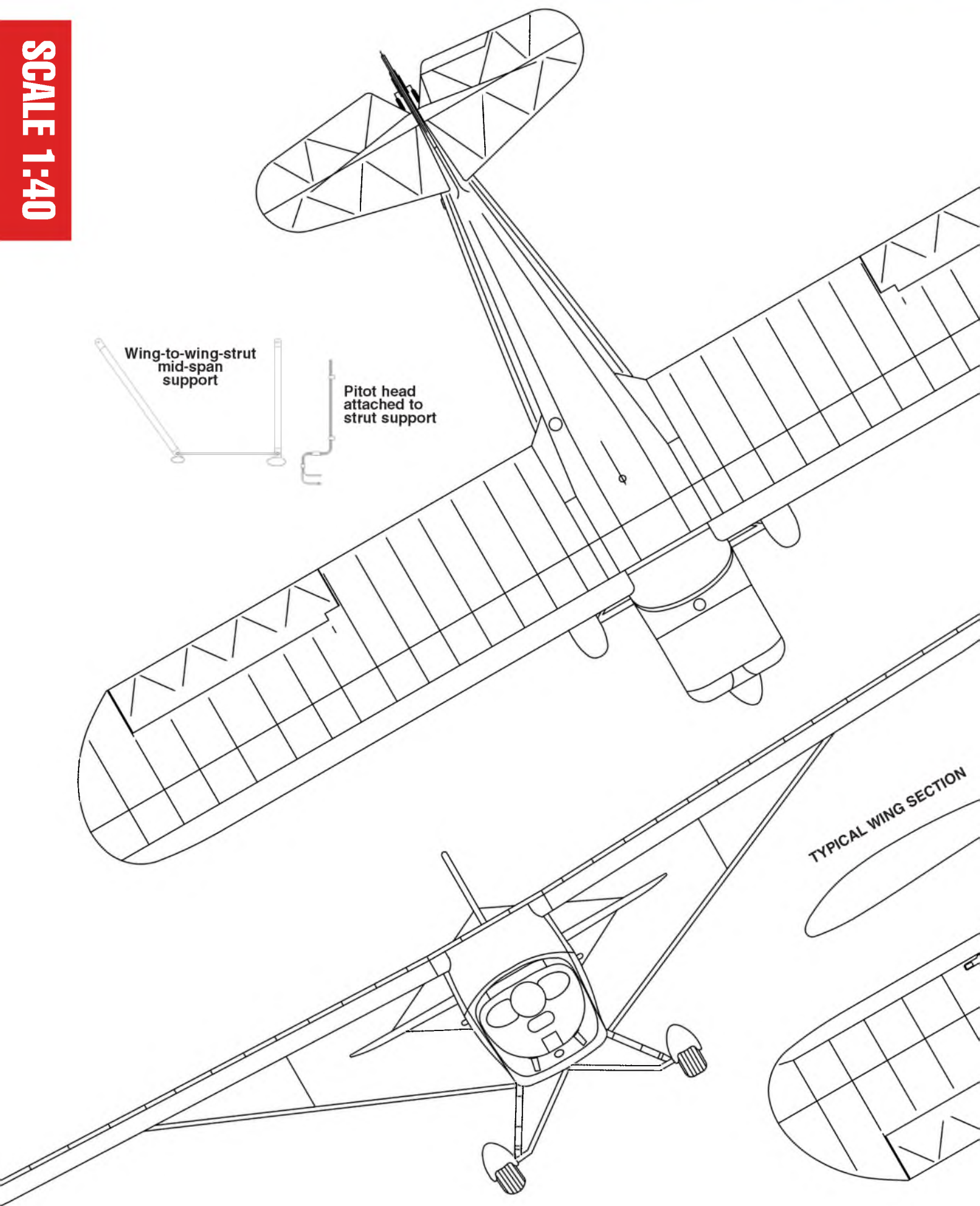
and military aviation manufacturer, Aeronca produced 17,408 aircraft spanning 55 different models.

Aeronca is now a division of Magellan Aerospace, producing aircraft, missile, and space vehicle components at the same location adjacent to Middletown's Hook Field Municipal Airport. Aeronca now builds components for aerospace companies including Boeing, Northrop Grumman, Lockheed and Airbus. You might say - it's gone a long way, without going very far at all! ■

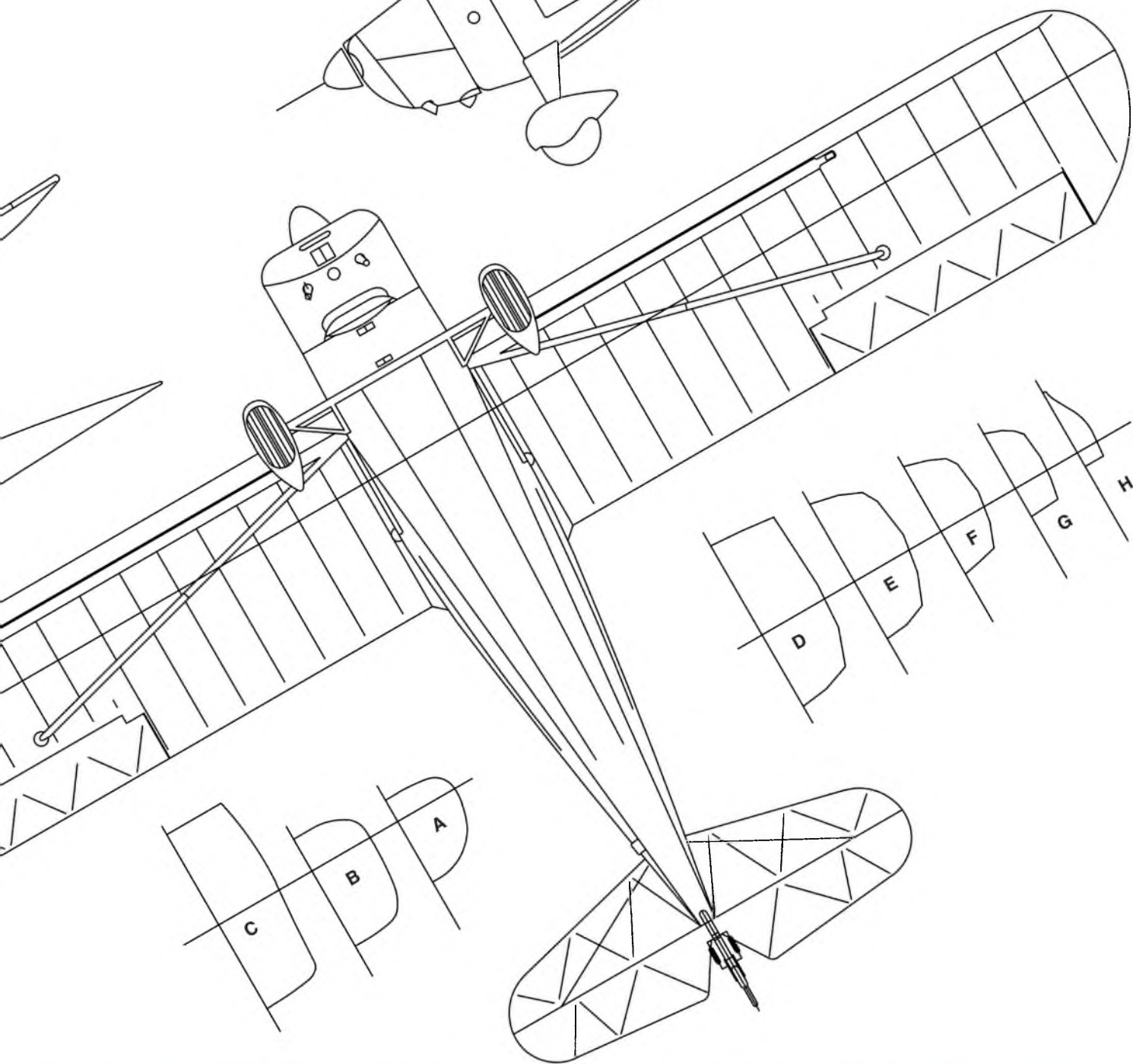
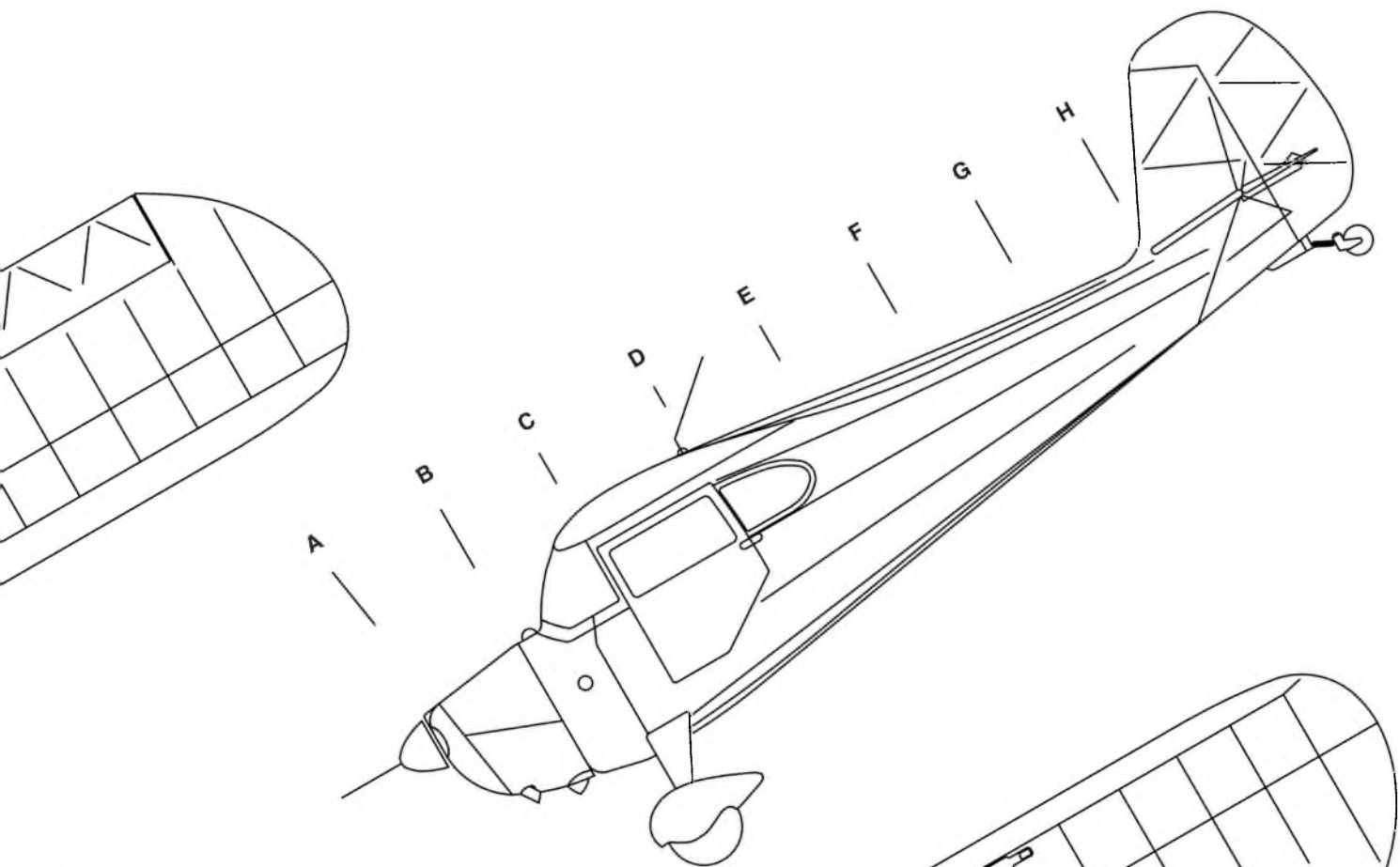
In the later, post WW2 period up to 1951, Aeronca's most successful introduction was their Model 7 Champion, affectionally known as the 'Champ'.



SCALE 1:40



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2



1



1: Head-on view of the engine cowl, also showing the main undercarriage anchor points. 2: Cowl access panels. 3 & 4: Cockpit front windscreen and oil filler cap. 5: Exhaust outlets in lower engine cowl. 6: Further view of the cowl and the propeller hub. 7: Tailcone, showing wire tailplane-to-rudder brace and elevator trim tab. 8: Tailplane underside wire brace and rudder control wire link. 9: Lifting grip, lower fuselage just ahead of the tailplane. 10, 11 & 12: Views of the steerable tailwheel unit.

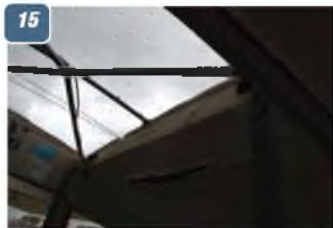




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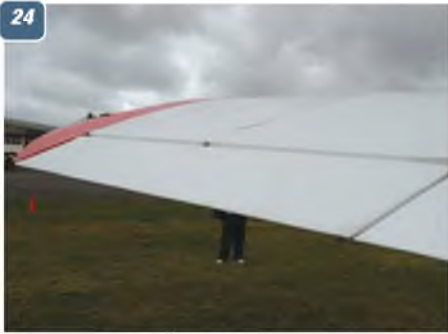
13: Cockpit instrument panel and dual control yokes - entire layout exudes 1950s automotive style. **14 & 15:** Cockpit view rearward showing clear vision panels **16:** Cockpit side window panels and roof. **17:** Windsceen, showing the rivetted metal rim. **18 & 19:** Cabin door, left side. **20:** Cabin upholstery behind the cockpit bench seat. **21:** Internal cabin door upholstery. **22:** View below the cockpit instrument panel showing rudder pedals and cockpit floor. **23:** A further view of the cockpit bench seat and the nicely appointed leather upholstery.



22



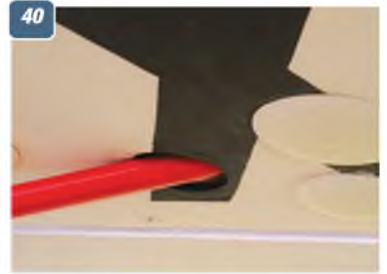
23



24 & 25: Aileron, port wing panel. **26:** Port wing tip. **27:** Wing root cuff. **28:** Front fuselage, showing the cockpit windows and line of the port side cabin door. **29:** Venturi for driving the cockpit instruments, Starboard side, immediately below the cockpit. **30 & 31:** Radio aerial and fuel filler cap on the fuselage top deck immediately behind the cabin, also showing the shape of the shape of the wing-to-fuselage fairing..



32: Close-up of the elevator trim tab, port side.
33: Tailplane anchor point of the rudder-to-tailplane brace.
34: Rear fuselage starboard side showing the rudder control horn and control wire at exit from the fuselage. Note also the disc shaped inspection panel.
35: Tailplane and elevator at the root, also showing port side inspection panel.



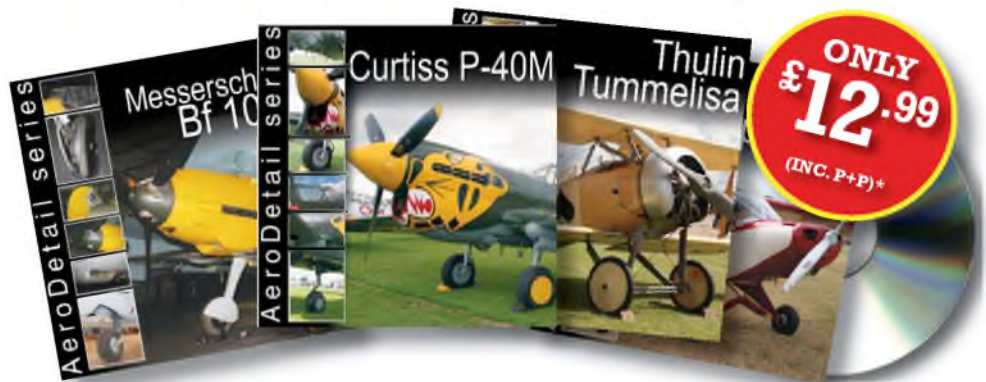
37: The unusual pitot head mounted on the mid-span wing-to-wing-strut brace, starboard side as seen in photo **38**.
39: Wing strut upper anchor point on wing underside. Note also the tie-down loop for lashing down the parked aircraft.
40: Wing strut upper rear anchor point on wing underside.
41: Wing strut lower anchor point on lower fuselage. **42:** The Main undercarriage.
43 - 48: Close-up details of the main undercarriage and its mounting points.



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Shuttleworth Museum's airworthy example presented in full detail. (100 plus images)

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Fantasy of Flight Museum's example. Photographed soon after superb restoration. Full nose to tail detail. (74 images)

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AT-6, SNJ, Texan, Harvard - call it what you will. 55,000 were built - this example is in U.S. Army colours, with comprehensive close-up detail, nose to tail. (76 images)

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THE FOKKER MONOPLANES

Part 3: Fokker E.5 and D.VIII

Gary Sunderland presents his 1:4 scale model of Fokker's ultimate WW1 fighter - for 1.20 - 1.55 cu.in four stroke motors

Flying Scale Models are usually complex to a degree. Most WW2 subjects have rounded fuselages and retractable undercarriages, while WW1 types predominantly feature biplane wings with much wire bracing. The Fokker Parasol is as simple as it gets! With a box fuselage and a flat wing undersurface type wing section it is almost as simple as those old favourites the Piper Cub and the Auster.

For a first-time scale scratch builder, the

Fokker parasol offers an option, which may be built as a detailed scale model or a simple 'stand-off' flying subject. As usual, this model build shows, in a photographic sequence and text, how my model was put together but this time, alternative construction methods are suggested as practical alternatives which may suit individual requirements.

Photo 1 shows the usual first steps in construction, with the two flat sides, built over the plan, being mated with the



firewall and the next frame. At this stage everything is flat and square.

Photo 2 shows the basic fuselage frame being assembled inverted on the flat upper surface, a feature of most Fokker designs. Forward crosspieces are from pine or spruce, with balsa aft.

Photo 3 has the corner reinforcement gussets being added. These are cut from 1mm birch ply at the front and 1.5mm balsa at the rear.

The next step, shown in **Photo 4**, is to add diagonal cross bracing to the rear fuselage. At each vertical, make a dint with an awl and from this, drill a 1mm hole. Aim for the next cross brace and trial-fit a length of 1mm carbon rod. Don't worry if your aim is not perfect - just re-drill at the correct angle to have a nearly straight rod. When satisfied, glue the rod in place with thin cyano, which will wick down into the longeron. When dry, nip off the rod ends with side cutters and sand flush. This makes an enormously strong fuselage with very little weight penalty.

As an alternative, you could adopt my old free flight technique of adding an internal 1.5mm x 12mm balsa internal stiffener along the longeron, as shown in my Fokker D.VII plans. However, I believe the carbon rod bracing is stronger and is 'scale' as well! No one can see it of course, but YOU know it is there!

BUILDING THE WING

There are a number of options to be considered before constructing the wing. If you want a simple colour scheme, as on the post-WW1 all-over green D.VIII operated by the Polish forces and the Dutch, the plans indicate the 'square'

wing tip shape option.

The simple build option is to construct the wing in one piece, as long as your method of transport to your flying site will cope with the wingspan. However, I opted for a two-piece wing for personal convenience. The Fokker E.5 (E.V) is a relatively small model at quarter scale and will easily fit into a small car, as long as the wing is divided at the centreline, with just two small screws to assemble it.

For my model, I chose to join the wings at the centre line with *Graupner* wing joiners on the upper side and small aluminium straps underneath. However, the bending forces at the centre are very low and a simple dowel-and-tube joint on the upper, compression side will do the job as long as the parts fit closely together with minimal slop. For a simple one-piece wing, just ignore this detail altogether. In both cases the wing is constructed in three parts, a flat parallel centre section, and tapering outer panels, joined just inboard of the wing struts.

The centre section is built first, as shown in **Photo 5**. As detailed above, my wing included a centre join. With two plywood centre ribs and the wing joiners glued and bolted. This detail is not obvious in the photo. For a one-piece wing, a single rib will replace the two plywood ribs, while spar webs will be balsa in lieu of ply. Next, add the spar joiners on the underside of the centre section as also shown in **Photo 6**. These will be cut tapered, to rest inside the spar booms.

After building the outer wings, flat over the plan, the centre section is added as shown in **Photo 7**. Note that this particular Fokker has no dihedral and the 'root' rib is

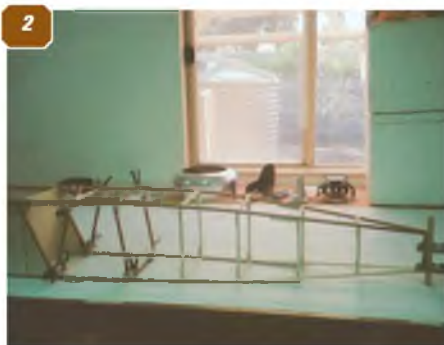
angled inwards slightly so that the centre section mean line is a prolongation along the tip. This is easily done by sighting along the spars. At this point the wing of a typical WW2 aeroplane would be sheeted from the top, to fix the wing twist of the usual bi-convex wing section. For the E.5 wing, the flat undersurface makes things a lot easier. The undersides are sheeted first, in three stages: centre first, then the two outer panels. For this, the 1.5mm balsa sheet is laid flat and glue applied to the mating ribs and spars. Place the wing structure on the sheet balsa skin and weigh it down flat. You now have full access to the wing inner structure to add wing fittings and servo mountings.

STRUTS AND UNDERCARRIAGE

The fuselage design provides for a main bulkhead 'firewall' to suit an O.S. 120 or O.S. 155 standard engine mount. This includes a substantial mounting for the main wing strut. In the original full size E.5/D.XIII this strut went down to the lower longeron and was welded there. For the model, the strut terminates at the centreline and is screwed on, so that it may be removed if necessary. A 'false' bulkhead is then fitted to the fuselage at the scale location as shown in **Photo 8**. The cowl will attach to this false frame.

My original strut attachment includes a ply backing plus a Dural plate screwed on, which in turn was tapped for a 4-40 cap screw. This is overly complex and could be replaced by a single screw into timber, without any decrease in strength.

The true length and shape of wire components are then plotted out on plywood. Clean the wire of its protective





oil covering and bend to shape. I use old-fashioned plumbers solder and liquid acid flux to join the parts together rather than brazing, with fine copper wire wound on and then re-soldered. Clean the joints with water and dry the parts.

The undercarriage legs are then glued in place with epoxy boxed in with plywood. For critical joints such as these, I recommend the 24-hour slow-set epoxy for better adhesion and strength, particularly in areas subject to fuel and engine exhaust. In **Photo 9**, the undercarriage legs have been spread apart, just by hand pressure, together with the cross bars and axle, which is made from 5/16" (5mm) steel tube, drilled for split pin wheel keepers. Inside this, tube a 1/4" (6.5mm) diameter round steel bar is hammered out, the axle straightened and a new internal round bar is hammered out, the axle straightened and a new internal round bar inserted. This method is used on most of my designs up to and including the Albatros C.III two-seater weighing 13 kg. (28.6 lbs).

Next, **Photo 10** shows the completed undercarriage structure. Note the hat-section wire joiner attached to the axle. This locates the axle and takes any side loads from the wheels. Two loops of 3mm bungee cord each end will absorb the landing loads. Note also the centre section struts, which are screwed to plywood corner reinforcements.

The next step is to fit the main wing

attachment to the fuselage and wing, checking both with a spirit level. The wing pylons are then removed for soldering, replaced for a final check and then bound with copper wire for final soldering as shown in **Photo 11**, with wings level tip-to-tip.

Photo 12 shows the wings jugged for incidence, at zero degrees to the lower surface, with the top of the fuselage longerons also at zero degrees. The rear struts are then screwed into place as shown in **Photo 13**.

FINISHING THE WINGS

Now we go back to the wing to double check that all the internals are complete. One of these last tasks is to replicate the desired wing tip shape (E.5 or D.VIII?) onto the lower sheet. This is reinforced with 3mm (1/8") scrap balsa pieces and then trimmed to shape. The scrap balsa is next sanded back to a wedge shape.

To sheet the top wing surface, start with the centre section as before, edge-joining the 1.5mm (1/16") sheets prior to covering. Then, sheet the wing tips as shown in **Photo 14**, using weights to cover rib areas and pins along the leading edge and spars also as in **Photo 14**.

I decided to incorporate some washout to the wing and packed up the last rib by 3mm (1/8") as shown. The ailerons were similarly washed out 1.5mm to suit. This washout is not true-to-scale and is probably unnecessary, so please yourself!

The excess top sheeting at the tip will require some work to fit down onto the reinforced lower surface, as shown in **Photo 15**. Wedge shaped slivers of top sheet are removed to permit the top sheet to conform to the lower tip.

The next task on the wings is to glue block balsa onto the leading edge and the rear centre section, and carefully carve and sand these back to profile as shown in **Photo 16**.

Finally, cover the whole with tissue-and-clear dope, or with resin and sine satin cloth.

COWLING OPTIONS

The next step is the cowl, with its distinctive 'funny face' cooling openings. Actually, the process needs to begin well before the construction of the model. In days of yore, an aluminium saucepan or other suitable pot could be an option, but these days you will be lucky to find one at all, let alone one of the required diameter.

Fortunately, we still have *Mick Reeves Models* (UK) and *Proctor Enterprises* (USA), both sources of spun aluminium cowlings to quarter scale. In either case, the cost is not too expensive (relative to the total cost of making a model of this size); in either case, the cost is in the region of £60/\$75 (USA)/AUS \$100 including postage. The *Proctor* cowl is of slightly heavier gauge metal and is longer, while the *M.R.* version is the correct length.

The alternative is to make your own

fibreglass cowl. (A wrap-around basic plywood shell faced at the front with a 'stack' of band-sawn balsa rings and sanded down the correct curvature would be a further alternative; reinforced internally with glass fibre matt - ED.).

Most exponents of the glass fibre approach suggest that you need to make a 'plug' and from this, laminate a mould. To me, this seems a waste of time and effort. A female mould would be worthwhile if you intend to make a number of cowlings, but for a one-off, a balsa core cowl is the best way to go. I did not make one for my E.5, but the basic method was used on my *Nakajima Ki-27* model as seen in **Photo 17**. This shows the basic plywood form glued up and ready for planking. The shell is planked with 3mm (1/8") x 10mm (3/8") balsa and the front is formed with balsa block.

After sanding the outside smooth, it was covered with two layers of satin glass cloth, cut into wedge shapes and resin brushed in to fill the weave. After curing overnight, the outside was sanded and a further two layers added. Then, the process was repeated inside, except that four layers may be added as once. I prefer epoxy resin, with which I used to build full size gliders, but it is more hazardous than polyester and you need to be VERY careful to avoid any skin contact and work in an environment with good

ventilation. The final result is shown in **Photo 18**.

For my E.5, I decided to use the *Mick Reeves* cowl. Nothing is more metal than metal, even after it is painted. **Photo 19** shows the trial-fit onto the false bulkhead. The first step is to flatten the nose radius, because the M.R. cowl follows the Sopwith practice of rounding the front. Just place the cowl nose on a flat surface and gently tap the lip down on the inside surface with a light hammer.

Next, a flat sheet of aluminium is cut to fit inside the nose and the holes marked and drilled with a disc saw. The next job is to rivet the face to the cowl. For this you will need 1/16" (1.5mm) aluminium rivets, available from a model railway supply house. The rivets come in a packet of one thousand, but are not that expensive.

Then we have a problem, in that the materials of the cowl and the face plate are of soft aluminium, so the rivets tend to collapse sideways when we attempt to hammer them. My solution was to back up the face with scraps of Dural sheet, cut to shape. A better solution would be to make the faceplate from Dural, but I did not have a piece big enough. Incidentally, I get my scraps of Dural sheet by raiding the dumpster at the local airfield! These days, people are more security conscious so it may be a good idea to tell the mechanics what you are doing.

Anyway, pass the rivet through each hole, drilling as you get and remove any dags or flash with a small file, after which a firm tap with a brad hammer fixes the rivet and the join in place.

Now cut the extension piece at the rear and repeat the riveting there. This is the same as the original and looks very realistic with its dummy cable in place. The original Fokker cowlings featured a groove in the cowl at the rear, which fitted into a corresponding groove in a metal plate on the firewall. A cable locked the two together with one cable tensioned on the port side.

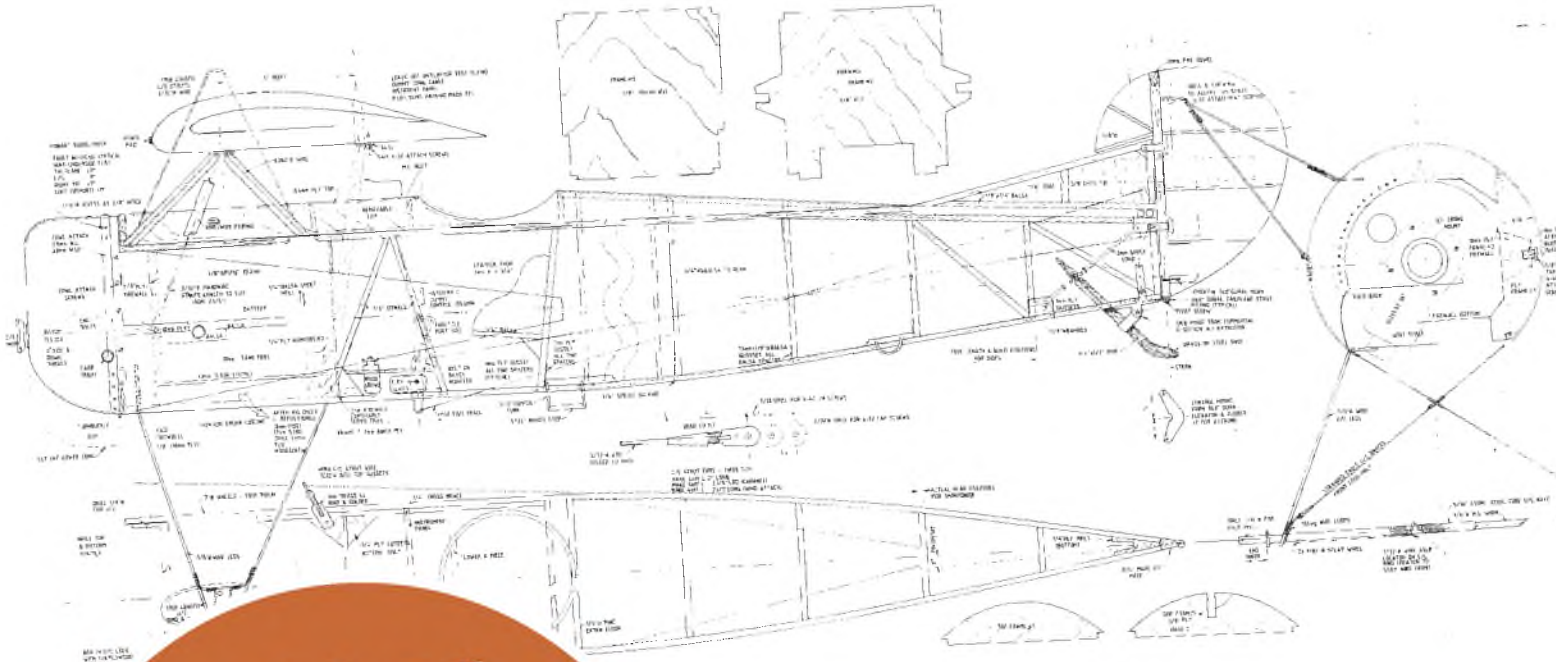
Photo 20 shows the complete model cowl, spray painted white and ready to be installed on the nose. In this case, it is secured with a row of screws.

FINAL COVERING AND PAINTING

The fuselage and tail sections were covered in *Sig Koverall*, using *Stix-It* adhesive. In addition, the fuselage was covered with silk, doped on. The purpose of the silk was to provide a 'key' for *Humbrol* paints used to simulate the original hex-fabric printed camouflage covering. The fabric pattern was based on that detailed by the late Ron Moulton back in *FSM September 2011* issue and photocopied to quarter-scale.

This, in turn, was traced onto paper, turned over and the pattern outlines masked again. Turned back then, to the

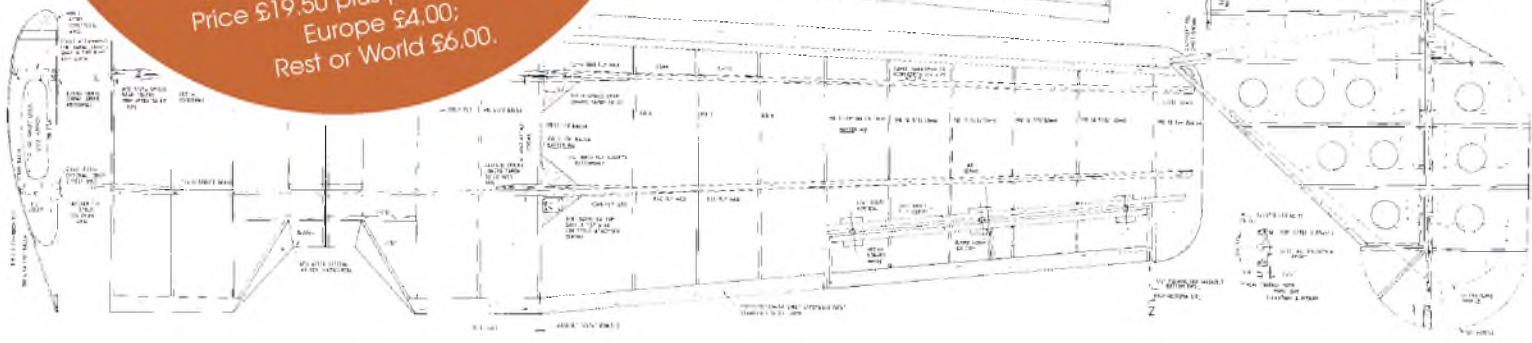




Fokker D.VIII

(PLAN FSM 523)

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correct side, a pencil was used to transfer the black carbon onto the silk. On the full size Fokker, the cloth was wrapped around the fuselage and met under the belly with a lace-up join along the centreline. For the model, the outlines of the National and individual markings are made with pencil so these areas do not have to be marked with the fabric pattern.

Another suggestion is to start masking the pattern at mid-fuselage, just behind the individual mark, then work forward and aft. Unfortunately, I started at the front and had many problems mating the sides to the wrap-over at mid fuselage.

Be aware that the fuselages of the

original full size E.5 machines of Jasta 6 were most likely covered in the dark upper surface fabric, judging by the black and white photographs available as a guide. For a true scale colour scheme, follow Ron Moulton's colours or, alternatively, use the colours of BIM fabric shown in my article in *Flying Scale Models* June 2007 and in *April & May 2009* issues detailing my Pfalz D.XII model.

My E.5 project was based on the New Zealand Omaka Aviation Heritage Centre replica, for which I had data and colour photographs. The fabric covering on the aeroplane seems to be the German undersurface colours, which are lighter and brighter than the top surface colours.

This makes for a nicer looking aeroplane, so I decided to use these colours on my model.

For reference, I used the following Humbrol paints :-

- Green: Matt 120
- Blue: Matt 89
- Light Green: Matt 90
- Brown: Matt 63

There is no suitable violet colour in this range, so I had to mix my own with White 130 and Purple 68.

Each hex pattern edge is masked out in the appropriate colour with a draughting

pen and a straight edge. These are then filled in with paint, using an artists' brush; a tedious job, but very worthwhile when it is finished. The E.5 is a relatively small model, so it is a small task compared with my Fokker D.VII of some years ago, which was all-over hex fabric covered! (See the Fokker D.VII Special in FSM February 2004.

The rest of the model painting uses only three colours; white, black and a grey-green. Any enamel paint will do, but I recently changed over to an external epoxy paint that seems to give good results and is available here in Oz in spray cans and tins. For Australian readers, the product is Watty! Killrust topcoat and the matching green is 'Wilderness'. The wings were sprayed all over. Brush coating was used for touch-up and for hard-to-get-at areas, such as the axle fairings. Note this axle fairing is green all over and does NOT have the underside painted light blue!

The white outlines were first made with Humbrol white using a draughting pen as before. White areas were brush-painted and Killrust, while the tailplane, elevator and rudder were spray-painted white. Black outlines were then added with Humbrol and filled in with brushed Killrust. **Photo 21** shows a simple jig I made up to apply the cowl markings. These are in fact triangles and a thin straight plastic rule was folded around the cowl to complete the edge marking.

FINAL ASSEMBLY AND CHECKS

At this stage the tail surfaces can be added. The elevator spar and the rudder spar are pine dowels and these are attached with simple wraps of Dural

scrap. I do not believe that pure aluminium will take the vibration, so use Dural or brass for these hinges. **Photo 22** shows the rudder partly assembled. Note the Dural rudder hinge, ready for the fin to be added.

Photo 23 shows the check assembly, this time with the model centre section levelled with a Robart gauge. This means that the tailplane is also level and the flat underside of the wing is at minus three degrees, as are the fuselage top longerons. The gauge will also show the tip incidences, both at about two degrees. Check the tailplane is level with the wing, tip-to-tip. This is more accurately done by sighting from the rear, rather than using a gauge or level bubble.

When satisfied, cut and drill the tailplane struts, bolt these in place and add the brace wires to the fin, noting the offset.

OTHER DETAILS

Although not previously mentioned in the progression of this construction sequence, construction of the tailskid had been under way from the start, starting with the rubber cord bungee installation well before the covering stage. The next step was to add the dural strut and rubber mount fitting, as shown in **Photo 24**. To this is screwed a 'U' shaped bracket made from scrap wire screen section. You can also buy this section from hardware stores.

The tailskid itself is from pine and it pushes into the bungee cord which is suitably knotted to secure it. The tailskid pivot is from brass tube, drilled for split pins. Note the brass shoe on the skid,

necessary to prevent wearing away the skid on runways. This design permits the skid to be easily removed for repairs.

Another detail installed early in the building sequence is the pilot's seat and retaining bungee cord 'harness', easy to fit before covering, but difficult afterwards. For most of my models, I usually install a bank of servos driving a scale elevator control column and rudder bar in roughly scale positions. This is a lot of work and for the E.5, I elected for a more simple arrangement, with the servos driving the control cables direct, as shown in **Photo 25**. Here, the rudder and elevator servos can be seen mounted on removable plywood 'floor' to the cockpit.

The underside of the floor is in **Photo 26**, with the fabric camouflage scheme applied in this area.

Another detail shown in **Photo 27** is the forward hatch. On the original aeroplane, this was covered in metal panels screwed on to give access to the fuel tank and the machine gun ammunition bins underneath. The guns shown here are scratch built from aluminium tube and pine wood.

Those who build this model may elect to use the excellent *Williams Bros.* machine guns kit which, being plastic, will start to break down after a couple of years of exposure to the vibration and fuel. Consequently, I built up my own copies of the Williams guns in more durable materials. Photographs of the original German IMG 08 guns show that the water jacket was so extensively fretted away that virtually nothing remained. The Williams guns are not entirely accurate in





that more material needs to be retained to guarantee sufficient strength in the relatively weak plastic. My metal guns were copied from the Williams jackets as it is hard work drilling and filling the metal away. Scratch building the guns is well worthwhile as they will last virtually for ever. This pair was originally fitted to my Pfalz D.XII of fond memory, and survived the crash completely intact.

Having the forward hatch readily

removable makes the installation of the radio gear straightforward as shown in **Photo 28**.

The installation of pull-pull closed loop cables to the rudder and elevators is carried out in one operation. The cables are fed through from the rear using holes in the correct scale positions. Note that the upper elevator cables pass through the tailplane and cross over in the rear fuselage. Care is required to identify

each cable and to avoid any tangles. The cables are swaged to the control levers and the assembly is screwed into place, taking care to pull the cables gently from the rear to ensure they don't tangle.

Remove the dummy control column and insert a length of cane in its place. Clamp this in a vertical position and peg or clamp the elevator horns to the tailplane. The elevator cables are then gently tensioned and swaged. Ensure that the rudder servo is at zero and that the rudder is aligned with the fin - appropriately 2 degrees left, then swage the rudder cables.

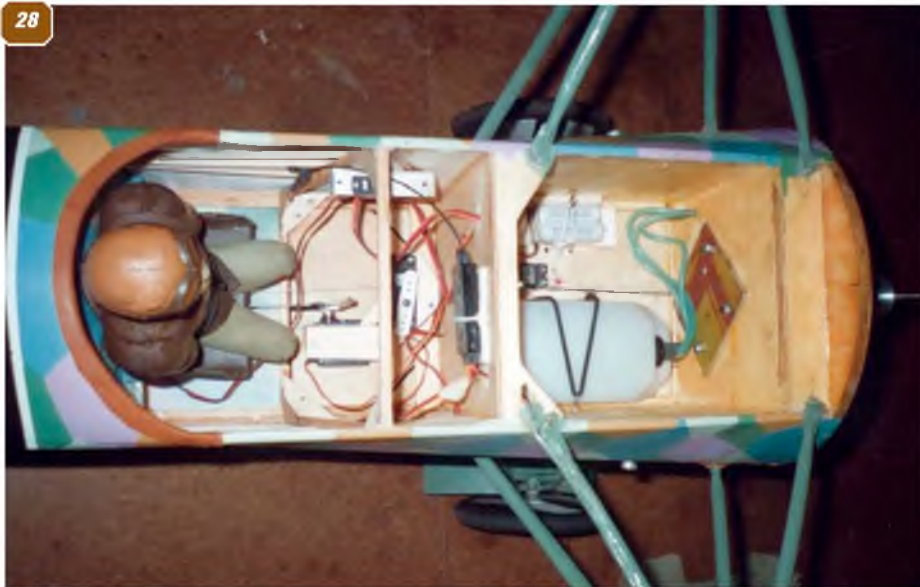
The ailerons are driven from servos in the wings, via pushrods below and a dummy wire above. The servos are connected to a Y-lead in the wings, to one lead at the rear of the starboard main strut, glued in place and covered with tissue.

Control throws are approximately plus and minus 5 degrees at the ailerons and 10 degrees both for the elevators and rudder. With an O.S.155 four-stroke installed, the balance was somewhere between the spats at the wing tip.

INITIAL FLYING

The lower photo at the start of this feature shows the model ready for test flying, but without a pilot figure, the axle fairing and other details. The weight at that stage was just under 7 kg (15.4 lbs), which is the limit, in Australia for classification as a 'small' model. Consequently, I decided to apply for a permit to fly on the basis that the finished weight would probably exceed that limit. That involved organising and Inspector and some paperwork, to be available at a given flying venue and date. I also organised for John Lamont as photographer and he took the action photos of the E.5 in action at the first air test.

As luck would have it, a blustery crosswind developed during the morning, but I decided to press on regardless, in the belief that the model would cope



E.5 AIR TEST!

Photos by John Lamont



better with the conditions than my usual biplanes. The photos about show the model climbing out, regardless of turbulence and looking very solid in the air. Only the last stages of the landing gave me any concern, the crosswind resulting in one wing tip touching the ground and a tip-over.

FINISHING DETAILS

Apart from the axle fairing and pilot, there are a few items now to be added.

On the right side of the cowling only, there is a manufacturers plate or placard recording the aircraft type and military

number. **Photo 29** shows one of these placards reproduced at twice size for one-quarter scale (i.e. to half size). I had these photographed and reduced to scale for my own model. **Photo 30** shows this placard glued in place with epoxy. This showed good bond with the epoxy paint underneath.

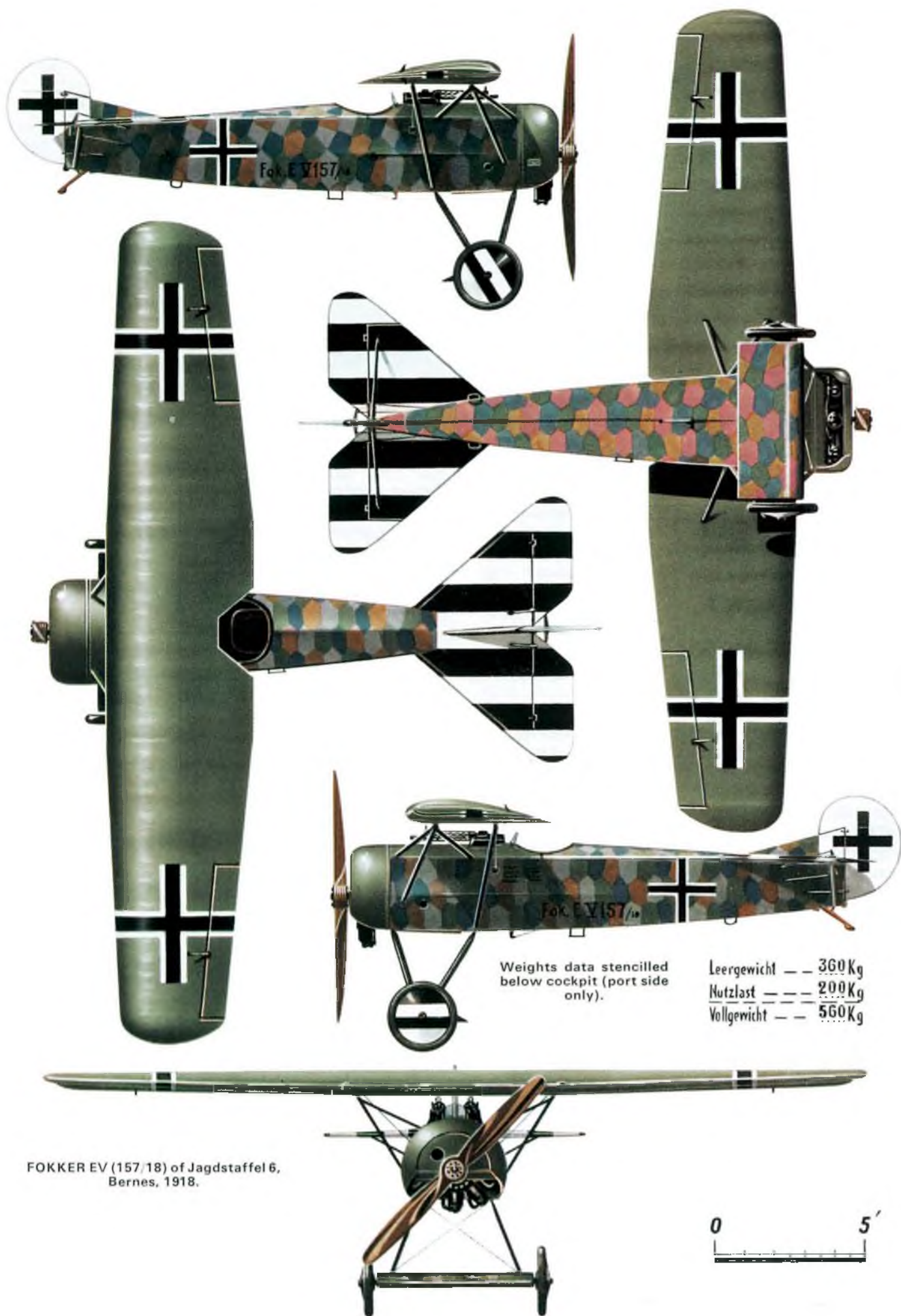
Also moulded in epoxy are three dummy cylinders attached to an aluminium plate, screwed to the engine mounts, as shown in **Photos 31 & 32**, the latter also with a scale wooden propeller. Finally, there's **Photo 31** depicting the 'erman "Herman-the-German' in the pilot's seat

as it would be presented to the static judges in a competition.

In flight. The E.5 seems very light and responsive, in comparison to with the V.23 (as dealt with last month), which was not unexpected, given that the E.5 weights 7 kg, against 9 kg for the V.23. The latter is also much better in a crosswind take-off or landing since I fitted it with a Fokker D.VII fin and rudder. My impression is that the E.5 model would fly quite well with an O.S.120 engine, but with the extra power of the O.S 155 can be useful in some aerobatics. Time will tell. ■



FOKKER DVII FLYING COLOURS



Weights data stencilled
below cockpit (port side
only).

Leergewicht — — 360 Kg
Nutzlast — — — 200 Kg
Vollgewicht — — 560 Kg

FOKKER EV (157/18) of Jagdstaffel 6,
Bernes, 1918.





Tailplane detail, upper and under.



Fokker E.V, Jasta 6, Busigny-Escaufort, France, August 1918.

Fokker E.V, Jasta 6, Busigny-Escaufort, France, August 1918.



Fokker E.V, Jasta 6, Busigny-Escaufort, France, August 1918.

Fokker E.V, Jasta 6, Busigny-Escaufort, France, August 1918.



Fokker E.V, No. 132/18, Unit unknown.

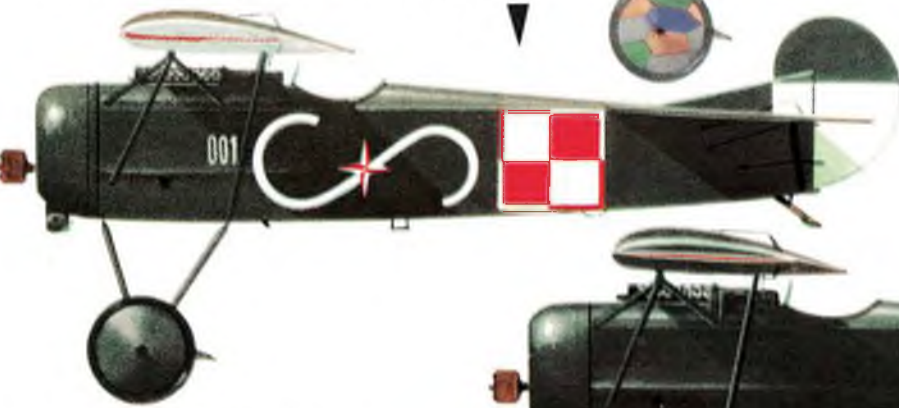
Fokker E.V, No. 7 (Kosciuszko) Squadron, Polish Air Force, Lwow, 1919. Flown by Lt. S. Stec, the Squadron Commander during the Ukranian Campaign, February-July 1919.



Wing marking position



Wing marking position.



Personal insignia of Lt. S. Stec.



Fokker D.VIII, Royal Netherlands Air Force.

Fokker E.V and D.VIII THE MEN AND THE MACHINE!

Compromised, initially, by sub-standard construction, Fokker's last WW1 monoplane arrived too late to make a difference



VzFlgmsr. Goerth of Marine Jagdstaffel III with Fokker E.V 144/18. Cowling and wheels are yellow, '3' annotation probably white.



Post-WW1 D.VIII in US Air Service markings having been taken to USA for evaluation.



This Fokker D.VIII of Jasta 36 looks very new.

Modern-day military combat aircraft often have a long service-life. In some cases, 40 years or more. Examples are the Boeing B-52 and English Electric Canberra, where individual aircraft have been older than the crews that have flown them.

Back in 1914-18, the active in-service lifetime of WW1 combat aircraft could often be measured in months only, before obsolescence set in as military hierarchy, aircraft designers and manufacturers on both sides of the conflict strove to achieve or maintain superiority of combat performance over the aircraft of the enemy. Lives depended upon it!

On the German side, the latest in a succession of competitions for the supply of fighters, in early 1918, led to the selection of the Fokker D.VII, the best of a number of machines, all of which were required to use the 160/180 hp Mercedes engine.

The D.VII went into immediate production, but the German High Command were fully aware of how quickly the performance of a new aircraft could be eclipsed and immediately decided to float a further fighter

design competition, the requirements of which were circularised among the manufacturers, including Albatros, Dornier, Kondor, LVG, Pfalz, Roland, Rumpler, Siemens-Schuckert and Fokker.

At the latter company, Anthony Fokker had in hand a number of experimental parasol monoplane configuration designs, V26, V27 and V28.

When this new competition was run off, it was the leading pilots from the Jagdstaffeln in the war zones who did the comparative testing and who were the arbiters of which design would be selected as the follow-on fighter. Their short-list whittled down the choice to the Dornier D1, Siemens Schuckert and Fokker V26/V28. Finally, the Fokker design was selected, receiving the official designation E.V ('E' for eindecker).

The production order required 400 machines, the first 20 being delivered in July 1918. Jagdstaffel 6 was the first unit to get their hands on the new fighter, receiving six in early August, but before the end of the month, three of their pilots had been killed due to wing failures.

Urgent official investigations blamed these failures on deformation under heavy in-flight



A line-up of D.VIIIs of Jasta 6 at Laon, France, in early August 1918 - probably right after delivery



This D.VIII is a Warbooty machine received and operated by the Belgian Air Service after WW1.



Jasta 6 again ... this is Lt. Wolff in his flying gear.

wing loads, but further more practical examination revealed poor standards of construction, which included the use of unseasoned wood and perished glue. Immediate improvement in quality control and adherence to the designer's original construction specifications quickly cured these ills.

Re-designated Fokker D.VIII, the aircraft re-entered service. Jagdstaffel 11 was the first the re-equip, followed by Jagdstafeln 1, 6, 10, 19, 23, 36 and the Marine-Feld-Jagdstaffeln 1, 2 and 3.

However, the D.VIII saw only three weeks of combat service before the November 11th armistice, during which the aircraft proved to be an effective fighting machine. More powerful variants using the 145 hp Oberursel UR III rotary engine and 200 hp Goebel Goe IIIa were planned and had these entered service, they could well have given the newly formed Royal Air Force's squadrons equipped with the S.E.5a and Sopwith Snipe a hard time indeed.

As also occurred in 1945, there was a post WW1 round-up of German aircraft by the Allies, including some of the 85 examples of the Fokker E.V/D.VIII operational with German Air Service units. Some of these were shared among the Allies for evaluation including US Air Service.

But not before Anthony Fokker had spirited 20 examples away to his native Holland, from where he sold some to the

Netherlands Air Service. Others were sold to Poland, to equip the 7th Aviation Squadron and used during 1919, in that country's conflict with Ukraine.

In 1921 Lieutenant Leigh Wade of the US Air Service produced the following evaluation of the D.VIII after testing at McCook Field:-

"The aeroplane has a tendency to turn to the right in taxiing, takes off quickly, climbs very rapidly and is very manoeuvrable.

It is easy to fly and the controls are sensitive. It is tail heavy, but so light on the controls that it is not tiresome to fly. The visibility is good.

The machine's guns are so placed that

in the event of a crash, the pilot would undoubtedly be injured by being thrown against same.

The aeroplane lands very slowly with a slight tendency to drop the right wing and to turn to the right on the ground.

The controls for the engine are very inconveniently located, in as much as the throttle for the gas in the left side of the fuselage and the throttle for the air is on the left side of the control stick.'

Such then was the Fokker D.VIII, a fighter aircraft of great promise, that just ran out of time ... rather like that other great German fighter, a generation later - the Messerschmitt Me262! ■



Off.Stv.Altmeier of Jasta 24. Altmeier had worked for Krupp and used the Krupp motif as his personal marking on fuselage side.



Fokker sold D.VIIIs to Poland after WW1. This machine was the personal mount of Lt.Stefan Stec, seen at Lwow in 1919.



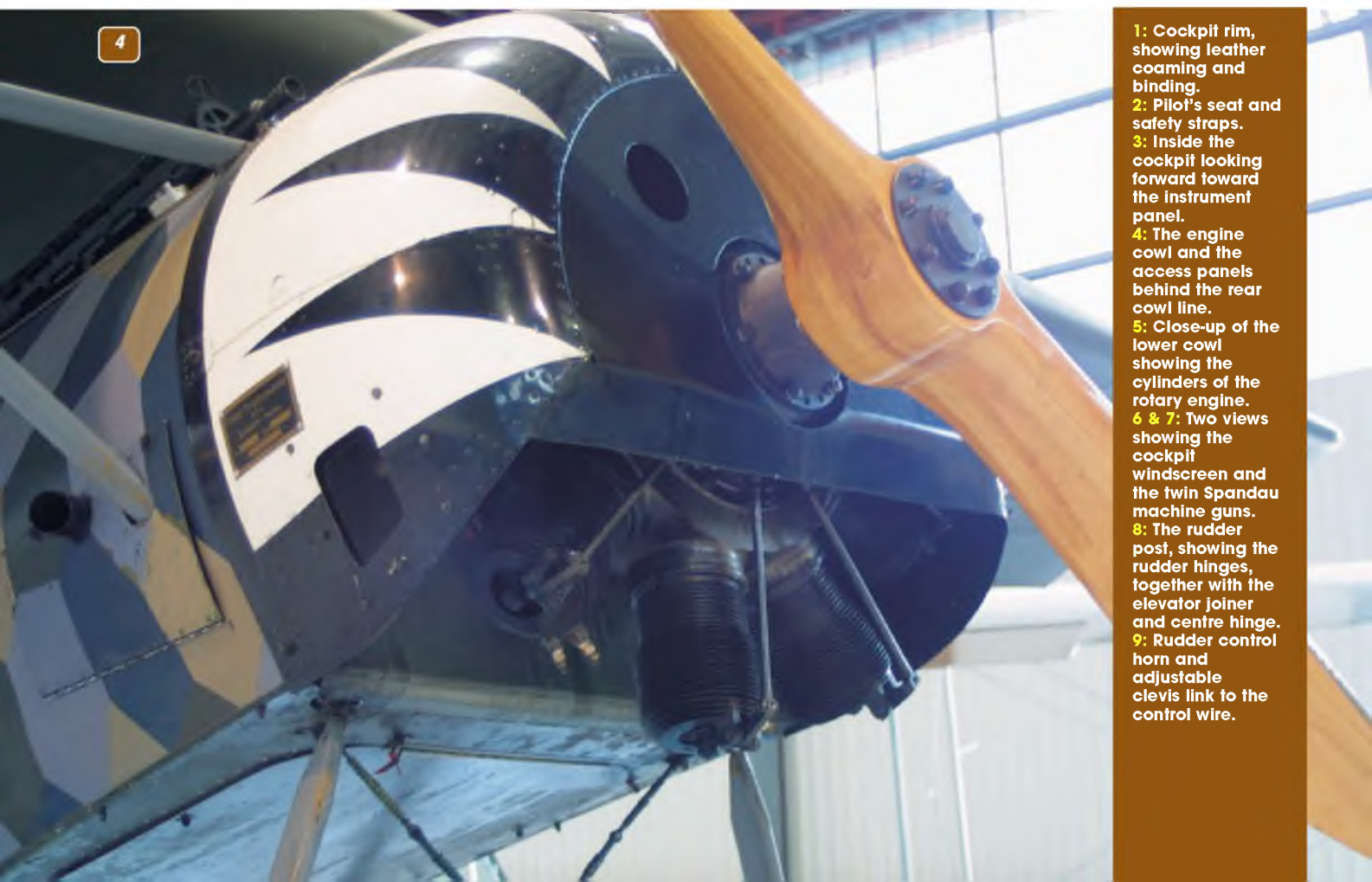
Fokker E.V no. 148.18 of Jasta 6. The interest that is being shown in the aircraft by those in the picture might suggest that it might be the first of the type to arrive at the unit.



This Fokker D.VIII one of the Jasta 6 machines, which seem to have had their fair share of photographers' attention.

FOKKER D.VIII

A CLOSE-UP STUDY OF THE FOKKER E.V HOUSED AT THE FANTASY OF FLIGHT MUSEUM IN FLORIDA, USA.



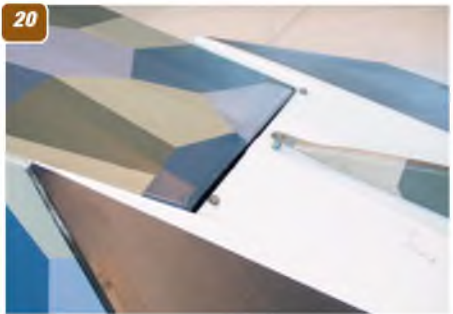
1: Cockpit rim, showing leather coaming and binding.
2: Pilot's seat and safety straps.
3: Inside the cockpit looking forward toward the instrument panel.
4: The engine cowl and the access panels behind the rear cowl line.
5: Close-up of the lower cowl showing the cylinders of the rotary engine.
6 & 7: Two views showing the cockpit windscreen and the twin Spandau machine guns.
8: The rudder post, showing the rudder hinges, together with the elevator joiner and centre hinge.
9: Rudder control horn and adjustable clevis link to the control wire.



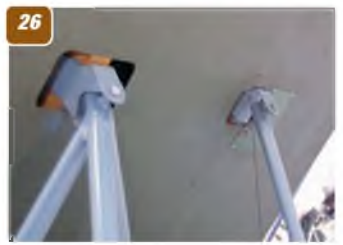
10: View of the left forward fuselage side, showing access panel, wing struts and undercarriage anchor points. **11:** View of the forward fuselage looking forward toward the cowl, showing the wing struts and the fuel tank cap. **12:** Detail of the foot stirrup on the left fuselage side below the cockpit. **13:** Lifting handle at the bottom of the rear fuselage side. **14:** View of the fuselage rear, underneath the tailplane, showing the control wire runs to the rudder and elevator control horns. Note the leather facings where the control wires exit the fuselage. The wire at the top goes through the tailplane to the top surface elevator horn. **15:** The anchor points on the lower fuselage for the rear undercarriage member and a wing strut. **16:** View looking forward along the fuselage, showing the general arrangement of wing struts.



17: View, right side of fuselage, just behind the engine cowl, showing wing strut, where it enters the fuselage. **18:** View of the right side of the rear fuselage, showing the control cable runs. **19:** Detail of the upper fuselage behind the engine cowl, showing the fuel tank cap. **20:** Rear fuselage upper decking, showing the tailplane leading edge and fin anchor point. **21:** Top surface elevator horn. Note the leather reinforcement where the control wire enters the tailplane fabric. **22:** Tailplane and elevator, showing the elevator aerodynamic balance.



23: Upper surface of the aileron, showing the control horn.
24: Lower surface of the aileron showing the control horn.
25: Close-up of the aileron control horn, control link and aileron hinge.
26, 27 & 28: Three views of the anchor point on the wing undersurface of the front wing strut.
29: Detail of the anchor point on the wing undersurface for the rear wing strut.





30: General view of the main undercarriage, showing the struts and the cross brace wires.

31: View of the undercarriage legs where they enter the undercarriage fairing, viewed from the outside rear, looking forward.

32: A look at the same components, looking rearwards toward the inside face of the wheel. Note the anchor point for the undercarriage cross-brace wire.

33: Further close-up detail of the anchor point for the undercarriage cross-brace wire.



34: The main wheel - not known how authentic the tyre is.

35: View looking rearwards along the fuselage underside, from just behind the engine cowl, showing the main undercarriage cross-brace wires and fuselage access panel.



36, 37 & 38: Three views of the tail skid, which has been modified with the addition of a metal shoe that gives a degree of ground steering.



OLD WARDEN

SCALE WEEKEND 2016

Alex Whittaker steps back in time and visits a sacred shrine of the scale cult

The thing about Old Warden, is that it is unique. There is no village like it. There is no vintage aircraft collection like it. There is certainly no other modelling event like it. As you arrive at the village, it always looks so impossibly well-groomed. Old Warden's gracious house and grounds have the feeling of 'Flambards', and once there,

even we rough-and-ready scale flyers tend to adopt a genteel attitude for the weekend. It is all rather impressive, yet also just a bit odd. An island of traditional Englishness set in aspic, yet surrounded by a sea of noisy Bedfordshire modernism. I adore Old Warden and every visit is one to savour.

My auld mate Ken Sheppard, Editor

Emeritus of a number of modelling magazines, runs the show with his very capable wife Sheila. Their care and attention means that the whole weekend is safe, fun, and varied. Old Warden is famous for the flying fun in the meadow. However, this year, I did not venture forth too much into the surrounding free flight merriment; instead, I stayed with the R/C





Bleriot IX (1909), 1/3rd scale, owned by James Gordon. Laser 360V power, driving a 28"x7" prop.



Amazing detailing on the 1/3rd scale Bleriot IX, built by Don Coe.

flightline. The truth is that the keen scale fancier will always find models at Old Warden that do not surface anywhere else.

Bright and Breezy

The air was a wee bit breezy at times and this undoubtedly kept a number of fine scale models on the ground. However,

many scale pilots were prepared to get airborne, and we had a great show on the Saturday. The weather was hot, and I have never seen so many airborne insects. When I reviewed my images on the back of my camera I thought I had a dirty sensor, such were the numbers of spots on some of the pix. This year I only had time for brief tour of the Shuttleworth

Collection, but it remains astounding. Next time I will spend a whole day there with my camera.

Models I saw

The first model I saw instantly impressed me. It was Richard Crapp's 88" span Junkers D.1 monoplane. He built it from the *Balsa USA* kit, which he reported had





Andy Gedney's fine 1/4 scale Velle Monocoupe 110.



Superb Shuttleworth Flying Exhibit: Miles Falcon (1936).



Hawker Cygnet in a diaphanous fly-by.

a few shortcomings. He had brought it back from America as hold luggage on the airline. The D.1. weighs 26lbs. and is powered by a Laser 300 V glow engine, driving a 20"x10" XAOR prop. Richard had problems with a new servo, but eventually got it sorted and the 'Tin Donkey' looked very special in the air.

Andrew Hilton took a different tack. He bought, assembled, and highly modified a *Balsa USA* Eindhoven kit. This works out at 80" span, weighs 13.5 lbs, and has Laser 100 glow power. Andrew has added lots of scale touches, such as a working compass set into the wing, plus a complete re-modding of the basic kit. She looked just right in the air, too.

Next up was Paul Blakeborough's exquisite Waco YKC. This is scratch built to 1:5.5 scale, is 72" in span, and weighs 12.5 lbs. She is Laser 120 FS powered, driving a Master 16"x6" prop. This really is a stunning scale model, complete, even down to full interior detail, with opening doors. She looked majestic in the air.

A lot more 'vintage' was a Bleriot IX (1909), 1/3rd scale, built by Don Coe. This is an impeccable model aircraft, built to museum standards and owned by James Gordon. She is Laser 360V powered, driving a 28"x7" prop, weighs 21 lbs, and spans 116". The model channels the Shuttleworth zeitgeist very nicely.

Walking along the pits I noticed a very meticulously hand-crafted

1/6th scale BE2C. This belongs to Mike Watters, spans 72" and has SC 70FS power. She flew very pleasingly, too.

Later I was chatting to Phil Kent who showed me two of his own designs: a Waco biplane, and a monoplane. The latter, a small model of the ZK Flying Dutchman was pretty and compact at 58" in span. She weighs 2.5 lbs, and is *Airtex* electric motor powered. His Waco biplane, was very attractive too. This was smaller than Paul Blakeborough's example, but still very attractive. The Waco is remains one of the cutest biplanes ever to fly.

On the strip, Don Harvey was flying a venerable DB Sport & Scale Cirrus Moth, G-EBLV, in blue and silver. She is built to 1/4 scale, spans 80", and is Laser 100 powered. So far so good. However, I was astonished when informed that this model was 20 years old!

A very sleek Belgian/British biplane was next: Jamie Cuff's *Fantôme* - some say the best looking biplane ever built. Jamie's immaculate model is 63" in span, and built to the old *Radio Modeller* plan.

More familiar to us from the BMFA Nats, was Lord Of Scale, John Carpenter, with his utterly superb 1/4 scale Howard DGA-3 'Pete'. This Golden Age air racer looked stunningly impressive on a cracking fly past! Wow and Double Wow!

A bit later, I noticed a very rare



Mike Watters 1/6th scale Be2C. 72" span and SC 70FS power.



Spotted in the pits, this fine Blackburn (1912) Monoplane.



Darrin Bonfield and his Tiger Moth.



Engine detail on Mike Watters 1/6th scale Be2C.



Blackburn Monoplane, on-high, overhead.



Flying actually got underway on the Friday. Darrin Bonfield's Tiger Moth climbing out.

“ My auld mate Ken Sheppard, Editor Emeritus of a number of modelling magazines, runs the show with his very capable wife Sheila. Their care and attention means that the whole weekend is safe, fun, and varied ”

model, an Italian Breda 15. This belonged to Steve Haughty, and I have not seen one for a few seasons. The last, I think, at the Skem Scale Day. I spent a good while chatting about scale models with Andy Gedney, who is Head Honcho of the Bardney Club. I greatly admired his extremely smart 1/4 scale Monocoupe 110. To my eyes the Monocoupe with an enclosed radial looks the best of the

bunch. Andy was flying his scale model with great élan - which means he was really chucking her about! Great to behold. There were many other models to see over the weekend, as the photos should confirm. Overall, we had a great feast of scale.

Full size movements

This being Old Warden, a number of full-

size aircraft flew in and out over the weekend. For the keen scale fan these movements are always welcome.

I particularly liked the elegant Miles Falcon, which dates from 1936. A stunningly well-crafted machine, and an extremely stylish "full-size".

Trade presence

This is always good, and of course at OW,



Jamie Cuff's Fairey Fantôme, 63" span built to the Radio Modeller plan.



The traditional and celebrated free flight "scale and otherwise" gathering, out on the meadow.



John Carpenter's superb 1/4 scale Howard "Pete" on a cracking fly past.



John Carpenter fittles his Howard "Pete", under the watchful eye of FSM's Revered Editor, no less.

it is augmented by a large number of swapmeet stalls, some of the smaller traders, dedicated engine specialists like Mike Clansford, and classic kit stalls. A new concern, MicroAces Aero Kits had a very impressive range of smaller electric scale models. These were made from pre-printed foam and were designed for easy, fast assembly. They use commercial electric gubbins. However, the sheer quality of the scale finishing "printed-in" was astounding. They flew well under R/C too.

I was also gratified to see one or two British classic scale kits still in production. Cambrian Model Company's 62" span Mooney 201 was a blast from the past. Traditional foam wings (!) and ideal for one of those classic .40s lurking unemployed in your shed. I also noticed a stash of Guillows scale kits, which reminded me of my early days with scale models.

The Verdict

Ken and Sheila Sheppard make an excellent job of this show. It is friendly, intimate, and varied. You can camp there as I did, to squeeze the maximum enjoyment from your weekend.

Highly recommended. ■

O.W. Scale Weekend always attracts a broad range of scale models.





Ken Bones pretty Flitzer just climbing out.



Don Harvey's DB Cirrus Moth. 1/4 scale, 80" span, Laser 100 power. 20 years old!



Old Warden is one of the "Crown Jewels" of summer scale in the UK.



R/c Bristol Boxkite soon to be available from IP Associates. Tel: 07976 071683.



The Shuttleworth Collection is an amazing British institution. Free entry at OW Scale.

Techno Scale Mike Evatt search

Usually most of the engines reviewed in this Column are huge, being designed to power the largest of scale models. With the advent of micro R/C systems, much smaller models are viable. Although electric power may be clean and convenient, many still prefer the buzz of an IC engine. **Ronald Valentine Engines** is the manufacturer of the world's smallest model engines. They specialise in two-stroke diesels for model aircraft, boats and cars, together with multi-cylinder two-stroke and four-stroke engines. All Valentine engines are produced in small quantities, and are of high precision, excellent design and high performance. Check them out at www.ronald-valentine-engines.com

Ask anyone to think of an aircraft made famous during World War I and the dreaded red Fokker DR1 flown by the Red Baron, Manfred Von Richtofen, will immediately come to mind. **Black Hawk Models** has brought back this great Walt Musciano control-line design for today's modellers to enjoy. The unmistakable triple wing layout and classic lines are faithfully reproduced.

Check out this 36in span delight at <http://blackhawkmodels.com>

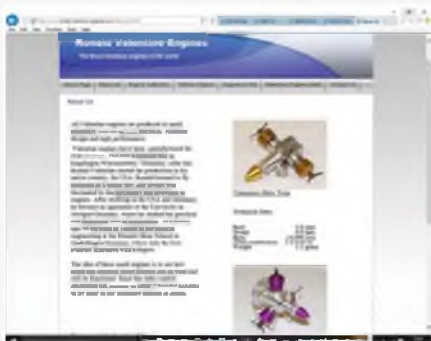
Jan Hermkens has been fascinated with the American Bomber B-17 Flying Fortress for many years and he dreamt that he would one day build a large scale flying replica. His web pages at www.janhermkens.nl chronicles in great detail his 1/8th scale B-17 (wing span 13feet) using his own plans and construction methods. Jan started the build in Autumn 1992 and it made its maiden flight May 1994. Over 800 flights later Jan has temporarily retired the model but the images live on.

The MD Helicopters' MD 500 series is an American family of light utility civilian and military helicopters. The MD 500 was developed from the Hughes 500, a civilian version of the US Army's OH-6A Cayuse/Loach. **Buzzflyer** at www.buzzflyer.co.uk stock a scale fuselage of this subject to fit the GAUI Hurricane 200 V2 FES. The GAUI Hurricane 200 is the only flybarless sub-micro helicopter! It is capable of the most powerful and best 3D performance in this size.

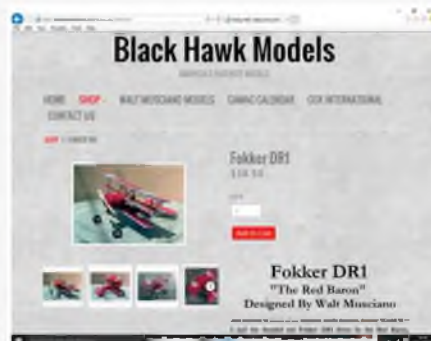
Hobby Barn is a family-run business

founded in 1970 with a web address of www.hobbybarn.com They specialise in radio control aircraft, helicopters, multi-rotors, cars, trucks, and boats. They stock the Herr 100 Series models that were originally designed as free flight rubber power aircraft, and as such they fly beautifully. Now, in this day of miniature radio gear and brushless out-runner electric motors, they are enjoying a new life as radio control subjects. Many experienced modelers are having a great time converting these airplanes to R/C flying. The light structures and stable flight characteristics make them excellent subjects for R/C.

Bill Hempel's **Team Edge** at www.billhempel.com claims to be the home of the World's Largest ARF's. Their KA-6 scale sailplane is truly huge with a wingspan of 7.5 metres and is surely the biggest ARF sailplane on the market! This KA-6 comes fully painted, covered and ready for radio installation. The airplane is finished in two basic colour schemes: all White or Red/White. Custom colour schemes are available. The airplane has a built up wing with four C/F wing tubes that



Ronald Valentine Engines are the manufacturers of the world's smallest model engines.



Black Hawk Models has brought back this great Walt Musciano control-line design.



Jan Hermkens' fascinating chronicle of his B-17 Flying Fortress build.



'Buzzflyer' stock a MD 500 scale fuselage to fit the GAUI Hurricane 200 mechanics.



Hobby Barn stock the Herr 100 Series, designed for rubber but are good for electric conversion.



Bill Hempel's KA-6 is truly huge with a wingspan of 7.5 metres.

Searches the web for more TechnoScale Topics...

disassembles into four separate wing panels to make transportation simple.

Aeroworks at www.aero-works.net has added a 100cc Carbon Cub SS ARF QB to their line of "Quick Build Series Aircraft". The Quick Build (QB) Series is top quality in both design and performance that has set a new standard for ARF aircraft. Designed with the customer in mind to provide the highest quality, light-weight construction and the fastest build time possible. The 100cc Carbon Cub SS was designed from the ground up to provide a True to Scale, Highly Pre-Fabricated, High Quality and Moderately Priced Scale Model. The 100cc Carbon Cub SS is fully aerobatic and sets a new standard for Cubs. This model features Large Full Length Ailerons with Split Flaps and has a higher power to weight ratio than the typical Cub.

At last you can build your biplane or Golden-Age Racer with real scale Flying Wires! Or just enjoy fitting real scale streamline tailplane wire bracing! True scale "working" streamline wires in 6 different sizes custom can be made to order by **Aero Scale Products** at www.flying-wires.ch. The wires are tensioned by simply turning the

oval wire between the terminals when fitted to the model. The range of tensioning is approximately 10mm each side depending on wire size.

Aircraft International is now located in Stuart, Florida, with a web presence at www.aircraftinternational.com. As well as providing the modelling world with IC engines from 3w-ModellMotoren such as the 3W-112iB4 Classic Series of flat four cylinder engines (shown in the screen-shot) but also perfectly balanced hand-made aircrews from the Biela Propeller Company which was established in Poland in 2000. The company also stock a wide range of other products including fine scale replicas of the P-51D Mustang and the F8F2 Bearcat.

Warbirdpilots.com claim to sell the most detailed pilots on the market. They offer a full range of highly detailed 10", 12", and 15" Tall WWI, WWII, and modern fighter pilot figures for your scale warbirds and Jets. The line of figures covers aircraft in scales 1/8, 1/7, 1/6, 1/5, and 1/4. These figures are fully adjustable to any position and are outfitted with the absolute most scale accessories on the market. The figures are incredibly light,

designed specifically for model aircraft, and have the ability to be cut and shortened into busts. All figures are now available with a servo operated head to put your scale warbird pilot above and beyond all the rest.

Check them out at www.warbirdpilots.com

The Fokker Eindecker fighters were a series of German World War I monoplane single-seat fighter aircraft designed by Dutch engineer Anthony Fokker. Developed in April 1915. This Eindecker was the first purpose-built German fighter aircraft and the first aircraft to be fitted with a synchronization gear, enabling the pilot to fire a machine gun through the arc of the propeller without striking the blades. The Eindecker gave the German Air Service a degree of air superiority, from July 1915 until early 1916. This period, during which Allied aviators regarded their poorly armed aircraft as "Fokker Fodder", became known as the "Fokker Scourge". **Balsa USA** at <http://shop.balsausa.com> sell a fine Eindecker E.111 with a wingspan of 80 inches.



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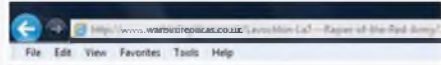
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That's all there is time for from me this month so click that mouse and if you find something out there of interest that might be good to share, email me at:

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