

THE WORLD'S ONLY R/C SCALE MODEL MAGAZINE

Flying Scale Models

www.flyingscalemodels.com

**AUSTRALIAN
FREE FLIGHT**

**SCALE
MASTERS
2014**

**HOW TO
STRUTS & WIRES**

A PRACTICAL APPROACH TO
WIRE RIGGING AND STRUTTERY



SHORT

TYPE 184 - A TRULY MASTERFUL MODEL

MORANE SAULIER TYPE N

CONSTRUCTION FEATURE : BIG 1:3RD SCALE MODEL OF THE EARLY WW1 FRENCH MONOPLANE SCOUT. IT HAS LOTS OF CHARACTER AND FLIES MAGNIFICENTLY

PLUS: SCALE THREE-VIEWS ● TYPE HISTORY

HEINKEL HE 51

PLUS: TYPE HISTORY ● SCALE THREE-VIEWS

**FULL SIZE
FREE
PLAN
WORTH £24.95**

PART 2 OF PETER RAKE'S 54" SPAN, ELECTRIC POWERED MODEL OF THE LUFTWAFFE'S BIPLANE FIGHTER

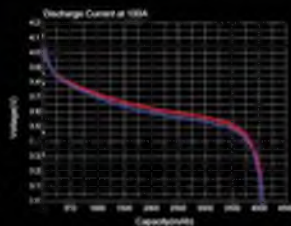
INDOOR SCALE ACTION

BMFA SCALE
INDOOR R/C NATS,
AT SHAWBURY



UNFAIR ADVANTAGE

A-SPEC G2
COMP GRADE LITHIUM TECHNOLOGY



Turnigy nano-tech A-SPEC G2 lithium polymer batteries are built to the absolute highest of standards to provide competition level performance. The A-SPEC G2 packs have the most stable consistent formula yet giving you peak performance without sacrificing reliability.

Simply put, you won't find a better performing pack on the market ensuring plenty of PUNCH for those high performance applications. If you are a performance junkie that is addicted to power, A-SPEC G2's are for you.

You won't be disappointed.

TURNIGY
power systems

GOLD

65C

Available at hobbyking.com



THE ISSUE AHEAD...

FORMATION...

FLYING SCALE MODELS - THE WORLD'S ONLY MAGAZINE FOR SCALE MODEL FLYERS



8



38



52



ON THE COVER

Obscure aircraft often make the most interesting subjects for scale modelling. Dennis Richardson, certainly achieved that with his 96" wingspan Laser 80 powered 1/8th scale replica of the Short Type 184, the inspiration and basis for which was the plan of Gary Sunderland's free flight scale example that appeared in FSM some years back. Alex Whittaker reviews Dennis' model in this issue.

FEBRUARY 2015 NO.183

4 CONTACT

Just for starters

FULL SIZE FREE PLAN FEATURE

8 HENKEL HE 51 PART 2

54" span, electric powered, model designed by Peter Rake

16 HENKEL HE 51 TYPE HISTORY

The Luftwaffe's first fighter

20 HENKEL HE 51 SCALE DRAWING

1:40 fine-line three-views

24 SHAWBURY INDOOR SCALE

BMFA Scale Indoor RC Nats, RAF Shawbury 2014. Alex Whittaker attends this innovative Indoor Scale event

30 QUIET ZONE

Peter Rake offers more indoor scale electric fun with a Deprop profile Sopwith Triplane

38 MORANE SAULNIER TYPE N

John Marriage created this big 1/3rd scale model of the early WW1 French monoplane scout. It has lots of character and flies magnificently

46 MORANE TYPE HISTORY

One of the first true fighter types of WW1, it was fast and looked very racy, but it was tricky to fly

50 MORANE SCALE DRAWING

1:40 fine-line three view drawings

52 MASTER MODELS: SHORT TYPE 184

The Short 184 was the only British aircraft present at the infamous Battle of Jutland. Alex Whittaker reviews Dennis Richardson's fascinating 1/8th scale model

58 STRUTS AND WIRES

Some practical advice from Dr. Mike Hawkins F.R Ae.S.

62 TECHNO SCALE

More scale orientated web sites to surf

66 AUSTRALIAN FREE FLIGHT SCALE

The Ausie Free Flight Masters 2014 - Gary D Sunderland reports.

www.flyingscalemodels.com

PROPPEL

America's leading
premium RC brand is
coming to the UK



Landing



**Dedicated
UK customer
service**

including our exclusive
Flight Club support
0330 123 3457 (local call rate)
www.flightclub.propelrc.com



Winter 2014

Editor: Tony Dowdeswell
Publisher: Alan Harman
Design: Peter Hutchinson
Website: ADH Webteam
Advertising Manager: Gareth Liddiatt
Advertisement Assistant: Joe Brown
Admin Manager: Hannah McLaurie
Office Manager: Paula Gray

FLYING SCALE MODELS is published monthly by ADH Publishing, Doolittle Mill, Doolittle Lane, Totternhoe, Beds, LU6 1QX. Reproduction in part or whole of any text, photograph or illustration without written permission from the publisher is strictly prohibited. While due care is taken to ensure the contents of Flying Scale Models is accurate, the publishers and printers cannot accept liability for errors and omissions. Advertisements are accepted for publication in FLYING SCALE MODELS only upon ADH Publishing's standard terms of acceptance of advertising, copies of which are available from the advertising sales department of FLYING SCALE MODELS.

EDITORIAL ADVERTISEMENT

& CIRCULATION: Doolittle Mill, Doolittle Lane, Totternhoe, Beds, LU6 1QX.
Tel. 01525 222573 Fax. 01525 222574.
Email: enquiries@adhpublishing.com

CIRCULATION TRADE ENQUIRIES:

Seymour Distribution, 2 East Poultry Avenue, London, EC1A 9PT
020 7429 4000.

NEWSTRADE: Select Publisher Services, 3 East Avenue, Bournemouth, BH3 7BW.
01202 586848
Email: tim@selectps.com

SUBSCRIPTIONS: Doolittle Mill, Doolittle Lane, Totternhoe, Beds, LU6 1QX.
Tel. 01525 222573. Fax. 01525 222574.

PRINTING: Symbian Print Intelligence, Calverley House, 45 Dane Street, Bishop's Stortford, Herts, CM23 3BT.
Tel: 0870 870 1670; Fax: 0870 870 1675

**(c) Copyright Flying Scale Models
2015 ADH Publishing.**

The paper used on this title is from sustainable forestry

Competitor to the famous Ford Tri-motor, the Boeing 80A-1. Australian David Balfour modelled it for electric power.



CONTACT

ANTIDOTE FOR SPITFIRES AND MUSTANGS!

No, we're not biased - and a well-produced model of a Spit' or 'Tang is something we'll always admire. But we're equally in admiration of scale modellers who go out of their way to tackle those obscure scale subjects, of which Dennis Richardson's big Short 184, reviewed in detail in this issue, is a classic example.

This creativity is worldwide among scale modellers and the proof of it can be seen in a couple of photos that Gary Sunderland submitted, of models seen at the Shepperton Mammoth Scale event in Australia. Just how many of us have actually heard of the *Boeing 80A-1* Tri-Motor, but it obviously appealed to David Balfour, who modelled it for electric power.

Gary Sunderland will be well known to readers of FSM for his extensive line of WW1 aircraft types, plans and construction features of which have appeared in this magazine. Gary reports that he has abandoned biplanes for the moment to produce a *Nakajima Ki 27* monoplane fighter which, he reports, flies well on an O.S.200 motor. Maybe we'll be able to persuade him to present plans

for this one in FSM too - after we've dealt with his B.E.2a, presently in the final draughting stages on the FSM drawing board.

So, the adventurous scale creativity is alive and well - but we're still attracted to Spitfires, Mustangs, Me 109s and Tiger Moths, just as much!

Most of Australian Gary Sunderland's scale models have been biplanes, so it's a surprise to see his *Nakajima Ki 27*.



NEXT MONTH IN FSM

March issue of FSM will appear on February 12th, in plenty of time before the end of the Indoor Scale flying season to present Richard Crossley's *Nakajima Ki-43 'Oscar'*, for which we'll be able to provide full size pull-out construction plans, colour schemes etc, for this Japanese WW2 fighter. Richard's prototype model is rubber powered, but can easily be adapted to radio control and electric power with a little ingenuity.



GET YOUR HANDS ON ULTRA **POWER**



CHARGE
...your passion

*Opti**FUEL**™ is one of the fastest growing brands in Europe with competition winning Nitro fuel products for the RC Model sector, now Opti**FUEL**™ is delighted to add a new brand Opti**POWER**™ which will be the flagship brand for the new range of RC Chargers and LIPO cells.*



> **ORDER NOW** FROM YOUR LOCAL RETAILER
FIND YOUR SPEC @ www.optipower.co.uk

OptiPOWER****
...your passion



Sweeping in for a low pass the He-51 shows off her lines and colour scheme to good advantage.

Heinkel He-51

PART 2: Continuing the construction of Peter Rake's 54" span, electric powered model of the Luftwaffe's biplane fighter, built and described by Craig Johnston



FUSELAGE REVISITED

The 1/8" motor mount pieces were glued together with the 'M'-piece to the front as against the rear that the plan shows. This was only done so as to suit my chosen motor and its shaft position in relation to the nose. The motor and X-mount were fitted to the motor mount with a couple of washers under the top, and left hand side of the 'X' so as to set the right and down thrust. This takes a bit of fiddling due to the motor not being centred on the ply mount, but offset, as I wanted the prop and spinner as close to the centre line of the fuselage as possible. *(The hole in parts M and MA is off-set by just the right amount so that the shaft is central with the required down and side thrust. So, make sure you fit them the right way round. The view on the plan is from the front, PR)*

Once happy with the motor and mounting, the ESC was placed under the battery tray of the lower fuselage section. The motor and mount assembly was then glued to the lower fuselage, the outer sleeve for the elevator control was glued to it's rear anchor post in the upper fuselage and the top and bottom fuselage halves were finally glued together with *Titebond* (slow drying) so as to give me some fiddle-time and check that all was aligned correctly.

I also ran some glue over the top part of the engine mount where it locates in the upper fuselage half. Once this assembly is dry, the side and vertical keels had their height built up with lengths of 1/8" x 1/8" balsa strip to bring them to the same level as the stringers, and sheeted sections. *(Balsa capping being much easier to sand than the ply keels themselves. PR)*.

The nose area was sanded to the correct depth to allow the prop. adaptor, and spinner backplate to be fitted along with the thin ply nose ring pieces. The nose area and cowl were then planed and sanded using pictures and the plastic model as references so as to give the area its distinctive shape. The air inlets were opened up using the *Dremel* and one of the wife's emery nail files. It is amazing how many useful modelling tools they have in their inventories!

While I was filling the back yard full of balsa shavings and dust, I made up the rear fin fillets. These are shown on the plan as just basic block balsa, but i wanted to have the area blended as per the real deal. They are pretty thin and fragile in places, so I made up a 'T'-piece of 1/4" balsa sheet the same as the desired fillet profile, the fillets were tacked to this, and this in turn double-side taped to the tailplane seat. This made it much easier to blend them with the fuselage, and also support them.

The Radiator assembly was made from balsa sheet, with some triangle stock to act as gussets. The louver is made from *Evergreen* card stock

UPPER WING

The top wing centre section was started by laminating the dihedral braces to the



Note how the motor is off-set to allow for down and right thrust and still leave a spinner that is central in the nose.



The tail fillets Craig fitted to his model.

centre spar sections. These were then being pinned down so that it was just a matter of framing the rest of the piece. Some care and attention is required though as most of the ribs are different, and the ply centre section strut mount parts must have their orientation correct.

The top wing outer sections were next for the board. These were framed up as normal, but care needs to be taken with a few things, again being sure to fit the correct rib to the correct spot, because there are lots of different ones in the make up.

The ply R15 ribs carry the aileron servos and were drilled for their mounting screws. These then had the servos test fitted due to being a potential nightmare once glued in position over the spars. I was also sure to check that I would be able to get the servos in place and secured once the wing was built up. Again I was sure to get the ply strut attachment plate orientated correctly, there is only about 1mm difference in them but a difference there was! The root ribs were glued in position after packing out the wing tips to the correct height.

The wing tips were laminated up using the same method as the tail surfaces, the only difference being the strips are 1/16" x 3/8". With these done they were glued in position and the leading and trailing edge areas cut to suit and fitted. The outer three ribs for each side were made in-situ and shaped with the tip taper. I put a reference line around the wing tip, duct-taped (Gaffer Tape) over the R19 ribs and sanded the tips to my desired taper using the duct-tape as and reference line for sanding limits. This was all done with the ailerons still attached so as to accurately carry the taper along the whole tip chord. The leading and trailing edges of all the wing sections were planed and sanded to shape.

Next, the ailerons were cut away from the wing panels and slotted for hinging. I chose to make the servo horn access panels removable so put a bit of 1/8" x 1/4" balsa in the required rib bays against the spars, so that I could screw in the access panels. The three sections of the top wing were then epoxied together, ensuring that the correct dihedral was maintained.

I wanted to run each aileron servo off

of its own channel so as to give myself some options when it came to radio set-up. I cut a slot in each of the centre section ply plates just inboard of the rear centre section (c/s) strut locating holes. Then I ran some servo wire through the central wing section for either side and crimped female plugs on either end of it, one end going to each aileron servo and the other seating firmly in the slots. After this was done, the top of the centre section was sheeted with 1/16" balsa.

BOTTOM WINGS

The lower wings were built up a little differently than designed by Peter, because he kindly agreed to let me incorporate flaps into the model as per the full size. To do this, I had to firstly put a hole in each rib for the servo lead, this was done using a piece of sharpened brass tube. I also replaced two of the 1/16" R5B ribs in each wing with some 1/8" jobbies for the servo bays, as I had decided to take the easier option and have each flap driven by it's own servo. The servos themselves were mounted on removable 1/16" ply plates as per many of Peter's designs using ailerons.



How those tail fillets work once everything is in place.



The top wing centre section showing the strut mount positions and how Craig has let in the servo lead extensions.

After these little changes were made, the wings were again framed up over the plan much as the top outer panels, just being doubly sure not to glue anywhere that I would soon be cutting away for the flaps. The lower wings require brass tubes to be fitted to the inner most three ribs on each side for the music wire wing joiners. The tubes were loose fitted to the wings with the wire rod, both wings were slotted together, and the packing which set the dihedral was again positioned beneath the wings which helped the brass wing tubes find their required location, they were then epoxied into position being sure not to accidentally glue the wings together or the music wire rods into the tubes. *(Been there, done that, wasn't impressed. PR)*

After all was dry, I separated the flaps from the wing just behind the rear spar, trailing edge piece, and wing tip. I trimmed down the stubs of the ribs on the flaps so as to fit a 1/4" x 3/8" leading edge to them. I made up a couple more control horns out of ply using the kit aileron ones as templates and glued in some balsa sections into the flaps to mount the horns into. The flaps were slotted for CA hinges. I went with top hinging for them as I didn't want to risk weakening the rear spar in the lower wing. The hinges were CAed to the top edge of the rear spar, and a cap strip of balsa was cut and glued across the top of the spar to bring it to the same height as the ribs.

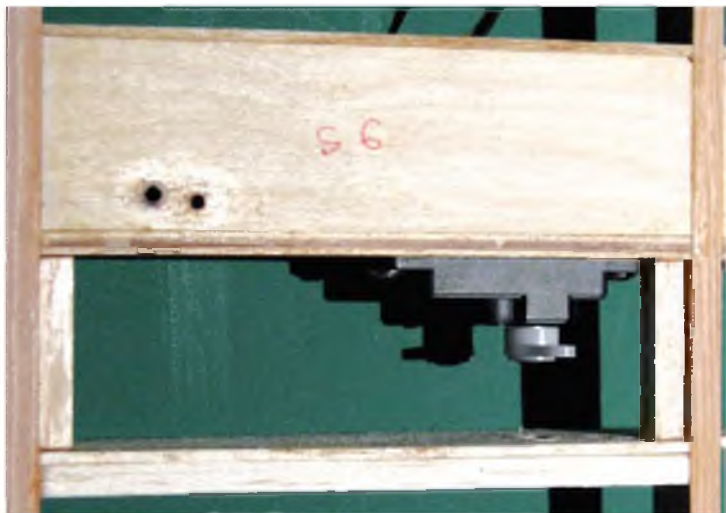
The inner bays of the lower wings were sheeted on top as per the plan, and some hard pine was cut shaped, and drilled for the lower interplane strut mounts, these were then glued into position.

While on the subject of the lower wings, I used a spade drill to put a hole in each side of the fuselage lower wing mounts so the servo lead could pass through it to the wings.

STRUTTERY AND UNDERCARRIAGE

The interplane struts were shaped from piano wire as per the plan. Brass tabs were then cut and drilled to secure these to the wings; but none of these components were not soldered at this stage. The c/s struts were also formed using the plan as a guide; again the tabs were not soldered for now. The undercarriage legs were shaped as well and took a couple of attempts, as wire bending is not my forte and the wire in this case was too heavy a gauge to be done using my little *K+S Bender*. When happy with the angles, these were plugged into their mounting tubes in the fuselage bound with stripped down copper wire and soldered together.

The spats were laminated together including the ply re-enforcements ensuring both a left and right handed unit were made. Then it was out with the ever-faithful razor plane and sandpaper again to shape them. Once shaped, the spats were assembled onto the undercarriage legs,



Here you see how the aileron servo will end up, and yet more strut mounting plates.

CUT PARTS SET FOR THE

HEINKEL HE-51

Get straight down to construction without delay! This month's full size free plan feature is supported by a laser-cut set of ready-to-use balsa and plywood components. This provides all the parts that, otherwise, you would need to trace out onto the wood before cutting out.

IT DOES NOT INCLUDE STRIP AND SHEET MATERIAL OR SHAPED WIRE PARTS

Price £115.00

plus carriage: £11.50 (UK); Europe £26.00

Order set CUT/FSM499

Shipping Note: For shipping to destinations outside the UK and Europe, you will be charged our standard flat-rate price of \$49. This covers most destinations and secures your order with us. However, we will contact you accordingly with an accurate total shipping charge prior to dispatch and either issue a refund or a PayPal money request for the balance.

Visit our secure website:

www.flyingscalemodels.com

to order yours



Order direct from:- ADH Publishing, Doolittle Mill, Doolittle Lane, Totterhoe, Bedfordshire, LU6 1QX, UK. Tel: 01525 222573/ enquiries@adhpublishing.com.

along with 3" lightweight foam tyre wheels and inner and outer retaining collets. The wires are located in channels in the spat and are secured using more brass tabs that were cut and drilled. Small screws hold the whole lot together.

The undercarriage legs were then in-filled with balsa sheeting, and slight fillets made up where they plug into the fuselage.

PUTTING IT TOGETHER

To aid in getting the top wing incidence correct, I made up a balsa wedge that I traced from the side profile view of the

plan. This was taped in its location to the upper fuselage and sets the top wings height and 1 degree of positive incidence in relation to the fuselage lateral line. The lower wings were plugged into their mounts using the piano wire joiners, followed by the c/s struts. The top wing was plugged into the centre section struts, followed by each of the interplane struts, which can be plugged into the lower wing and then swung into their top wing homes by spreading the wings a little.

Once all the struts were in their respective locations, the top wing was seated against the incidence wedge

and checked for distance between top and bottom wing tips. When I was happy that all was as it should be, the brass tabs that had been slid onto the strut wires as the assembly was slotted together, were then soldered into position. The spreader wires between the front and rear centre section struts were also wire wrapped and soldered at this stage.

The whole lot was disassembled and the struts were clad in hard balsa, and sanded to shape, with a slot being cut in the rear post of each c/s strut to hide the aileron servo wires. ■

Craig has protected the main ribs with tape while shaping and sanding the tip ribs.



Although Craig fitted flaps to his lower wing panels, they proved not to be needed for successful take-off and landing.



All set for another flight the model has a vast amount of 'presence' about it.

Sussex Model Centre
 57-59 BROADWATER ROAD : W. SUSSEX : BN14 8AH
 24 Hour (01903) 207525 (3 lines) & 233817
 Fax: (01903) 202933 (International 44 1903 202933)
 Email: smc@sussex-model-centre.co.uk
 Web Site: <http://www.sussex-model-centre.co.uk>

SEE OUR 42,000 ITEMS ON OUR WEBSITE - www.sussex-model-centre.co.uk

ARTTECH

Stol 500
 PNP
 1254mm span
 requires Tx, RX, battery and charger
£159.99

Diamond 1800 span elec. glider Complete with Radio **£169.99**
 Or without tx/rx/chg or batt. **£129.99**

Diamond 1100 Pro span elec. glider Complete with Radio **£129.99**

Diamond 1000 Sport span elec. glider Complete with Radio **£99.99**
 Or without tx/rx/chg or batt. **£89.99**

ARES

Ares Gamma 370
 PNP 3ch 980mm
 Special **£34.99**

Ares Chronos CX100 RTF with Camera
 Special **£26.99**

BLADE

Blade 180 CFX
 BNF Basic **£179.99**

Blade 200 SR X
 BNF **£152.99**

Blade 200 SR
 X RTF **£188.99**

Blade 300 CFX
 BNF **£314.99**

Blade 180 QX HD Quad Copter BNF **£116.99**
 RTF **£143.99**

Blade 200 QX Quad BNF **£161.99**

Blade 350 QX Firmware 2.0 RTF **£320.00**
 BNF **£199.99**

Blade 350QX Carrying case **£79.99**

DJI

Phantom 2 Vision +
 Ready to Fly Quad Copter with Radio, Camera and Gimbal **£940.00**

Phantom RTF Quadcopter **£349.99**

Phantom FC40 RTF Quadcopter **£389.99**

Phantom 2 RTF with H3 3d gimbal **£674.99**

DYNAM

Messerschmitt B1 110 1500mm RTF Warbird without TX/RX/Battery **£197.99**

Cessna 188 (Agwagon) 1500mm RTF Civilian Aircraft **£143.99**

Hawker Hurricane Mk1 1250mm with motor servos & retracts **£139.50**

A10 Warthog 1080mm span with motors and fans **£143.99**

Meteor Jet V2 ARTF 910mm span with servos, motor, fan, retracts and ESC **£130.50**

Smart Trainer ARTF 1560mm span with servos, motor and ESC **£143.99**

Cessna Sky trainer 1280 mm span Ready to fly with 2.4Ghz radio **£164.99** ARTF **£103.50**

Pitts Model 12 1130 mm span with ESC, motor and servos Red or Yellow **£139.50**

DHC-2 Beaver 1500mm span without Tx/Rx/Battery **£152.99**

Fox/Wulf FW190 1270mm With motor, servos, ESC and retracts **£134.99**

ME262 1500mm With motors fans, servos, ESC and retracts **£202.50**

Tempest 1200mm span with ESC, motor, servos and retracts **£139.50**

Spitfire 1200mm span with ESC, motor, servos and retracts **£121.50**

Waco F Series Bi-plane 1270mm With motor, servos, and ESC **£139.50**

F4U Corsair ARTF 1270mm With motor, servos, ESC and retracts **£139.50**

GeeBee Y Sport Plane 1270mm With Motor, servos, and ESC **£134.99**

Tiger Moth 1270mm with motor, servos, and ESC **£134.99**

Cessna 550 1180mm With motors, fans, servos, ESCs and retracts **£139.40**

EFLITE

Carbon-Z Cub 2150mm span PNP **£395.99** or BNF **£337.50**

Clipped Wing Cub 250 780mm span for 250 motor **£103.50**

Apprentice ESP 15e 1500mm BNF **£188.99**

Mystique RES 2.9m ARTF Airframe **£233.99**

P-51D Mustang span 1120mm

PNP **£143.99** or BNF **£170.99**

UMX B-17G Flying Fortress 660mm Span BNF only needs a DSM2 or DSMX Transmitter **£114.99**

Habu S DF 372mm Span BNF only needs a Transmitter **£124.99**

Habu 32 X Ducted Fan 1070mm span ARF Airframe **£300.50**

FMS

P-47 Razorback 980mm without Tx/Rx/battery High Speed Version **£166.50**
 Standard Speed Version **£134.99**

Edge 540 1320mm with motor, ESC, servos **£161.99**

HOBBICO

Fox RTF 800mm Mini Glide RTF **£71.99**

LET 13 ARTF 1500mm Glider **£74.99**

VTail RTF 800mm Mini Glider **£71.99**

Pitts ARTF 1400mm Bi-Plane **£269.99**

Dromida Ominis Quadcopter 238mm with LED very tough RTF **£55.99**

Dromida Koda Quadcopter 90mm with camera RTF **£35.75**

HUBSAN

Hubsan Q4 Micro Quadcopter RTF **£28.99**

Hubsan X4 LED Mini Quad Copter RTF with HD Camera Recording & 2.4Ghz Radio **£59.99**

Hubsan X4 Micro LED Quadcopter with video camera Ready to go with 2.4Ghz radio. **£48.50**

Hubsan X4 FPV Mini Quadcopter Ready to go with 2.4Ghz radio **£143.99**

NOW Available from Sussex Model Centre
 Who doesn't know the legendary Curare 60?
 Hanno Prettnr won many championships in the late 1970's with this iconic model. It is now possible to own your own Curare 60 Hanno Prettnr Edition ARF 1640mm span.



Curare retractable retracts 40-90° **£119.99**

LiPolice LP-4025/12T-510KV Brushless Motor **£56.50**

West Eurotech 52 T1 Engine with Genesis Pipe Manifold **£183.81**

Requires 5 servos, ESC, 5 or 6s lipo, receiver, transmitter and regulator if not using an Opto ESC - Available in two colour schemes £261.50

MAXFORD

Range of Maxford Scale Kits in stock

MULTIPLEX

Pilatus PC-6 EP RR 1250mm with motor ESC and servos **£179.99**

Stuntmaster 3D 870mm span with motor **£125.99**

Shark Fun Flyer 1070mm span with motor, ESC and servos **£129.99**

Extra 300 S RR 1200mm span with motor servos and ESC **£170.99**

Panda Sport 1160mm span Kit **£49.50**
 RR **£130.50** RRPlus **£161.99**

FunMan 1019mm span RR version includes motor, esc, prop, servos **£97.00**

Tucan Kit 1300mm span airframe **£117.75**



EasyStar II Airframe kit **£60.99**

FunCub 1400mm ARTF **£82.99**

FunCub Power Set **£104.50**

FunJet Ultra Electric Flying Jet 783mm span for C3514-2980bl motor **£74.50**

EasyGlider PRO span 1800mm **£71.99**

Solius 2160mm span electric glider Kit **£94.50**

Solius RR with motor, esc, and servos Kit **£219.50**

Solius RR+ with motor, esc, Rx and servos Kit **£283.50**

PARROT

Parrot AR. Drone 2.0 Elite High Tech Quadcopter **£279.99**

Parrot AR. Drone 2.0 Power Edition High Tech Quadcopter now with GPS Flight recorder with 1000 mAh lipo **£319.99**

Parrot GPS Flight Recorder **£89.99**

PARKZONE/HOBBYZONE

Glasair Sportsman 1390mm span RTF **£179.99**
 NOW **£119.95**

Sukhoi SU29-MM 1120mm BNF **£175.50**

Parkzone Sport Cub 1300mm PNP **£148.50** or BNF with AS3X **£170.99**

Hobbyzone Super Cub Safe with AS3X 2121mm span RTF **£124.99** or BNF **£112.50**

Parkzone Artizan 108cm span with AS3X PNP **£134.00** or BNF **£179.99**

Ultra-Micro Icon A5 BNF with AS3X **£71.99**

Parkzone Ka8 2.25m sailplane PNP now **£79.99** BNF **£99.99**

Parkzone Visionaire 3D Trainer BNF 1143mm span **£219.50**

PERKINS TWISTER HELI.

Twister Quad RTF **£31.99**

Twister 400 Sport V2 Heli RTF **£80.99**

Mini Twister Sport 4ch 2.4Ghz Single Rotor R/C Helicopter **£43.50**

Twister Scale 2.4Ghz 4ch Ready to fly Contra Rotating Helicopter **£39.99**

Micro Twister Pro 2.4Ghz Contra-beginners & Advanced Modes with 3 ch. 2.4ghz & gyro stabilisation RTF **£29.99**

Twister Sea King RTF Coaxial with Planet T7 2.4ghz radio, working winch and tail rotor **£125.99**

IFT Evolve 300 CX Coaxial Electric Heli RTF **£134.99**

Twister Quattro-X 300mm High performance Quad RTF **£251.99**

Camera set for Quattro **£71.99**

RBC Kits

Traditional build up kits for experienced modellers.

Corby Starlet kit 1325mm makes up into airframe only **£135.99**

Bristol Beauflighter kit 1050mm makes up into airframe only **£135.99**

Spitfire kit Mk 1100mm makes up into airframe for Speed 600 **£74.50**

Tiger Moth kit 1190mm **£129.75**

DUMAS

Nieuport 28 kit 889mm makes up into airframe only **£56.99**

DH-89 Dragon Rapide Kit 1066mm makes up into airframe only **£51.50**

Pilatus Porter Kit 686mm makes up into airframe only **£44.99**

Tiger moth DH-82a Kit 889mm makes up into airframe only **£49.50**

Spad XIII Kit 889mm makes up into airframe only **£51.99**

Aeronca C-3 Kit 1016mm makes up into airframe only **£49.50**

Taylorcraft Kit 1016mm makes up into airframe only **£49.50**

PRECEDENT

Slec T240 span 242cm kit for 90 size eng **£239.99**

Stampe Biplane span 2080mm kit for 90 size eng. **£229.99**

SPECIAL

Axion Laser Arrow with motor, ESC & servos Was **£99.99** Now limited period **£69.99**

SEAGULL

Savage Cruiser 203cm for 91 size eng. **£193.50**

Bucker Bu-133 Jungmeister 165cm span for 91size engine **£275.00**

Spitfire 203cm for 26-36cc 2030mm span **£269.99**

Extra EA300LEP 1395mm span for 46 size eng. **£134.99**

Gipsy Moth 1830mm span for 90 size eng **£251.99**

CEA-309 Mahari 170cm span ARTF for 90-120 size eng **£170.99**

Super Chipmunk 160cm span ARTF for 60 size eng **£161.99**

Sea Eagle 125cm span ARTF for 46 size eng **£143.99**

Grove GR7 Madness 180cm span ARTF for 55 size eng **£170.99**

WEST WINGS

Orion E kit 1.5m span for 400 motor **Kit £41.99**

Orion kit 1510mm span **Kit £37.99**

Lancer Thermal Glider kit 2515mm span traditional balsa build **£134.99**

FSM 11/12/2014

Prices are subject to alteration without notice E&OE Please note the UK 48 hour service is from time of dispatch not from time of order.

Orders over £175.00 value sent 48 hour Carriage Paid - Very small items £3.50 - Small size items up to £40.00 part letter post cost £3.99 or £4.50 depending on size/weight - Otherwise medium, large and heavier orders totalling less than £175.00, sent 48 hour service pan cost £6.50 - These apply to UK Mainland only. For Scottish Highlands, N Ireland, Isle of Man & Scilly Isles ask when making order.

An optional next working day delivery (not Saturdays) available UK £8.95 (Not Scottish Highlands, N Ireland, Isle of Man & Scilly Isles) Overseas Carriage Charged at Cost

For immediate despatch on orders paid by Cheque we require your cheque card number & your address (Applies to UK Customers only).



No. 1 High Street Retail 2009 & 2010 No. 2 Mail Order Retail 2009 & 2010 as voted by RCME&E readers and members of ModelFlying.co.uk



rcHobby
your rc-model superstore

- ▶ **ALL MAJOR BRANDS
IN ONE SHOP**
- ▶ **SHIPPING ALL
ACROSS EUROPE**

rcHobby.com

**AIRPLANES • HELICOPTERS • MULTICOPTERS • CARS • BOATS
RADIO SYSTEMS • CHARGERS • ACCESSORIES & MUCH MORE...!**

AlmostReadyToFly



P-51 DAGO RED

£54.90

AlmostReadyToFly



▶ with 3 axis gyro system!

INTERCEPTOR II X3

£86.90

AlmostReadyToFly



▶ with 3 axis gyro system!

MUSTANG P-51 X3

£86.90

AlmostReadyToFly



▶ with 3 axis gyro system!

TROJAN T-28 X3

£86.90

AlmostReadyToFly



PITTS S-1S

£109.90

ReadyToFly

▶ incl. radio, charger and lipo battery



U CAN FLY II RTF

£134.90

ReadyToFly



EDGE 540 RED BULL

£109.90



FUTABA T6J SET

£78.90



Forerunner of the Heinkel He 52, the He 49 featured a different undercarriage arrangement.

Heinkel He-51

THE LUFTWAFFE'S FIRST FIGHTER

Contrary to popular belief, the rebirth of German military aviation after WW1 was by no means a product of Adolf Hitler's Nazi Party ascent to power in January 1933. The terms of the Treaty of Versailles in June

1919 included the disbandment of the German Air Force, although it did allow a Defence Ministry in Berlin, albeit of seriously curtailed scope and size, commanding a treaty army of 100,000.

Here, General von Seeckt, Chief of the Army Command, himself a career infantry

officer, could see that air power would eventually be of paramount importance and was determined to lay the foundation for the resurgence of German air power. To circumvent Treaty restrictions, in late 1921 emissaries were sent to Soviet Russia to discuss aircraft manufacture and

Glad Rags, Luftwaffe style! A group of officers pose in front of a He51A of the newly formed Jagdeschwader 132 'Richthofen' based at Jüterberg-Damn in 1935. The swastika tail marking was adopted when the Luftwaffe discarded its clandestine status on March 1st 1935.





A He 51B-2 floatplane of the Kuste njagdgruppen 136 46.

military training and by 1924, the foundation of a clandestine German air-force-in-training had been established in the Soviet Union and this secret 'co-operation' continued for most of the following decade, during which 'civilian' organisations such as the *Deutscher Luftsportverband* provided basic airmanship training on gliders to thousands of young men - potentially the bedrock of a resurgent German Air force - whenever that might occur.

Thus, when Hitler's National Socialist Party came to power in January 1933, they were not the originators of an all-new German military air arm, but the inheritors of a force clandestinely in being, although the secrecy continued until 'coming out' with Hitler's revelation of a Luftwaffe in-being on March 1st 1935.

A fighter borne in secret

The Heinkel He 51 was a development of

the earlier He49, design work on which commenced in 1931 and the first prototype flew in November 1932. Officially, this was an 'advanced trainer', although in reality it was a fighter aircraft. Interestingly, that date is an indication that warplane development in Germany during the pre-Nazi Weimar Republic period, (specifically prohibited under the terms of the Versailles Treaty after the end of WW1), was taking place prior to the January 1933 parliamentary elections in Germany that brought Hitler and the Nazi Party to power.

Development of the He 49 continued, first with a stretched fuselage, and then with the introduction of a different engine. Further revision quickly led to the Heinkel He51 that closely resembled the '49 but with revisions that included changes to the strut braced main undercarriage. The new type first flew in May 1933 as a pre-production type for the embryo, but

still secret Luftwaffe, which received initial production examples in July 1934. This conventional single-bay biplane, of all-metal construction and fabric covering used a glycol-cooled BMW VI engine, and carried an armament of two 7.92 mm (.312 in) machine guns mounted above the engine - typical of the kind of armament carried by fighter aircraft of other Air Forces. The He51 therefore hardly broke new ground in fighter aircraft design but then, such was hardly the intention, which was, to give the still secret Luftwaffe some fighter type experience.

The He 51 entered service at a time when the end of the lightly armed fighter biplane was clearly in sight. In other countries, the advance toward the more heavily armed monoplane fighter was underway at least in the form of design studies, and no doubt in Germany too. However, although the He 51 was outdated the day it entered service, it

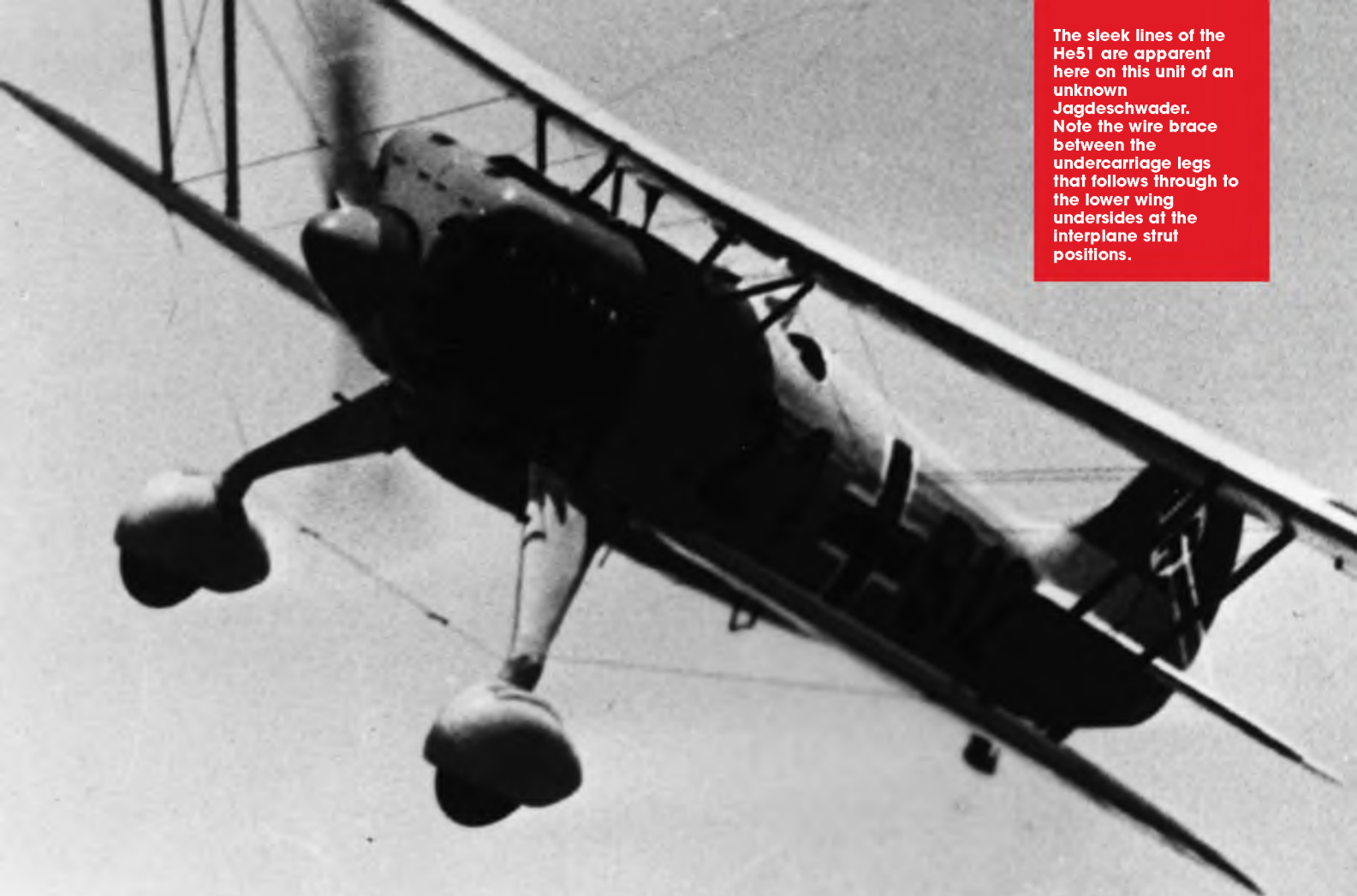


A pretty grubby He 51B trainer of the Jagdfliegerschulen in the early 1940s.



He 51A. D-IDIE the sixth production aircraft completed in the Spring of 1934 and thus in 'civilian markings'.

The sleek lines of the He51 are apparent here on this unit of an unknown Jagdeschwader. Note the wire brace between the undercarriage legs that follows through to the lower wing undersides at the interplane strut positions.



nevertheless provided the newly formed Luftwaffe with a useful tool on which to gain vital experience and an initial run of 150 production examples was followed by the modified He 51B, of which approximately 450 were built, including more than 40 He 51B-2 floatplanes and then finally a further 100 He 51C light ground-attack aircraft.

Into combat

The He51 saw service with Nationalist forces at the outbreak of the Spanish Civil War and achieved initial success, against a number of older French Nieuport Ni-52, Breguet 19 and Potez 54 biplanes of the Spanish Republican Air Force. As the intensity of combat operations increased, further supplies of the He 51 led to the formation of two Spanish Nationalist

squadrons and three of the German 'volunteer' Legion Kondor.

Air superiority was however quickly lost to large numbers of more modern aircraft from the Soviet Union, including the Polikarpov I-15 biplane and new Polikarpov I-16 monoplane, rendering the He51 unable to protect the Legion Kondor's bombers. Thus outclassed, He51s were withdrawn from fighter duties and re-assigned to ground-attack operations, making way, in the Spring of 1937, with the Condor Legion, for the very early version of the Messerschmitt Bf 109.

In its 'relegation' role, the He51 proved a successful tool in developing the ground-attack, close support tactics used by the Luftwaffe during the opening stages of World War II. It continued in use as a ground attack aircraft for the

remainder of the Spanish Civil War, although losses were heavy. Following the end of the civil war, He51s continued in Spanish service until 1952.

Experiences in Spain demonstrated once and for all that the days of the biplane fighter were over. The Soviet Polikarpov I-16s were basically untouchable because of their speed and the biplane fighter could successfully give combat only if they could enter a fight from a position of a perfect 'bounce'. The lesson learned by all of the participants was that speed was far more important in combat than manoeuvrability.

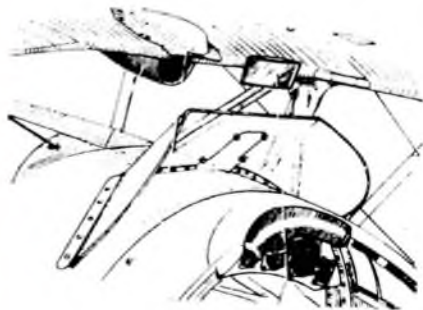
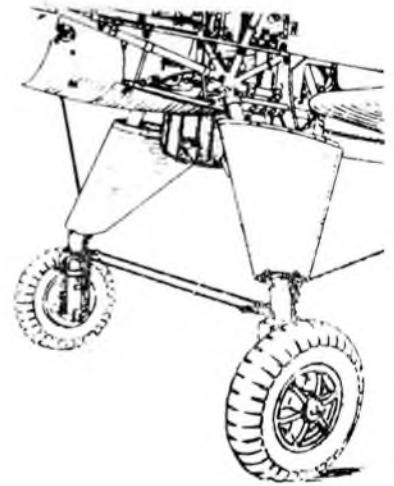
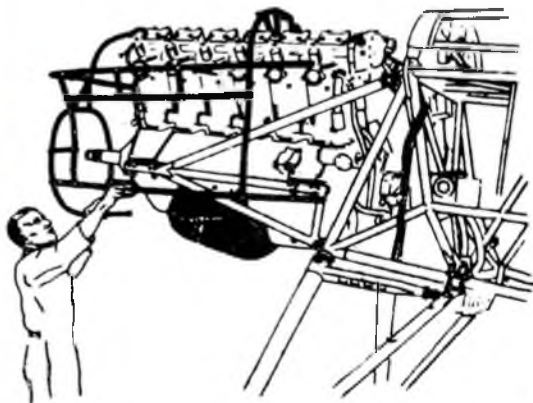
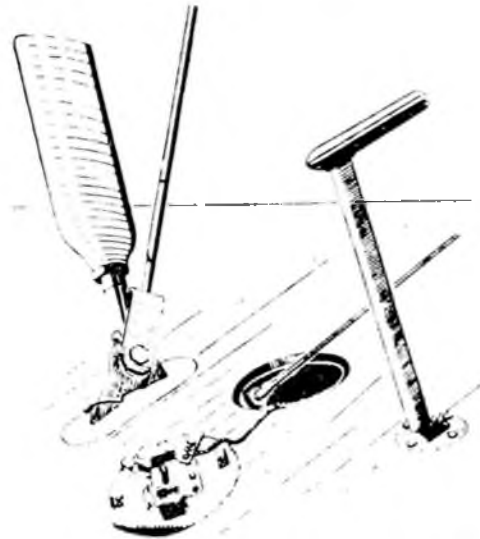
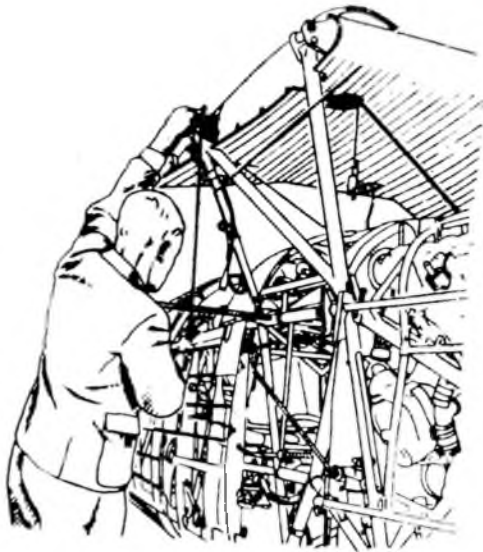
The He 51 continued in front-line service with the Luftwaffe until 1938, then remaining in service as an advanced trainer for the first few years of World War II. ■



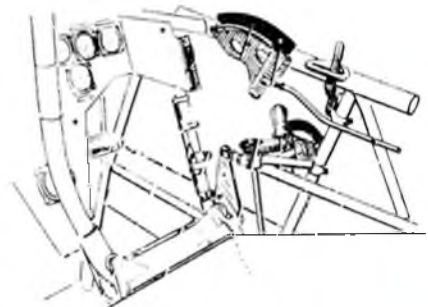
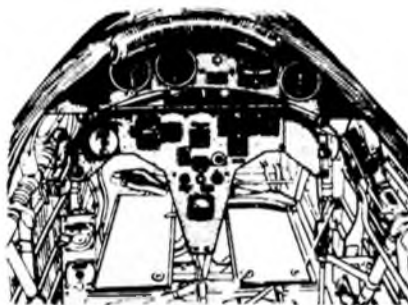
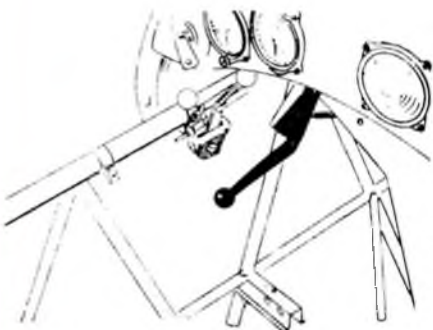
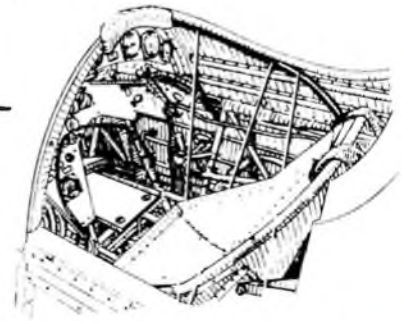
A He51B of the 2nd Staffel I Gruppe being inspected at Doberitz in 1937. The civilian at the bottom right is Colonel Charles Lindbergh who was visiting the base with the US Air Attache. The officer consulting his watch is Reichsmarschall Herman Goering.

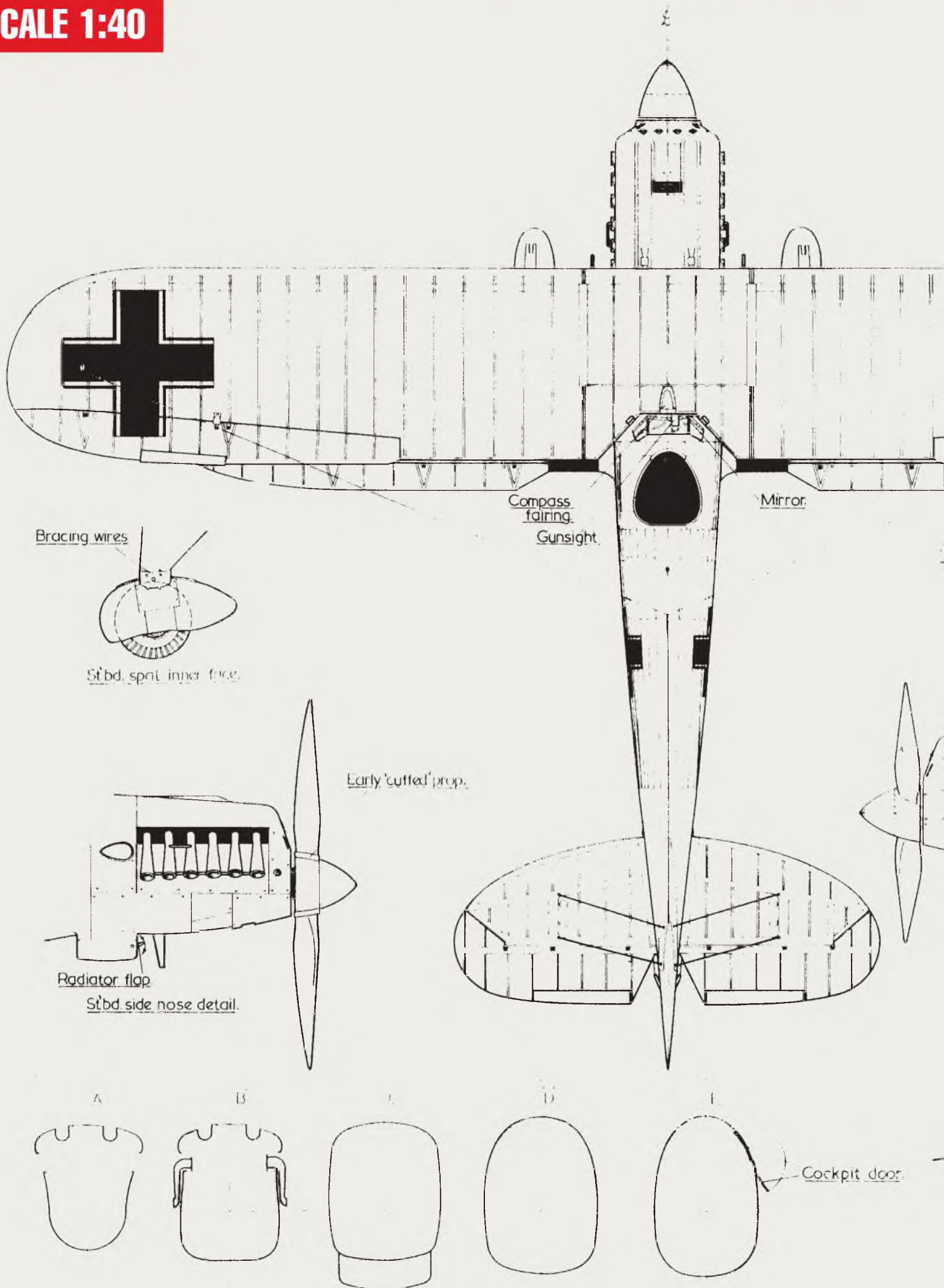


A He51B of the Condor Legion in Spain in 1938.

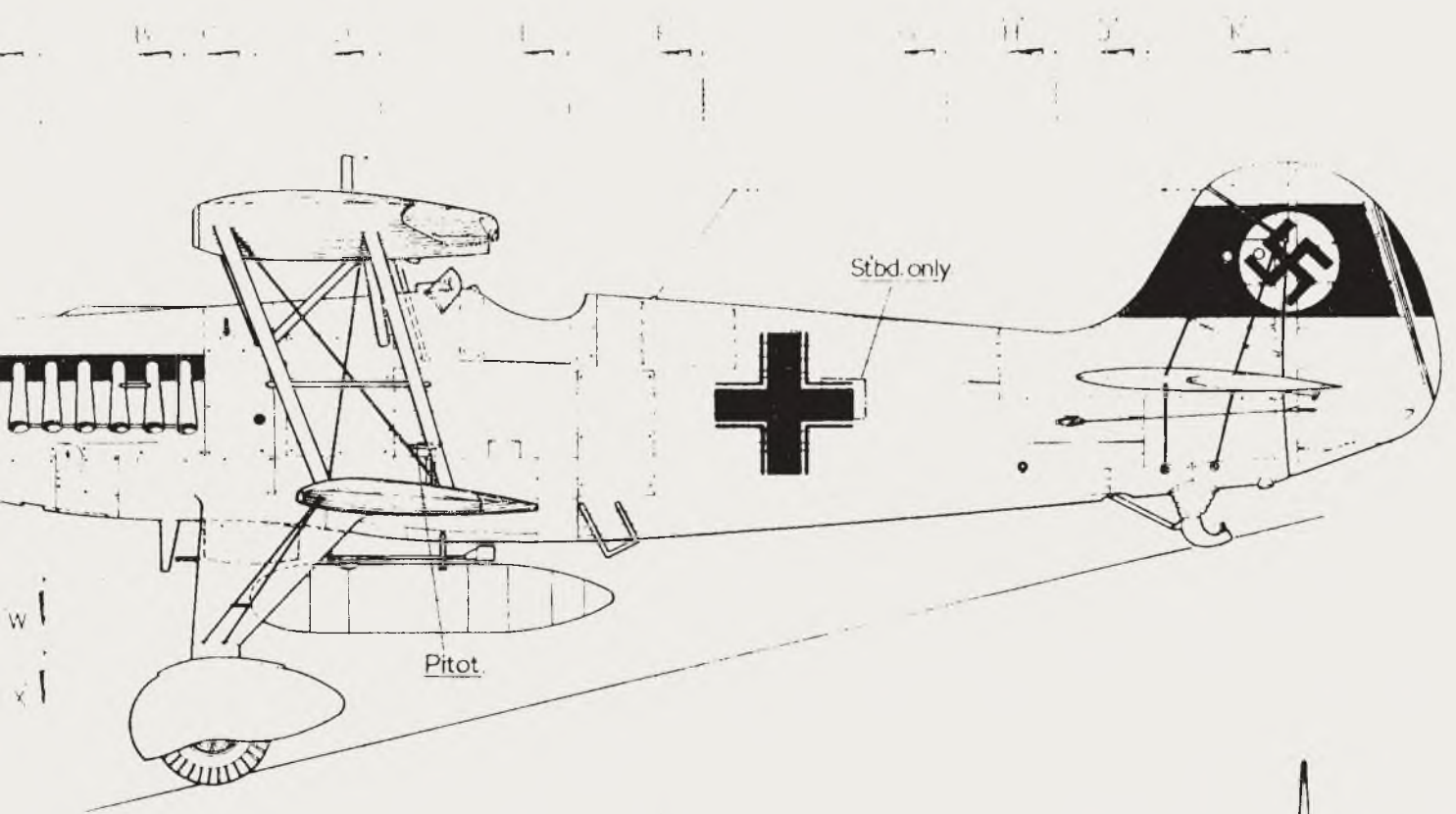
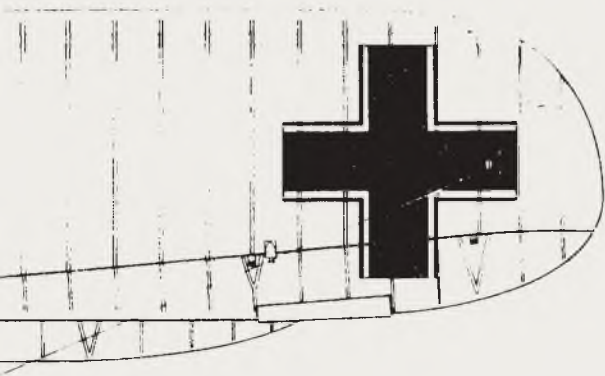


Heinkel He-51 Sketch Page

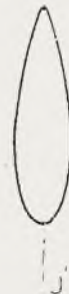




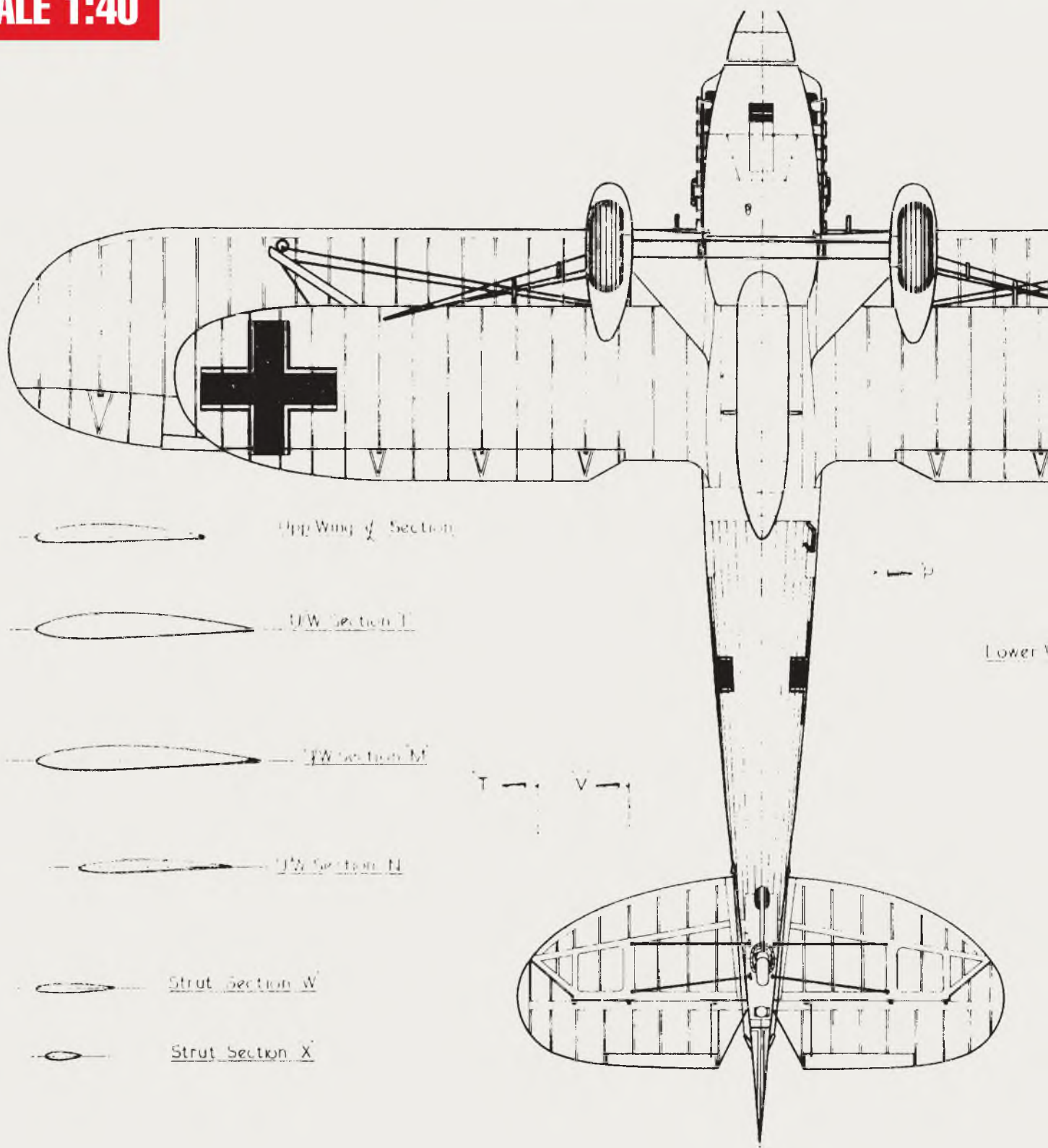
Heinkel He-51



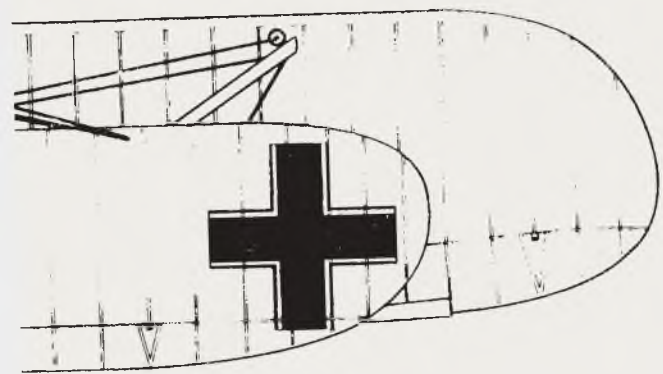
Tailwheel on some machines.



SCALE 1:40



Heinkel He-51



→ R

+ → S

Wing Section P



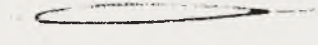
L/W Section R



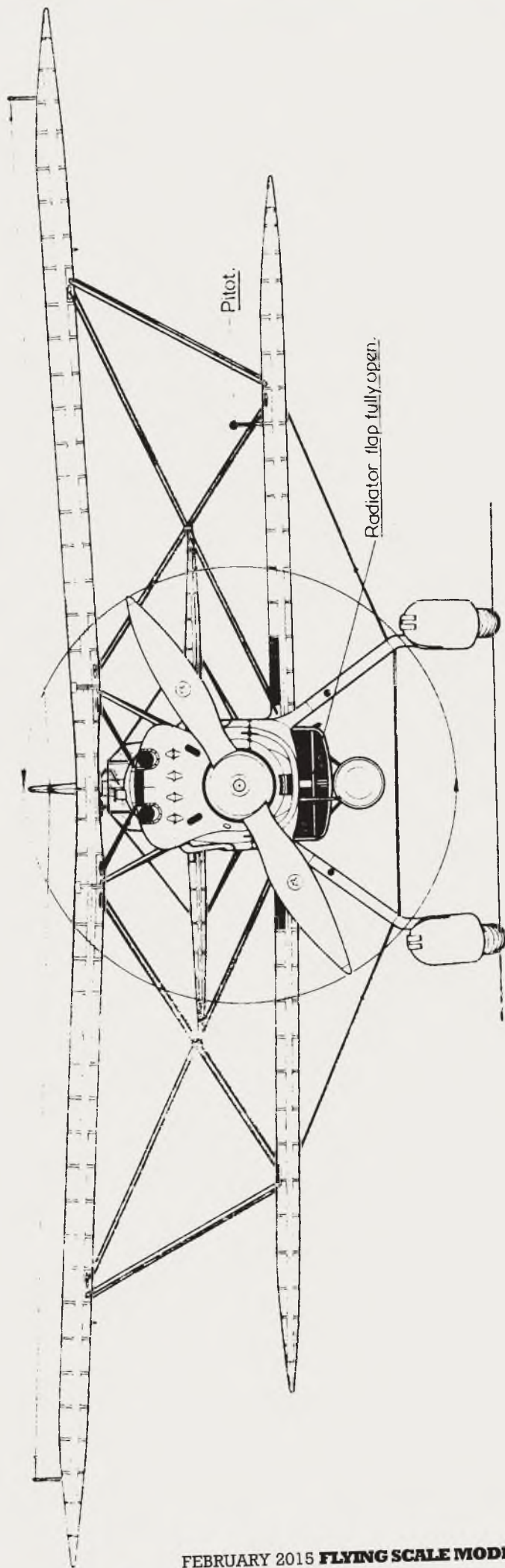
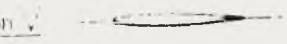
L/W Section S



Section T



Section V



Pitot

Radiator flap fully open

R/C Indoor SCALE!

BMFA Scale Indoor RC Nats, RAF Shawbury 2014.
Alex Whittaker attends this innovative Indoor Scale event

A chilly overcast autumn day, with dark leafless trees stark against the grey sky. Arriving at the venue down a silent and deserted country lane, it felt like one of those old British black-and-white sci-fi movies. The windowless hangar is quite an eerie place. It is easy to imagine it as a top secret cold war installation rather than its present incarnation as a gym. Entry by a small

afterthought of a door takes one into the high geodetic-arched hall. It was warm enough inside, but the light from the mercury lamps was pitiful. Still, all the hard core Scale Indoorists had already set up their model boxes, picnic tables, folding chairs, benches, and electric kettles, so it was all go.

New R/C Events

We were all here because energetic and capable Andy Sephton had

**The BMFA
Indoor Flyer
Trophy R/C
Scratch-Built
Class.
Splendid is
it not?**



**Graham
Smith's Voisin,
Winner of
Scratch built
R/C Class.**



Graham Smith's Voisin has full scale detail throughout. The elegant Edwardian petrol tank is shown at left.



The pilot in Graham's Smith's Voison had neat tweed suit.



Gordon Warburton taking some rare time off to have a fly, between computer scoring duties.



Distinguished Scale Judges Philip Kent (left) and Ian Pallister. Quality in depth!

devised an ambitious new scale indoor event. This comprised a number of elements:

R/C Scale: static and flight judged to BMFA Scale Rules for the R/C Model Flyer Trophy

R/C Scale Flying Only: open to any Scale R/C model that is 'indoor legal', as per BMFA rule book, and flown to BMFA scale rules. Note that both ARTF and scratch built models are eligible and the builder of the model rule does not apply.

In addition there were the usual free flight indoor scale disciplines, making it an attractive day out for a broad range of indoor aeromodellers, viz:

F/F Peanut for the Modellers Den Peanut Trophy

F/F Open Scale: open to any Scale Indoor F/F model, with flight judged to Rubber/CO2/Electric F/F Indoor rules

F/F Glider: flying only judged to the

provisional rules published last year and appended below.

F/F No-Cal Scale: to BMFA Indoor F/F Rules

The R/C scale events drew most oohs and aaahs from the cognoscenti. First of all there was the new hardcore "Scratch-Built" event, and then the Ready-to-Fly ARTF event, with a relaxed Builder-of-Model (BOM) Rule. The days of scale aeromodellers being strictly F/F or R/C seem to be ending.

Entries

I was really looking forward to the R/C Scratch Built event because I was intrigued as to how many entries it might attract. On the day, entries were light, and just four flew. Now, I was disappointed. I know from other innovative events, that for the first two or three times through the cycle, modellers are

often still waking up to the possibilities. Let's see how it goes in future. I certainly did not feel we were wasting our time, we all had a great day together. As for the R/C Scale Ready-to-Fly Class, there were eight entries. For comparison, F/F Open Scale drew 6 entries, and Peanut Scale drew 3.

RTF/ ARTF R/C Scale

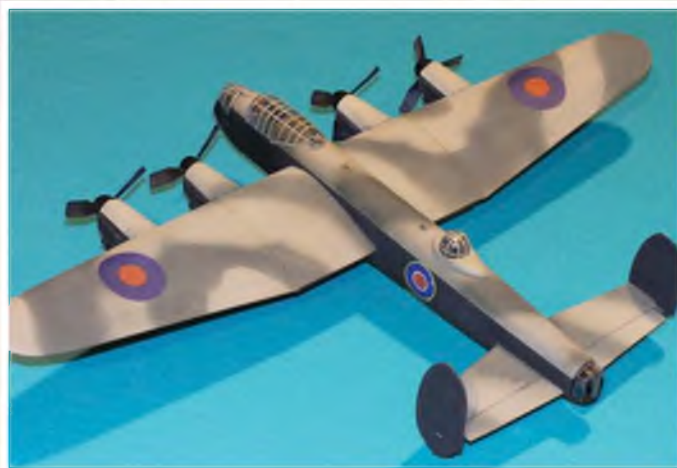
The R/C RTF models flown comprised all the usual subjects with foam/electric Tiger Moths (3), Spacewalkers (2), and an Albatros, a Fokker Triplane, and a Trojan, fielding one example each. Such models are a good way of testing your R/C indoor scale flying skills against unyielding walls before committing your scratch built masterpiece to the ether.

Models I Saw

The light was very dull in the hall and flying photography was well nigh impossible.



Eric Strefford and Chris Fouweather had Lancaster's to Chris's Depron formula. This is Eric's Lancaster.



Eric Strefford's 1/48th scale Lancaster is 25.5" in span, weighs 78 grams. Retracting undercarriage.



Peter Smart's lovely own-design Be2c. 1/20th scale Peter powered it with a Gasparin Outrunner motor and used 35 Meg radio.

However, I was able to get a number of static shots with an improvised 'studio' in the trimming enclosure. There were lots of interesting R/C and F/F scale models to admire, and the flying was continuous. In fact flying started at 9.00am and continued until 18.00pm.

Bristol Gypsy Racer

This bright red scale model immediately caught my eye. It was familiar and puzzling at the same time. The penny never did drop, so its builder Dave Crompton had to let me in on the secret. In fact, it was a Bristol M.1c Gypsy Racer from the Derek Buckmaster plan. The full size example was fitted with a Gypsy engine, hence the name. It is 19" in span, and weighs in at 30 grams. The Racer is covered in Esaki tissue, then airbrushed

with Humbrol enamels. It was beautifully finished.

Kirby Cadet Glider

Scale gliders were being bungee launched in the appropriate flying slots. This fashion has caught on with the indoor sect and Dave Crompton also flew his Kirby Cadet Mk I. This is 23" in span, and weighs 14 grams. A very pretty model.

Mustang P-51 D

Reno Racer Mustangs are sure-fire modelling subjects in all scales. Dave Crompton's Rockwell schemed racer was very well finished and was 13" in span, weighing 12 grams.

Bristol Beaufort

For those of us of a certain age, those

Airfix subjects we built as kids really do stick in the bonce. I was shown a fine twin engined WWII R/C model and asked what it was. With no feeling of remembering at all, my mouth said 'Beaufort'. We see this British scale subject very rarely, but it really does have bags of character. Chris Fouweather uses his own-developed hot-moulding technique to form his Depron marvels. This innovative Beaufort r/c model weighs just 79 grams and it flies magnificently. Quick and manoeuvrable, too.

Lancaster

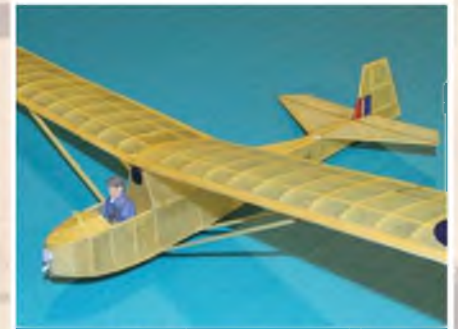
Built using Chris Fouweather's Depron moulded technique, Eric Strefford's 1/48th scale Avro Lancaster is 25.5" in span, and weighs 78 grams. It even has flaps, landing lights, and retracting



Dave Crompton's Bristol M1C Gypsy Racer from the Derek Buckmaster plan. 19" in span, weighs 30 grams. Esaki tissue and airbrushed Humbrol enamels.



Dave Crompton's P-51D Reno Racer Rockwell International scheme, 13" span, weighs 12 grams.



Dave Crompton's Kirby Cadet Mk I. 23" span, weighs 14 grams, indoor bungee launched.



Chris Fouweather's stunning and innovative Bristol Beaufort R/C. Weighs 79 grams. Heat moulded Depron structure.



I took a quick snap of this nifty little Etrich Taube during the thick of the activity, but then forgot to record the details. I plead old age.



The electronics and R/C gubbins packed neatly inside Eric Strefford's Lancaster.



Peter Fardell's Chardon 1933 Monoplane. Weighs 19 grams and is 19" in span. Covered in esaki tissue.

undercarriage! All this is little short of science fiction to those of us raised on those forementioned 1960s plastic construction kits and it flew very well indeed. Most impressive.

Chris flew his too, though Eric pipped him in the R/C scratch-built competition event.

Be2c

Peter Smart brought boxes of fine models.

His electric Gasparin Outrunner powered Be2c is particularly well appreciated. I noted that he was flying it with 35 MHz radio, with no glitches.

AW Argosy

Armstrong Whitworth built some rather quirky aircraft, and Peter Smart's Argosy was worthy of that epithet. It spans 23" and is radio-controlled. Unusually, for R/C it is built to the rubber

No -rules and was more manoeuvrable than I expected.

North American FJ-1 Fury

EDF R/C jets are still rare on the indoor scene, but Eric Stefford's Depron sheet, 16" span, own-design model of the US Navy FJ-1 Fury was fast and agile. He used a recycled EDF unit from an old Silverlit Jetstar Twin. She weighs 30 grams. She has a Deltang Rx, and two Hobby King 0.8g servos.



E-Flite Spacewalker flew very well. A good little electric ARTF to get your "indoor scale" hand in.



Guillows rubber kit of the 0-1E Cessna Bird Dog, of Blessed Memory.



Trojan ARTF electric r/c model flies well for not much money.



Organiser Andy Sephton checks out his model between flights.

A good space but the lighting is very strange.



BMFA Official Results

BMFA Scale Indoor RC Nationals - Shawbury 19th October 2014

RC Scale - Scratch Built

Name	Model
1: Graham Smith	Voisin
2: Peter Smart	BE2
3: Eric Strefford	Lancaster
4: Chris Fouweather	Lancaster

RC Scale - RTF

Name	Model
1: Ian Pallister	Tiger Moth
2: Alan Glover	Tiger Moth
3: Graham Kennedy	Albatross
4: Ian Lever	Spacewalker
5: Eric Strefford	Spacewalker
6: Doug Hunt	Focker Triplane
7: Doug Cowen	Tiger Moth
8: Alex Kennedy	Trojan

Free Flight Open Scale

Name	Model
1: Peter Fardell	Fairchild 24
2: Tim Horne	Misty Racer
3: Mike Hadland	Stampe
4: Derek Knight	Tiger Moth
5: Peter Smart	Fred
6: Dave Crompton	Bristol M1C

Peanut Scale

Name	Model
1: Mike Hadland	Bucker Jungman
2: Dave Crompton	P51
3: Tim Horne	Heigt Monoplane

As usual, grateful thanks to Gordon Warburton FSMAE for his prompt results service.

The Verdict

A great day out amongst the gentlemen of Indoor Scale. I would say that the venue is better for flying than photography, but you can't have everything. I don't think anybody was disappointed with the light entry in R/C Scratch Built Scale. It is early days. What was obvious is that F/F Indoor Scale modellers are quite happy to have a

dabble in Indoor Scale R/C. By the way, after almost three years in post, Andy Sephton is standing down from the BMFA Scale Technical Committee, as Indoor Representative and PRO. Everyone thinks he has done exceptionally well indeed in his tenure. Bear in mind that he was only supposed to be doing one year! As I often remark at this point, the dedication of others ensures our flying fun. ■



23" span radio controlled profile scale Armstrong Whitworth Argosy from Peter Keen. Built to No-Cal rules.



Eric Strefford's profile scale EDF R/C FJ 1 Fury. 16" span, weighs 30 grams.



Graham Smith, Winner of Scratch-Built Class, receives Trophy from its originator, Ken Sheppard, Editor of RCMF magazine.



There are two distinct flying areas, which greatly assists with trimming.

AeroDetail series

Making a scale model?

Finding the detail needed to finish a scale model can be difficult and getting full size images is not always practical. Our range of detail photo collections provides extensive close ups of a wide range of popular aircraft all on CD in J-peg format



Junkers Ju87G-2 Stuka CD65

The aircraft that defined the term

Hawker Typhoon CD109

The Hawker Typhoon was a British single-seat fighter bomber, produced by Hawker Aircraft. While the Typhoon was designed to be a medium-high altitude interceptor. 117 images

Hawker Tomtit CD64

Mid 1930s RAF biplane trainer aircraft, from the era open cockpits of silver dope and polished metal. (140 images)

Hawker Tempest Mk 2 CD63

The final development of Hawker

Hawker Sea Fury FB XI CD62

Hottest of all the piston-engine fighter aircraft, the carrier-borne Sea Fury is also admired for its elegant profile. (140 images)

Hawker Hurricane MK1 & MKIV CD61

Two versions of the famous 'Hurri' - one a true Battle of Britain survivor painstakingly restored to perfect authenticity, plus the cannon-armed, Mk.IV 'tank buster'. (170 images)

Hawker Hart & Hind CD60

A combo collection featuring the RAF Museum's Hart bomber and Hart Trainer, plus Shuttleworth's Hind. (115 images)

Hawker Fury CD59

No authentic example now exists, but the accurate replica photographed in extensive detail in this collection is as good a guide as can be found of this elegant 1930s RAF fighter. Includes some general arrangement pictures authentic to the period. (55 Images)

Grumman FM-2 Wildcat CD58

First of Grumman's highly successful line of prop-driven 'Cats', the Wildcat, in guises from F4F-3 to FM-2 held the line after the Pearl Harbour attack and served from then until the end of WW2. It was idea for operations from the small escort carriers. (90 images)

Grumman F8F Bearcat CD57

Hottest of Grumman's prop-drive fighters - it arrived too late for action in WW2 but was standard ship-borne fighter equipment in the immediate post-WW2 era. (90 images)

Grumman F7F Tigercat CD56

The awesome twin engine long range fighter of the late WW2 era operated by US Navy and US Marines. (90 Images)

Grumman F6F Hellcat CD55

The US Navy's most important, and most successful fighter of WW2, photographed, close-up, from nose to tail and wing tip to wing tip. Example shown is part of The Fighter Collection, based at Duxford. (90 images)

Grumman F3F CD54

A study of the faithfully replicated example of the 1930s U.S. Navy biplane as seen at the 2001 Flying Legends Show. (34 images)

Gloster Gladiator CD53

The Royal Air Force's last biplane fighter, star of late 1930s air shows and flown in combat during early WW2, including Battle of France, Battle of Britain, Mediterranean operations and North Africa. (50 images)

Fokker D.VIII CD52

The Fantasy of Flight Museum's example of the late WW1 Imperial German Air Service monoplane fighter, in full detail. (69 images)

Fokker D.VII CD51

The most famous of all the German fighter aircraft of WW1. The collection depicts the RAF Museum, Hendon's authentic, restored example. (44 images)

Focke Wulf FW 190A CD50

Germany's 'butcher bird' fighter of WW2, active on all combat fronts from 1941 onwards.

Fieseler Storch CD49

Arguably the first military STOL aircraft, this storky looking aircraft has long been a modellers' favourite. Two examples are represented, the machine at the Fantasy of Flight Museum in Florida and the RAF Museum Cosford's example. (90 images)

Fairey Gannet ASW1 & T.2 CD48

The Royal Navy's post-WW2 anti-submarine workhorse, that also served with a number of other air-arms. Most images are of Mk.T.2, that was more-or-less the same as the ASW.1. (110 images)

Fairchild Ranger CD47

Elegant U.S. high wing light aircraft in full detail. Two examples shown. (60 images)

Erco Ercoupe 415 & Avalon Ercoupe CD46

The elegant twin finned light/sport aircraft. Both original Type 415 and later Alon resurrection examples. (115 images)

DHC Chipmunk CD45

A bumper bundle of images that provides a vast array of detail pictures, plus photos of examples in both RAF trainer and civil colours. (70 images)

DH Tiger Moth CD44

Much close-up detail of civil register example, plus further detail of the IWM Duxford's example in Royal Navy trainer colours, showing the blind flying hood. (110 images)

De Havilland DH89 Dragon Rapide CD43

Graceful twin engine biplane airliner that saw service from pre-WW2 through to the mid 1950s. Several are still flying and three are shown in this picture collection. (100 images)

De Havilland DH84 Dragon CD42

Forerunner of the more famous DH 89 Dragon Rapide, this collection depicts a superbly restored example. (40 images)

DE Havilland DH 60 CD41

The aircraft that set the British 'club' flying movement on the road to success during the 1930s. (140 images)

De Havilland DH 53 CD40

1920s lightweight low wing sports aircraft designed to a low-power specification. Machine illustrated is the sole remaining example. (60 images)

Curtiss P-40M CD39

One of the later versions of the famous Curtiss Warhawk, the WW2 fighter aircraft that saw service in just about every combat theatre of operations. (100 images)

Curtiss P-40B Tomahawk CD38

Rare, full restored example of the early version of the Curtiss fighter aircraft that was at Pearl Harbour on Dec. 7th 1941 - and survived the attack! (130 images)

Curtiss Jn-4 'Jenny' CD37

An authentic, restored example in full detail. (130 images)

Curtiss Hawk 75 CD36

The 'export' version of the Curtiss P-36 that saw service in during WW2 with Finland and during the 'Battle of France' in May/June 1940. Example shown is a combat veteran. (130 images)

Comper Swift CD35

1930s racing aircraft. Example depicted is the radial engine example at Shuttleworth Mussel (91 images)

Cierva C.30 Autogiro CD34

A study of the example hung in the Fantasy of Flight Museum, finished in RAF WW2 colours. (35 images)

Christen Eagle CD33

The spectacular, stylish aerobatic biplane revealed in close-up. Example shown is the two-seat version. (90 images)

Chrislea Super Ace CD32

Late 1940s civil light aircraft with distinctive twin fins and nosewheel type undercarriage. A fully restored example. (123 images)

Chilton DW1 CD31

Original upright engine version of this diminutive British low wing sportsracer. (90 images)

Chance Vought F4U-1D Corsair CD30

The famous 'bent wing bird' in super detail. (132 images)

Bucker Jungmeister CD29

Radial engine version. Example from Fantasy of Flight Museum. (79 images)

Bucker Bestmann CD28

Authentic example as exhibited at the Fantasy of Flight Museum, in WW2 Luftwaffe colour scheme. (43 images)

Bristol M.1C CD27

Early WW1 fighter monoplane. Example depicted is the faithfully authentic replica built by the Northern Aero Works and operated by the Shuttleworth Trust museum. (100 images)

Bristol F2B Brisfit CD26

Full close-up detail, including photos of engine cowls for both Rolls Royce Falcon and Hispano-Suiza engines. (28 images)

Bristol Bulldog CD25

This collection depicts the example assembled from two donor airframes and restored to superb standard by Skysport Engineering. It can now be seen at the Royal Air Force museum, Hendon. (60 images)

Boeing Pt-13/17 Stearman CD24

Subject aircraft is a current British civil register example used for air-show displays. (54 images)

Bleriot Monoplane CD23

The Shuttleworth Museum's machine, the oldest original example still flying. Much close-up detail showing all the exposed rigging, structure and the 'bedstead' main undercarriage, plus Anzani engine. (74 images)

Bell P-39Q Airacobra CD22

Superbly restored example of this much-maligned WW2 fighter aircraft that was used with great success by Russian forces in the ground attack role and with saw much action in the south Pacific, from where this restored example was recovered. (130 images)

Beech D18 Staggerwing CD21

The distinctive back-staggered 1930s biplane with retracting undercarriage. (45 images)

Avro 504k CD20

The Shuttleworth Museum's superbly maintained machine, in full detail. (140 images)

Arrow Active II CD19

Sole remaining example of this 1930s racing and aerobatic biplane restored to pristine condition. (50 images)

Aeronca Sedan CD18

The last and most graceful of the Aeronca line of light/sports aircraft in fine detail. (80 images)

See many more online at flying scalemodels.com

ORDER FORM - Aerodetail CDs

Please send me the following CDs:

Name:

Address:

Postcode:

Daytime Tel No:

Enclose a cheque for £

(Made payable to ADH Publishing)

Please debit my credit card for £

(VISA / Mastercard - please delete non-applicable)

Card No:

Expiry date:

CCV:

SIGNATURE:

DATE:

Order on line at

www.flyingscalemodels.com or aero-modeller.com



£12.99 (including p+p)* per CD *UK only

Postage: (Europe); £2.50 (World); £3.50

Send to:

ADH Publishing Ltd,
Doolittle Mill, Doolittle Lane, Totterhoe,
Bedfordshire, LU6 1QX. Great Britain.
Tel: 01525 222573 Fax: 01525 222574
Email: enquiries@adhpublishing.com
Allow 21 days for delivery

THE QUIET ZONE

R/C SCALE ELECTRICS WITH
PETER RAKE

Well, I'm afraid it's that time again - time for another bout of electric flight doings. Here we are, already well into yet another New Year, all the goodies you received from the chap in red are now old hat and you're looking for something new. Well, bear with me and I might just have something to offer.

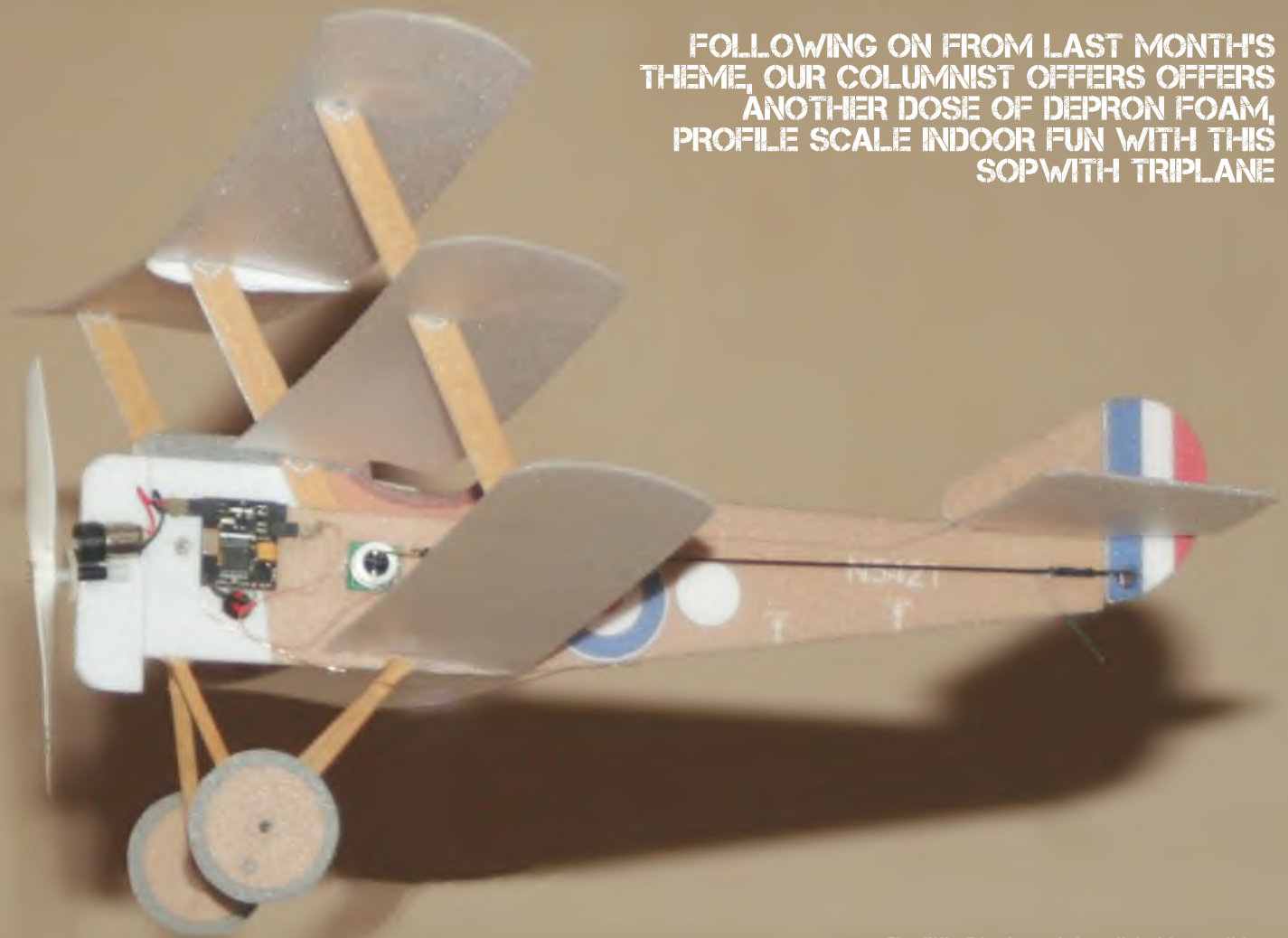
Since we're also still into deepest, darkest winter and nobody in their right mind wants to stand around in the middle of a field freezing their bits off, how about another profile scale indoor flyer to while away the hours?

Last month I gave you a rehash of an earlier model but this time, although the techniques are much the same, you get the treat of something completely new. Working on the theory that if one triplane was good, two triplanes had to be better I drew up the graphics for a Sopwith Triplane to use the same type of equipment as the Fokker Dr.1 presented last month. Although construction is very similar to the Fokker, there are some pretty obvious differences. I'll deal with these as I describe the build, but first off, lets take a look at the gear I used.

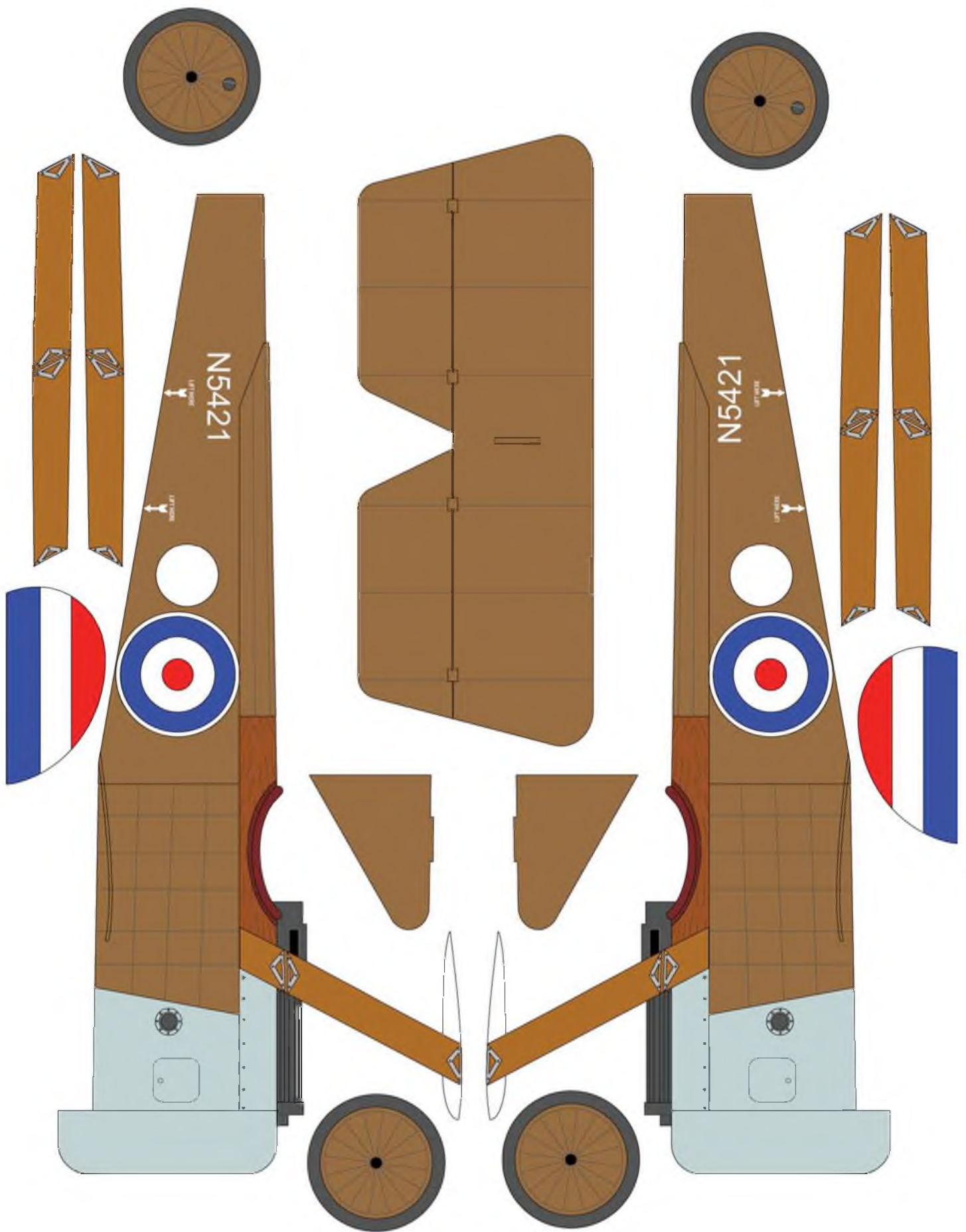
KITTING OUT A TRIPEHOUND

Although the plan shows the receiver and motor from a *Nano Stik* coupled to a *Plantraco Microact*, I had none of those items available at the time. My printer

FOLLOWING ON FROM LAST MONTH'S
THEME, OUR COLUMNIST OFFERS OFFERS
ANOTHER DOSE OF DEPRON FOAM,
PROFILE SCALE INDOOR FUN WITH THIS
SOPWITH TRIPLANE



The little Tripehound does its' airborne thing.



had just died-the-death and needed replacing, thereby eating up the funds I had intended to use to equip this model. Time to check precisely what equipment I did, in fact, have available.

As luck would have it, there was still one functioning actuator stashed away, a *Micro Invent* item with its plug changed, a

three channel *Plantraco* receiver with the battery magnets removed and replaced by a battery lead and a 4 mm motor unit of unknown origin. I have a feeling that it might have come from a *Mini Aviator*, but it could well be one made up from salvaged parts. Whatever, it was the right size, used the right prop and appeared to

deliver the required amount of power. The fact that it was even fitted with the correct type of plug was just an added bonus.

So, as you see, the model isn't restricted to using only the equipment shown on the plan. As long as it isn't hugely different pretty much any radio

gear will do. If you have a *Mini Vapor* brick looking for a home, that too could be used and you get the option of three channel control to boot. As for me, I'm happy enough just using rudder and throttle controls. Keep the gear you fit small and very light and you won't go far wrong. Remember, the aim here is to finish

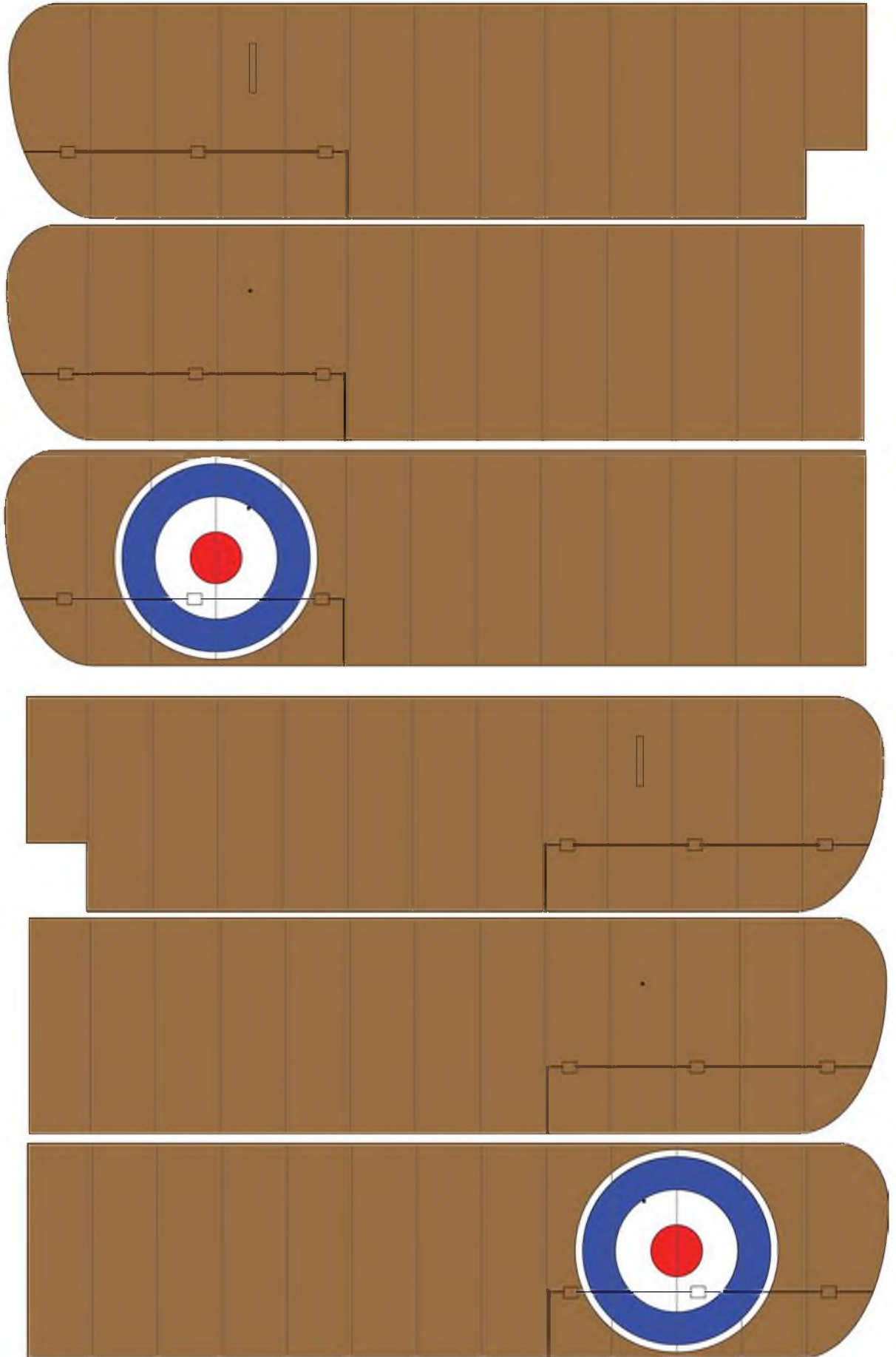
up with a ready-to-fly model that weighs less than half an ounce. My model, complete with battery finished up at just less than 10.5 grams.

BUILDING A SOPWITH

The first thing to do, once you've printed and cut out all the parts, is to make up a

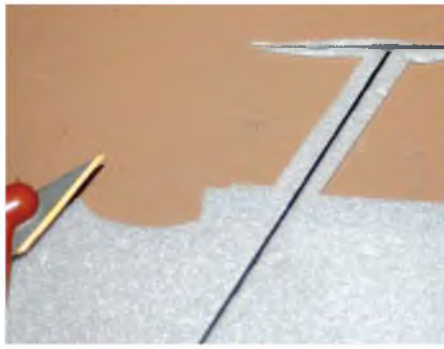
series of sub-assemblies. The most obvious of these is the fuselage and that requires a little preparation before you glue the halves together.

One difference between this model and the Dr.1 is that the top wings mount onto a platform and the logical arrangement is to make that platform part of the centre





I used a steel rule to make a groove for the carbon rod stiffener to fit into before gluing it in place.



Rods glued in and the two sides are ready to glue together using a very thin coat of RC Modeller's Glue.



Although they're hard to see, there are two narrow strips of Blendederm tape used to hinge the rudder before joining the laminated halves.



Not a lot of camber is required but it does help to stiffen the wing panels and, combined with camber and incidence on all three wings works well.



The printing over a simple hair spray base gives good results on the finished model to give a nicely understated finish.



The model drifts by overhead. That wall is actually at least five feet away so I've no idea why the shadow is so obvious.

section strut. Both the strut and the platform need to be stiffened up a bit before the sides are joined, so each has a length of 0.5 mm carbon rod glued to one side and then the other side is glued in place using *RC Modeller's Glue*. A very thin coat should be smeared all over the second side, the two brought together and adjusted for alignment before being placed on a flat surface and weighted down to dry. Applying some pressure where the carbon rod is trapped between them will bed it slightly into both sides, assisting the gluing process.

A similar process is used to trap 0.5 mm carbon rod between the interplane strut laminations. Here, it's important that both struts end up with the carbon rod in the same relative position or it will complicate accurate wing alignment during the final assembly stage. Note that there is a distinct top and bottom to these struts, so make sure you end up with matched sets. Although only slight, there is a convex curve at the top and concave curve at the bottom. The carbon protrudes at both ends and will plug into the holes in the wing panels as the struts are fitted.

When joining the fin and rudder parts, I like to combine this step with hinging the one to the other. Apply two narrow strips of *Blendederm* tape to one fin half and hinge the matching rudder half. Then it's just a case of gluing the remaining halves in place and weighting it all down while the glue dries.

Now for the technical part; the wings. On this model, only the top wing panels are joined before they are fitted to the fuselage. The centre and lower wing panels are butt glued at the points indicated by the printing. The bottom

wing position is clearly shown, while the 'brackets' on the c/s strut determines the position of the centre wing panels.

However, before any of this joining or gluing in place can happen, you need to induce camber into all six panels and sand their roots for the correct dihedral. To induce the camber just draw each panel over the edge of a table until it is curved by the correct amount. Strangely enough, a sharp edge works best, and does less creasing of the lower surface. Just work gently, gradually increasing pressure until the desired curve is achieved.

To sand the wing roots, I find an emery board (I 'borrow' one of the wife's) works best. Pack up the panel to the correct angle, butted against the edge of a board, gently hold down the root making sure you don't alter the camber and run the emery board along the edge of the board, which will help keep it vertical.

When it comes to joining the top wing panels I use *Uhu Por* as adhesive, using it as an 'impact' glue. Thinly coat both wing roots and allow the glue to virtually dry. Then, CAREFULLY bring the two roots together at the correct angle and alignment. I stress carefully because you only get one shot at this, once the two parts touch they are stuck. I usually lay both flat on the board and gradually bring them together. Then it's just a matter of raising one tip until the sanded in joint meets along its' entire length. A little extra pressure to ensure they meet precisely and the job is done. Using the glue this way produces a slightly 'harder' joint than if it is applied and the parts joined immediately. Don't ask me why, that's just the way it works out.

The final sub-assembly involves the

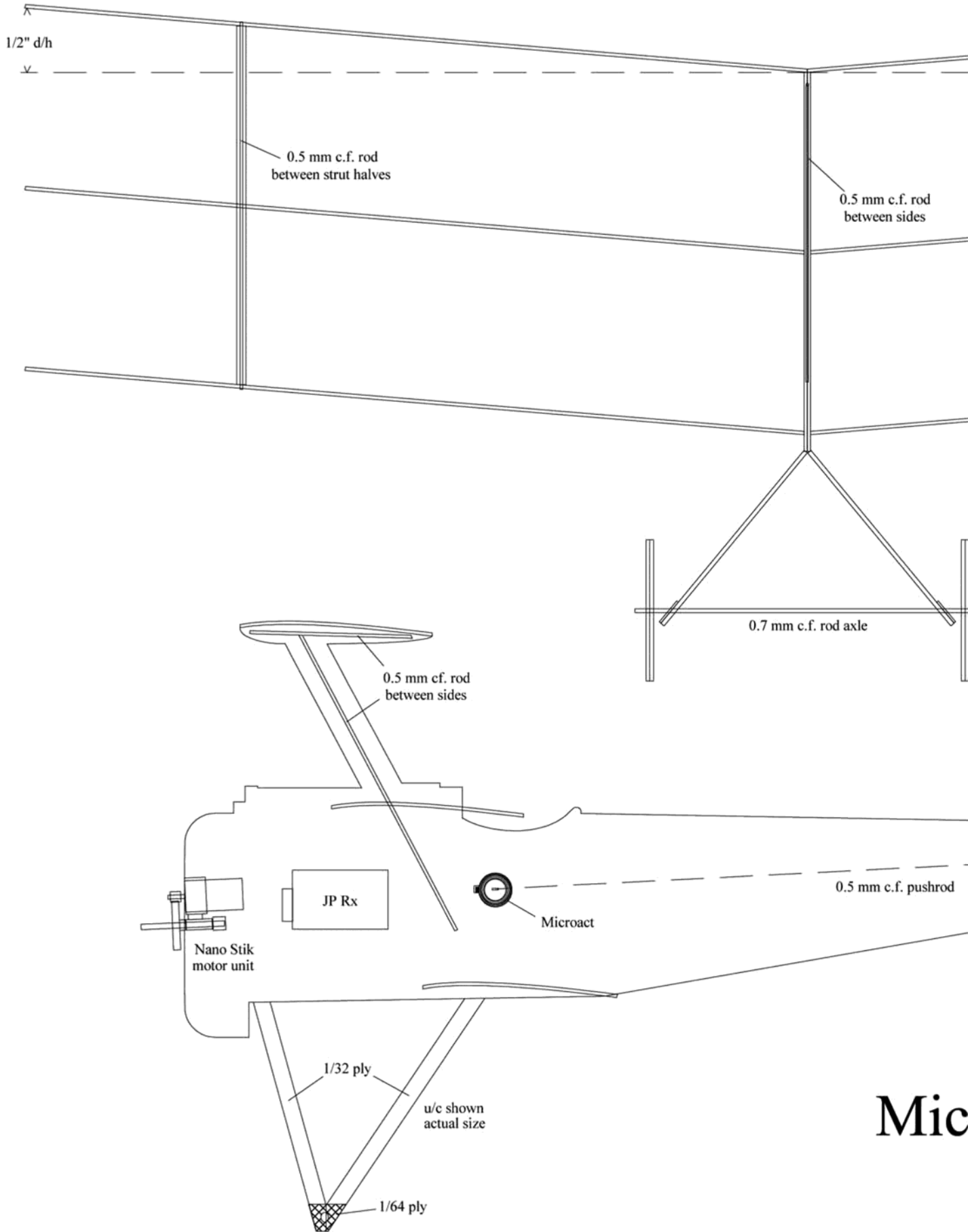
undercarriage and this is definitely one of the areas that differs from the Fokker. Whereas on the Dr.1 the u/c was tubular, and is easily represented by carbon rod, the Sopwith u/c was much heavier looking and made from wood. I considered carbon rod, but think what I came up with not only looks better but is easier too.

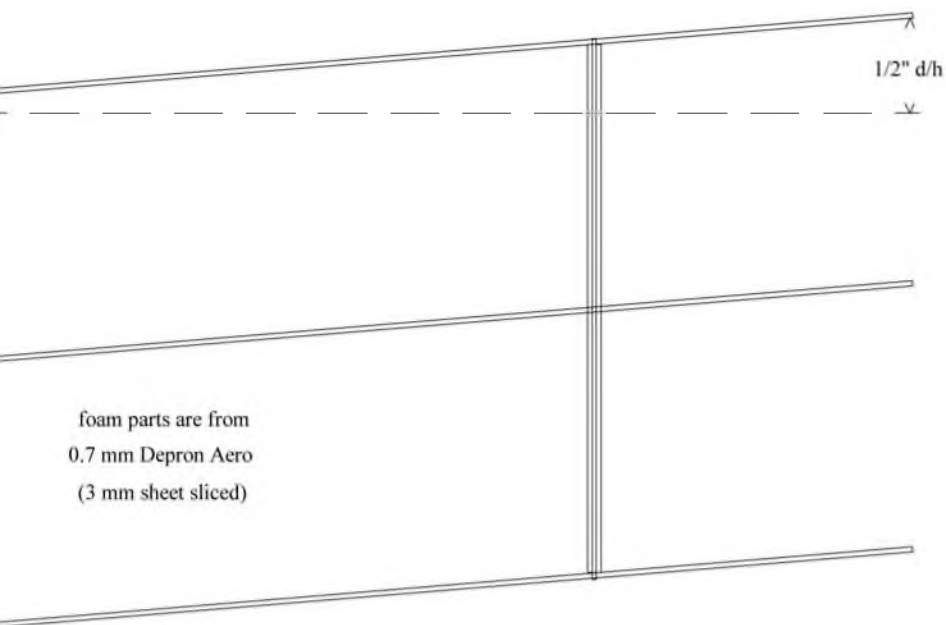
The main legs are made from narrow strips of 1/32" ply, with a patch of 1/64" ply over the joint as reinforcement. The leg strips were lightly sanded to remove any roughness and then a piece was laid over the full-size drawing on the plan to cut it to size. Cut both front and rear legs as matching pairs and position one set over the drawing. Cut and sand a wider strip of 1/64" ply and glue that in place over the joint. Trim the 1/64" ply to match the u/c leg shape and drill the assembly for the axle to fit. The second set is assembled over the first, making sure you don't end up with two right hand sets.

Open up the drilled holes to ovals, slip in a piece of 0.7 mm carbon rod and lightly glue the legs at the correct spacing on the axle. You shouldn't wait for the glue (I used medium CA) to cure fully, just enough so the legs don't slip on the axle. Bring the tops together, checking that it all remains even, and glue them together. Allow this to cure and that's all the sub-assemblies ready. Talent

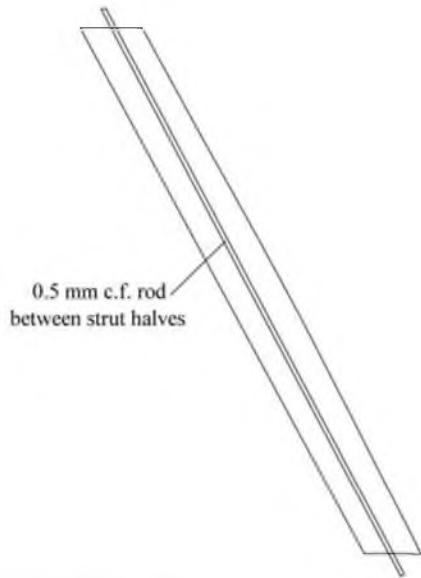
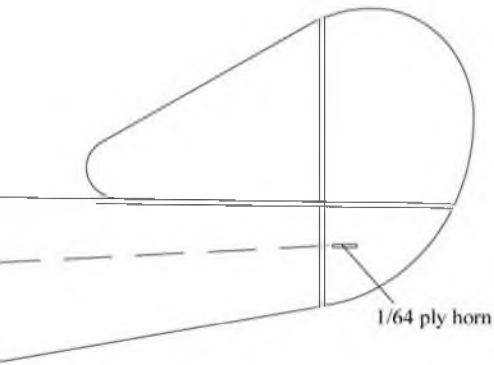
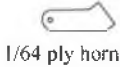
I can see that it's also about where I run out of space for this month. Next time we'll look at getting the model together, equipping it and how it flies. Possibly with a bonus.

In the meantime, if you'd like pdf files of the printed foam parts, or want to contact me for any other reason, you'll





- materials
- 0.5 mm c.f. rod - 18"
(cs strut, i/p struts & p/rod)
 - 0.7 mm c.f. rod - 3"
(axle)
 - brass wire - 1.5"
(pushrod ends)
 - 1.5 mm heat shrink - 1"
(pushrod ends)



FITTING WINGS

- Glue top wing to platform
- Butt glue bottom wing panels to fuselage
- Glue interplane struts into middle wings
- Glue middle wings to fuselage and strut stubs into top & bot. wings

Bracket positions show angle of struts in middle wing & wing on fuselage

ro Tripehound

www.flyingsca



NEVER MISS AN ISSUE
SUBSCRIBE TODAY!

www.adhpublishing.com

£42

FREE 13th issue when taking out a 12 month subscription*

Next issue will be out on January 8th - get your copy delivered to your doorstep before it reaches the newsagents by subscribing



www.adhpublishing.com



01525 222573



enquiries@adhpublishing.com



JOIN THE ELECTRONIC REVOLUTION

Enjoy FSM on your iPhone, iPad, Android phone or tablet PC.

Visit the App Store or Google Play and search for "Flying Scale Models" or visit PocketMags.com to purchase single issues and subscriptions to read on your device or PC.

Available on the iPhone
App Store

Google play

*offer runs until 28th February

lemodels.com

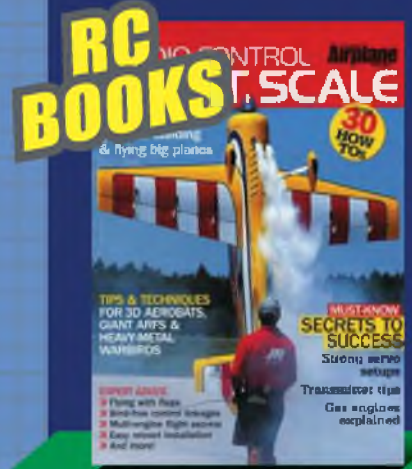
Follow us on Facebook
facebook.com/pages/Flying-
Scale-Models/495012097186048

Follow us on Twitter
@ScaleModelFlyer



- MASTER MODELS
 - TYPE HISTORY
 - IN DETAIL
 - SCALE DRAWINGS
 - FREE PLANS
- CONSTRUCTION
 - TECHNIQUE
 - SHOW REPORTS
 - FLYING COLOURS
 - HOW TO'S
- GLIDERS
 - ELECTRIC
 - SCALE INDOOR
 - SCALE REVIEWS
 - SCRATCH BUILD

ALSO
AVAILABLE
FROM ADH
PUBLISHING...



www.adhpublishing.com/shop



SUBSCRIBE FOR ONLY **£44**



SUBSCRIBE FOR ONLY **£55**

SEE THE ADH
WEBSITE FOR MORE...



ONE MAN'S **MORANE**

John Marriage created this big 1/3rd scale model of the early WW1 French monoplane scout. It has lots of character and flies magnificently



like building scale models, the prototypes of which are no longer flying. The seeds of this project were sown when I borrowed a copy of 'Warbirds: Military aircraft of WW.1 in colour' whilst

researching a colour scheme for a Flair Fokker D.VII. I found a section covering the Morane-Saulnier Type N, and thought it looked an interesting possibility, especially as it seemed to possess very similar proportions to my much-loved Flair Magnatilla - but I fancied a BIGGER model!

I then checked the overall proportions of the Hannibal (overgrown Magnatilla) and found that there was, indeed, a very close similarity between the two, (even the rib spacing was correct). This led to the original plan, i.e. buy a Hannibal kit, fit my 28cc 'Champion' Glow engine (converted

McCulloch strimmer), then tart it up to resemble a Morane, after all, if Flair make it, it must fly well!

Planning

I next bought the excellent *Windssock Datafile* on the Morane and had the 1/48th scale three-views enlarged to 1/3rd scale to match the actual dimensions of the Hannibal.

This was quite a big scale change, but not impossible in a few passes through a digital plan copier; check out your local print shop. Whilst browsing through the books in a local model shop, I came across 'Aircraft of World War I Volume 3', which had a small section on the Morane, including a drawing of the fuselage frame. This was also given the digital treatment!

It was obvious that to achieve even a passing resemblance to a Morane, several important changes would be needed, especially as Flair used a one-piece wing bolted to the top of the fuselage and I really wanted to incorporate some cockpit detail (the Morane, of course has more of a shoulder wing, anyway). The project was obviously snowballing!

To cut a long process short, the fuselage and tail feathers were designed from scratch, while the wings were built largely as per Flair, with a few important changes. The model was never intended as a serious 'F4C' Scale project; my own requirements were:

- a) Model must be flyable in normal conditions from the club field (a good field but with several obstructions (e.g.





1: The uncovered airframe, showing the open frame, stringered rear fuselage. **2:** Detail of the uncovered airframe, showing the shape of the wing structure in the tip area. **3 & 4:** These two views of the uncovered airframe reveal a quite simple basic structure. One of the obvious deviations from true-scale is the thickness of the wing section but this change, in the interest of practicality, is not noticeable when the model is airborne. **5:** Rear end, showing the open-frame structure and the tail skid. **6:** Further detail of the tail cone, showing the tailskid with its bracing and the pivot tube on the all-flying tailplane. **7:** The tailplane showing the tubular spar that acts as a pivot for the all-flying control movement.

Magnetic Oak trees!) and not exactly a bowling green.

- b)** Fairly close scale outline, with plenty of detail to help preserve the illusion,
- c)** If possible, no visible 'Model' parts (e.g. silencers, servos, wiring, etc.)

Bearing the above in mind, plans were drawn up; at least with the amount of space within the model (c) above should not be too much of a problem!

It was also obvious that the project would need as much model engineering as aeromodelling and I make no apologies for the fact that I have a well-equipped workshop. I think this type of project is a bit beyond the classic 'blowlamp' scenario. One or two problems immediately became apparent in the area of the tail. Morane used an all-flying tailplane; how effective would this be?

A scale tailplane would have only about

50% of the total tail area of the Hannibal's and as I felt this could be distinctly inadequate, I enlarged it by 30% as a fair compromise, but kept the shape correct. The Hannibal tail sits on the flat top of the fuselage, as does the flat-bottomed wing, but on the Morane the tail is below the wing; what effect might this have? The only way was to build it and see.

Basic design wings

These are similar to the Hannibal, but built in two halves, but I omitted the leading edge sheeting, in keeping with the full size. The wing tips were re-profiled and constructed from laminated ply and balsa to preserve the 'delicate' look of the open framework. The tip laminates were also shaped to give the impression of a heavily undercambered section, but this gradually changes toward the outboard full rib. I'll elaborate a bit on laminating later. The original Morane used wing warping as its primary control, but I decided to opt for ailerons - I reckoned there were enough 'unknowns' in this project already!

Tail

Having guessed the size, the next problem was; how do I know if it is aerodynamically balanced? I needed a wind tunnel! The following recipe seemed to work.

Make up a full-size tailplane from 5mm foam-cored display board (local art shop), poke a hole right through the foam core with a sharpened rod, where you think the axle should be, then fit a stiff axle through



the hole. Persuade wife to drive car at a steady 30mph and hold tail out of window, lean forward, grasping axle securely. Observe effect of deflecting trial piece from horizontal. If you get it right, little force will be required to hold the wing at quite significant angles. Repeat experiment till you are happy. This determines the correct pivot point.

Fuselage

The structure is conventional, using 3/8" sq. longerons and frames with 3/8" x 1/4" balsa diagonals and liteply slab sides from the cockpit forward.

There is no conventional sternpost, the fuselage coming together at the rear to form the mounting for the tailplane axle). Liteply formers were then added which, together with the 1/2" x 1/8" stringers, would give the correct rounded cross-section, incorrectly referred to in contemporary reports as a monocoque). In order to utilise the beautifully spun Hannibal cowl, the fuselage diameter was reduced slightly from true scale. F1 is a disc of 10mm ply with no side- or down-thrust.

Structure

There is no point in an article of this type in describing

conventional structures. I will, however, cover some of the less common construction techniques, before describing some of my detailing work.

Laminating

Significant parts of the rudder, tailplanes and wing tips were built using this most useful technique. First find a suitable stout, flat baseboard that will accept screws fairly readily but firmly. Now arrange a sturdy framework matching the INSIDE dimensions of your component and screw it down firmly. Pieces of 2" x 1" timber and short lengths of thick-walled tubing are ideal for this, as long as the timber is cut to fit close to the tubes. It is important that the framework provides support all the way round, and that lots of clamps can be attached during curing. Finally cover all jig surfaces with silicone paper or polythene adhesive tape, to prevent the job becoming an integral part of the jig!

On the rudder and tail, I found that the best strength/weight compromise was obtained using 3/8" wide 1/32" birch ply as a first laminate, followed by four layers of 1/16" medium balsa, then another 1/32" ply. The ply laminates are best softened by

8: Another view of the uncovered fuselage rear. 9: View of the uncovered fuselage showing the wing root with tube for the tubular wing joiner.



CUT PARTS SET FOR THE

MORANE SAULNIER TYPE N

Get straight down to construction without delay! This month's full size free plan feature is supported by a laser-cut set of ready-to-use balsa and plywood components. This provides all the parts that, otherwise, you would need to trace out onto the wood before cutting out.

IT DOES NOT INCLUDE STRIP AND SHEET MATERIAL OR SHAPED WIRE PARTS

Price £135.00

plus carriage: £11.50 (UK); Europe £26.00

Order set CUT/FSM124

Shipping Note: For shipping to destinations outside UK and Europe, you will be charged our standard flat-rate price of £49.00.

This covers most destinations and secures your order with us. However, we will contact you accordingly with an accurate total shipping charge prior to dispatch and either issue a refund or a PayPal money request for the balance.

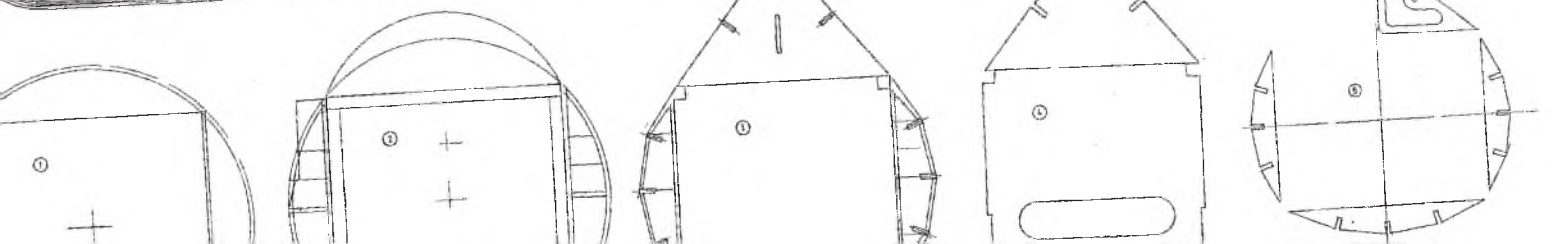
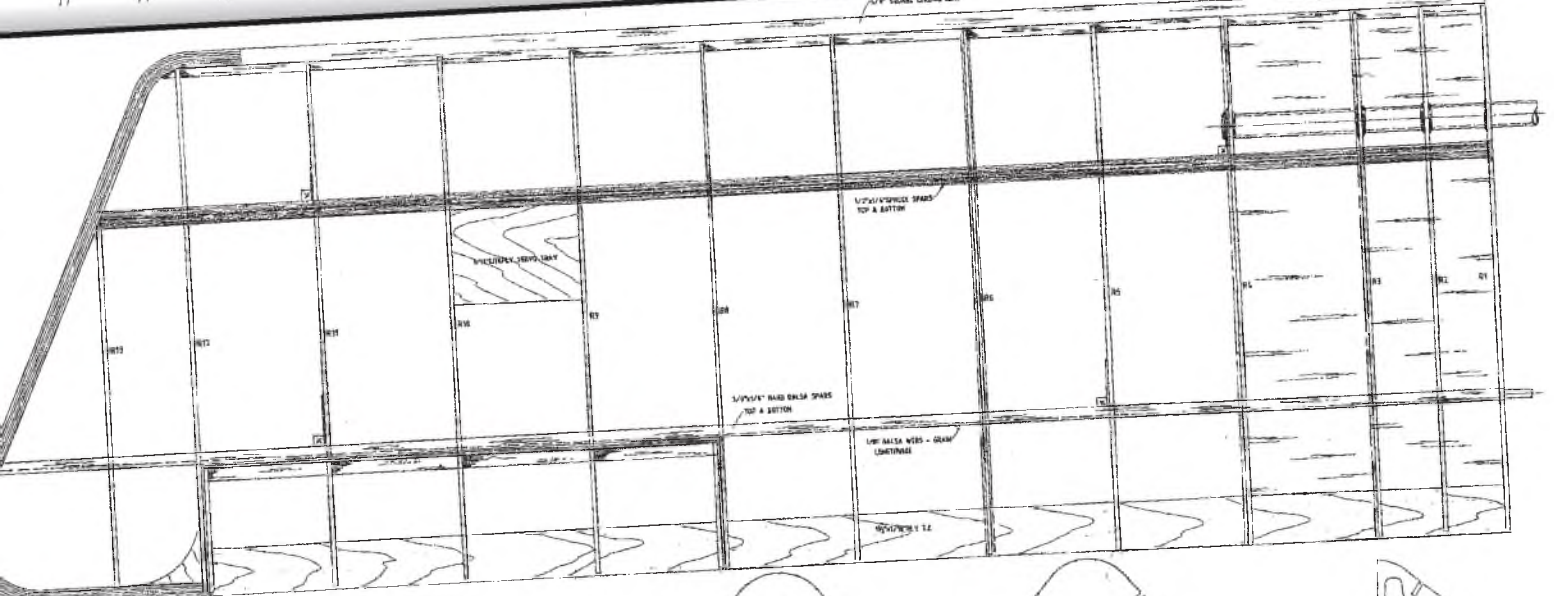
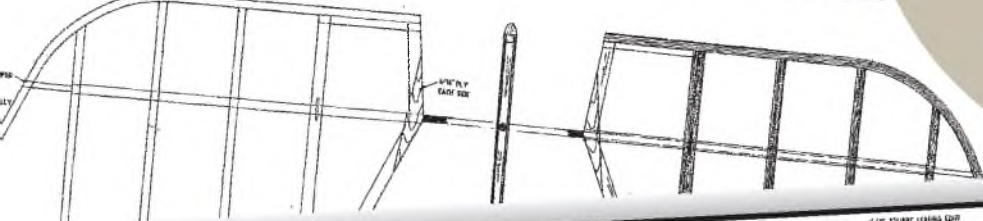
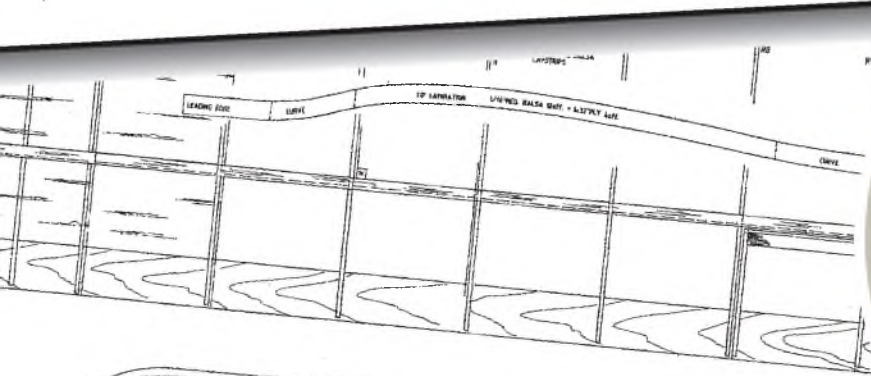
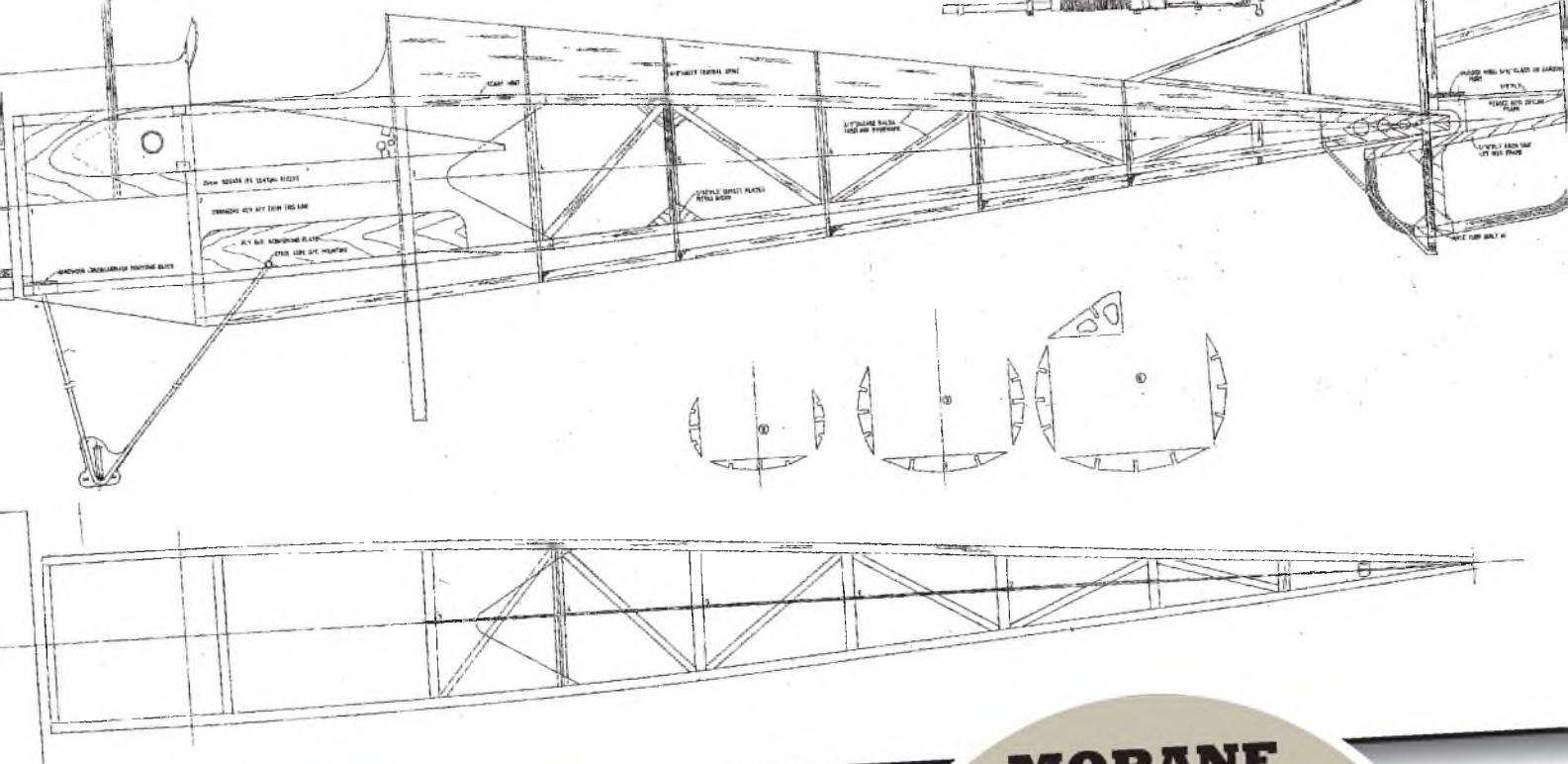
Visit our secure website:

www.flyingscalemodels.com

to order yours



Order direct from:- ADH Publishing, Doolittle Mill, Doolittle Lane, Totterhoe, Bedfordshire, LU6 1QX, UK. Tel: 01525 222573/ enquiries@adhpublishing.com.



MORANE SAULNIER
TYPE N
(PLAN FSM124)

Full size copies of this three sheet plan are available from Flying Scale Models Plans Service, ADH Publishing, Doolittle Mill, Doolittle Lane, Totternhoe, Bedfordshire, LU6 1QX. Tel 01525 222573
enquiries@adhpublishing.com
Price £22.50 plus p&p
(U.K £2.50; Europe £4.00; Rest or World £6.00.



10: Prominent features of the Morane Saulnier Type 'N' are the bracing wire anchor mast ahead of the cockpit and the prominent machine gun. **11:** Another view of the wing wire brace anchor mast and the dummy machine gun. **12:** View of the rear fuselage underside, showing the tailskid, which is a mixture of wire braces and laminated wooden skid. Note the adjustable clevis end to the tailplane underside bracing wire. **13 & 14:** The anchor points for the adjustable links at the ends of the bracing wires on the wings are re-shaped links from a bicycle chain. Above right: builder John Marriage invented this two-function tool with an Allen key end and a shaped shank to ease open the link. **15 & 16:** Two views the tail cone, showing the closed loop control wire runs and control horns. **17 & 18:** Two views of the dummy scale wing warping mechanism below the fuselage under the cockpit area. This example uses conventional ailerons, by author says the mechanism should work to actuate scale wing warping for roll control.

soaking or steaming, especially where the bends are sharpest, but with care and practice balsa can usually be pulled round dry. Have a dummy run before coating all surfaces with plenty of P.V.A. and clamping as securely as possible.

DON'T BE IMPATIENT!

With this ratio of glue to wood it takes a long time to cure fully. Keep the assembly for several days in a warm place before removing the clamps, then a few more before carving it to its final D section. The ply laminates really help to stop the balsa curling during gluing, and after final shaping most of the outer ply layer is removed leaving a narrow, hard band to help resist 'hangar rash'.

The wing tips were a little more complicated, in that I wanted to produce a component that is curved in two directions. To avoid lots of wasteful cutting and shaping after laminating, I cut my laminations to an approximation of their finished shape before gluing. The results were very satisfying in both shape and strength. The final operation was to cut halving joints into the laminates, to enable them to be joined to the

conventional leading and trailing edges.

Tail feathers

As with the wings, the curved outlines were made by laminating. Each tail surface had to pivot on an axle, and to this end, a thin-walled dural tube was incorporated in lieu of a spar. One standard servo in a closed loop arrangement is used on each tail surface, and on the rudder.

Fuselage

Forward of the cockpit the full-size Morane is covered in metal cowlings that were to be reproduced using litho-plate, but to add some support and strength to the sides, these were covered in 1/16" ply. These would extend forward of F1 to form the mounting for the engine cowling. The ply pieces were soaked, heated and wrapped around a suitable sized tin, then allowed to dry out before gluing to the formers' helping to prevent distortion and bulging of the springy plywood.

It was necessary to incorporate strengthening members along the basic framework to support the undercarriage and wing rigging pylons (top and bottom),

which were going to have to work for their living! A 20mm I.D. Dural tube was bonded across the forward cockpit area to accommodate the plug-in wing panels.

At the tail end, it was necessary to fabricate a rather complex framework from 12 g piano wire. This fits to the lower longerons, and supports the rudder and sprung tailskid, whilst also forming the bottom anchorage for the bracing wires that stiffen up the tail and rudder axles. Both of these were made from carbon fibre tubes for maximum stiffness with minimum weight.

The tailskid was laminated from close-grained mahogany, with a steel hinge bracket bonded and screwed in place. Springing was effected as in the original, using lightweight bungee cord (see photo).

Wings

As already mentioned, these are fairly conventional. I incorporated 20mm O.D. Dural tubes close to the front spar to mate with those in the fuselage, together with a locating peg nearer the trailing edge to set the wing incidence. Lengths of 8mm sq. aluminium bar were drilled through lengthwise and tapped M3, then bonded



19: View of the fully furnished cockpit. The needle on the rev counter works, as does the compass. **20:** The Morane Saulnier Type 'N' is 'blessed with many bracing wires and the model takes about 20 minutes to assemble. The author devised these little bobbins onto which the bracing wires are wound when the model is disassembled. **21:** Detail of the top of the fin/rudder, showing the rudder hinge and anchor point for the tailplane top side bracing wires. **22:** View of the fuselage front end, showing the radio and engine installation, with fuel tank. **23:** Ready for another dawn patrol, the author provides scale to the size of the model Morane Saulnier Type 'N'. **24:** Dummy fabric stitching on the rear fuselage - a prominent feature of the full size that needs to be reproduced to give realism to the model.

into the structure at appropriate points (where ribs meet spars) to form anchorages for the functional rigging wires. One standard servo was used for each aileron, as I figured that the control forces would not be enormous on this model.

CONCLUSION

The maiden flight of the Morane took place

at my club's traditional New Year's Day barbeque. At that state, none of the detailing had been applied and the flight went off fairly unevenly, giving enough confidence to finish the job.

Next flight with 'all the trimmings' in place was at the Club's Gala Day the following July, and was followed by flights and various summer meetings all of which demonstrated

the practicality of the model and its good flying characteristics.

NEXT MONTH

Wait for the follow-up on the making of the metalwork parts and other close-up details.



NEW FROM ADH PUBLISHING

The Modeller's Guide

Superdetailing, Painting and Weathering

Aircraft of WWII, with airfield accessories, ordnance and diorama

The Modeller's Guide



SCALE MODELLING:
A LOVE STORY READY
TO ASSEMBLE

TOOLS AND MATERIALS

TECHNIQUES

BUILDING THE AIRCRAFT

- SPITFIRE MK. IXC
- P-47D THUNDERBOLT
- JU-87D 'STUKA'

MAKING A DIORAMA



Aleksandar Počuč

Modeller's guide to superdetailing, painting and weathering aircraft of WWII' book is intended for both beginners and advanced modellers as it covers wide variety of modelling tasks ranging from basic detailing, scratch-building, painting, weathering, machining custom parts using resin as well as scratch-building part from brass and aluminium and of course, diorama making. Basics about tools, paints and modelling materials have been covered as well. The book revolves around three subjects, P-47D Razorback, Spitfire Mk.IXc and Junkers Ju-87D Stuka, all in 32nd scale. Step by step concept will provide a good reference and ideas to all WWII aircraft modellers regardless of their experience.

ORDER NOW:



www.adhpublishing.com



01525 222573



enquiries@adhpublishing.com

FOR ONLY

£18.95

PLUS P&P



ADH PUBLISHING, Doolittle Mill, Doolittle Lane, Totternhoe, Bedfordshire, LU6 1QX, United Kingdom.
TEL: +44(0)1525 222573. FAX: +44(0)1525 222574. ONLINE: www.adhbooks.com

MORANE SAULNIER 'N'

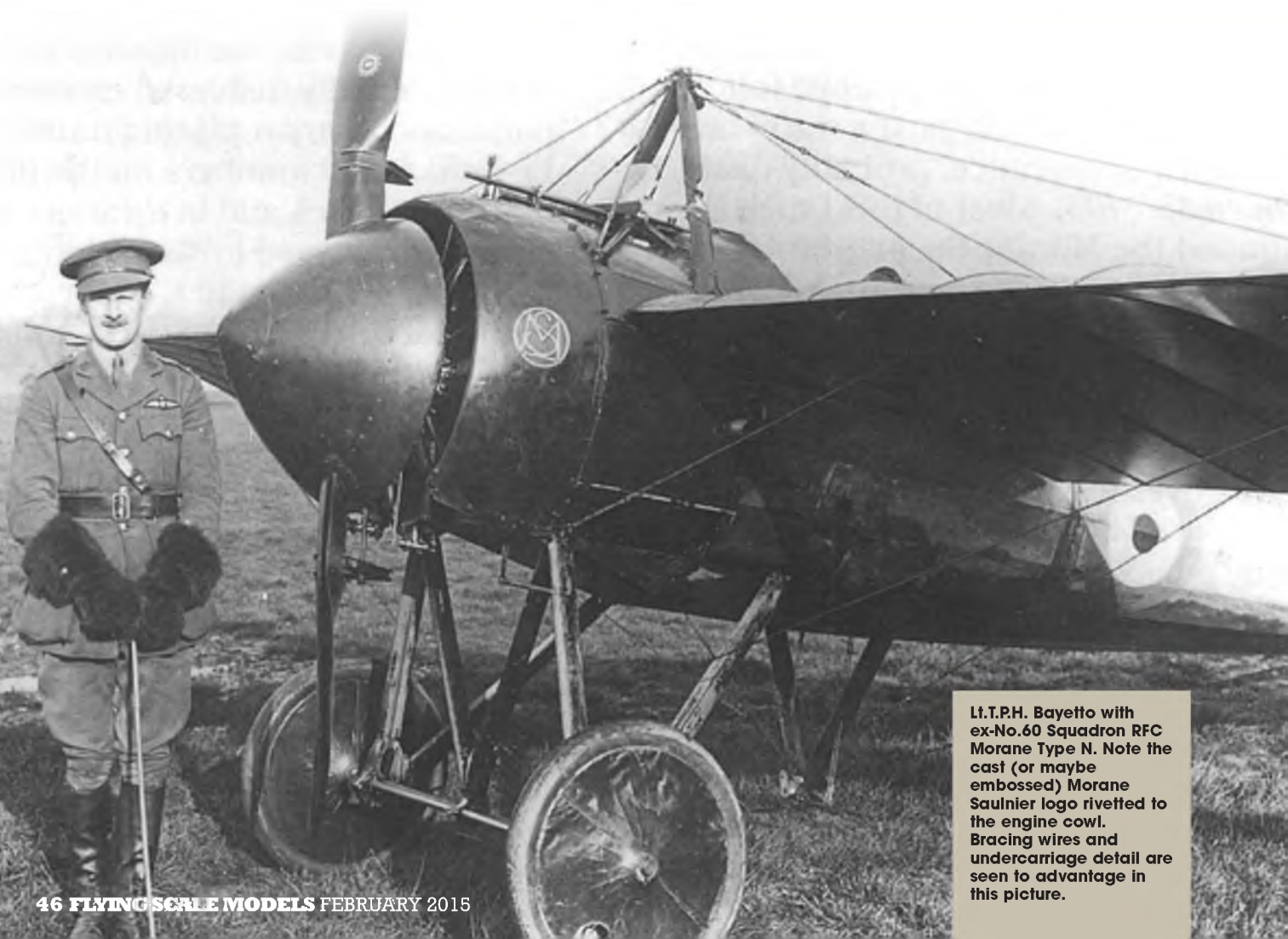
COMPARED TO OTHER VERY EARLY 'FIGHTER' TYPES OF WW1, THE M.S. TYPE N LOOKS SURPRISINGLY SLEAK AND RACEY, BUT IT WAS NOT POPULAR, PERHAPS BECAUSE RUN-OF-THE-MILL MILITARY PILOTS WERE LACKING, RATHER THAN THE AIRCRAFT!

When the nations went to war in August 1914 their air services, such as they were, consisted of a motley collection of machines hardly any of which were designed for war service and none at all for fight-to-fighter air combat. Indeed those that revelled in such romantic

names as 'battle plane' or 'cannon-aeroplane' were adaptations of existing types, for it was not really known what part the aeroplane would play in war.

The only task that had crystallised in any form at all was that they would be solely the eyes of the artillery or a sort of aerial cavalry, reporting on the movements of enemy troops, and one must bear in mind

that the subsequent stagnation of the war into trench warfare was not foreseen. Some machines that had been designed for endurance and height (such as some of the German types) were particularly useful, whilst it was assumed that the small, single seater with its speed would make an ideal 'scout'. The conception of a fighter aircraft took some



Lt.T.P.H. Bayetto with ex-No.60 Squadron RFC Morane Type N. Note the cast (or maybe embossed) Morane Saulnier logo rivetted to the engine cowl. Bracing wires and undercarriage detail are seen to advantage in this picture.



Physically, there was very little difference between the M.S. Type N and the Type I, of which this is an example supplied to the Imperial Russian Air Service. The figure on the left is a captured German airman. Roundels are red outer, blue middle and white centre. Fin and rudder in black.

time to develop.

However, the small racing machines which had made their mark in the years immediately preceding the outbreak of WW1 were, generally speaking, not suitable for military purposes for several reasons. One was that they carried a limited amount of fuel and in consequence, had short ranges. Another

was that they were designed principally for speed and because of the fact that aircraft design was still in its infancy, many of them were very difficult to handle unless an experienced pilot was in the cockpit. In any case, in the early days of the war, high speed was not important, stability was, and so was a second crew member who could observe and record

without having to concentrate on controlling the machine.

One aircraft type that had just made a name for itself, before the out-break of war, was the Morane Saulnier Type 'N', a delicate and finely proportioned, little, single seater designed by the company which, only a short time before, had produced the famous 'G' and 'H' monoplanes which were very highly regarded in pre-war aviation circles. Anthony Fokker in particular admired this machine so much that he bought a damaged one and made a virtual copy of it, so starting the line of 'E' monoplanes, which became so notorious in 1915. The M.S. 'N' was to some extent a refined Type 'H', but the designers had seen the beautiful Deperdussin monoplanes, which had a monocoque fuselage, (i.e. the framework was covered in layers of plywood, giving a smooth, strong shell - a construction technique soon to be repeated on the German Albatros line of designs.

Although the M.S. Type 'N' was later usually referred to as the 'Morane Monocoque' this was a misnomer because the shape was achieved by stretching fabric over wooden stringers which in turn were attached to a metal framework, thus achieving the rounded fuselage outer shape in contrast to the typical 'boxy' style the generally prevailed at the time.

The first Morane-Saulnier Type 'N' came to the notice of the aviation public in June 1914 when it was flown by well-known French aviator Roland Garros at Vienna during a flying meeting at Aspern. The story of Garros's activities with forward-firing guns are well known, but there is a common misconception that, in 1915, he was shot down while flying M.S. Type 'N'; this was not so, for he had been carrying out experiments with guns on the M.S. type 'L' parasols and it was in one of these machines that he was shot down and captured.

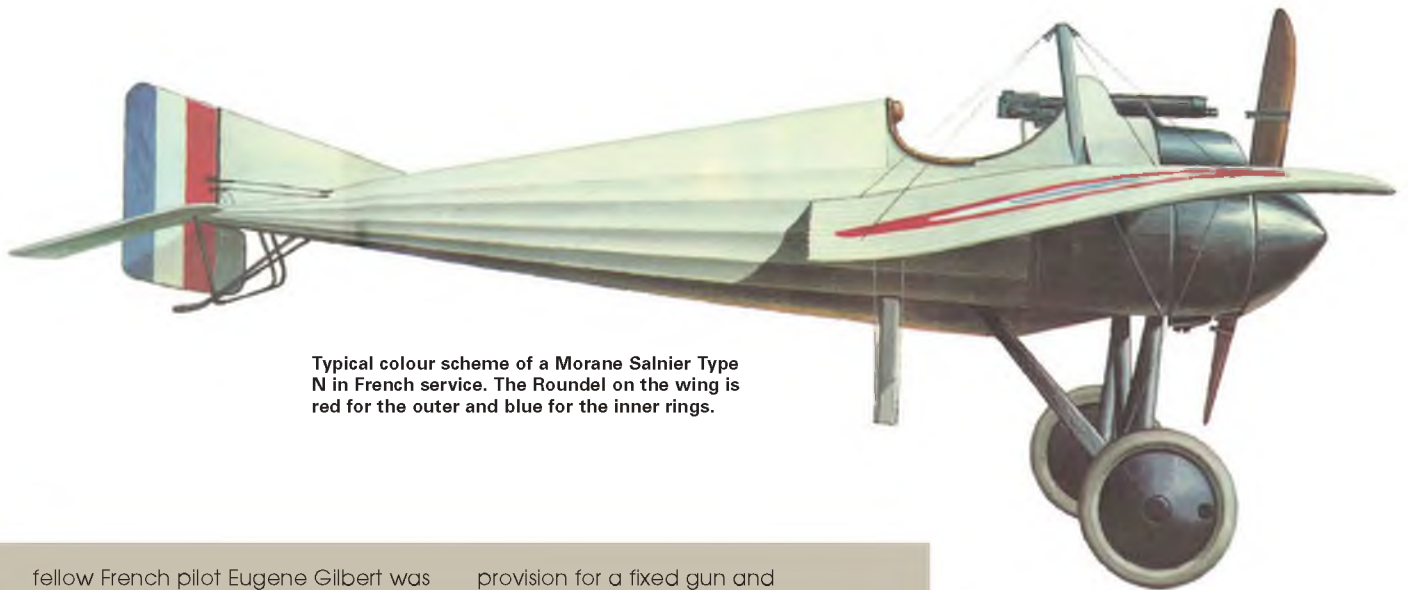
Later, an M.S. 'N' of M.S. 23 flown by



Another example of the M.S. Type I, with 110 h.p. Le Rhone rotary engine and synchronised Vickers machine gun.



A Morane Saulnier Type N in French service with Hotchkiss machine gun and deflector plate type propeller.



Typical colour scheme of a Morane Saulnier Type N in French service. The Roundel on the wing is red for the outer and blue for the inner rings.

fellow French pilot Eugene Gilbert was seen at the Front with the name 'Le Vengeur' painted on the sides. This appears to have been the original 'N' of the meeting at Aspern and the name represented Gilbert's feelings about the capture of his friend Garros.

Gilbert had some success with this machine, which was fitted with a forward-firing Hotchkiss 'Portative' machine gun and a propeller blade fitted with deflection plates. As a result of this, the French Government ordered a small number of machines for war purposes, the production examples having the spinner altered, together with the shape of the fuselage spine behind the pilot.

These were fitted with 80 h.p. Le Rhone 9C engines and the vertical tail surfaces became less stylised. It appears that only a few of these machines were used by French units who were more impressed by the early Nieuports, although such well-known French pilots as Jean Navarre and Adolphe Pegoud flew them. These two were excellent pilots, able to get the best out of whatever they were flying and the Morane continued to be disliked by the average pilot because of its handling qualities, which did not suit those with less flying experience.

Meanwhile the R.F.C. required more aircraft than it was possible to supply from the home industry so that orders were placed for French machines. At the height of the 'Fokker Menace' there was an increasing demand for a machine to act as a counter weapon. At that time the Morane appeared to be a good bet, for it was fast and had

provision for a fixed gun and subsequent tests were to prove that the Morane was indeed superior to the Fokker Eidekkers that were taking heavy toll on British and French air activities over the Western Front. However, despite its speed, it was a very difficult machine to fly, being extremely sensitive on the controls and with a tendency to dive like a brick if not held at all times.

In R.F.C. Service, the machine was known as the 'Morane Bullet' but in fact other small, high-speed machines were dubbed 'bullet' and generally speaking, it was disliked. The Type N served with Nos. 1, 3 and 60 Squadrons of the R.F.C. and for a short time a few were attached to No. 24 Squadron. Because of some confusion which had arisen over identification, R.F.C. Headquarters issued an order on 19th June, 1916 instructing that all Morane 'N's were to have their metal parts painted red so as to distinguish them from the Fokker monoplanes. However, by this time the Fokkers were rapidly disappearing from the Front and were being replaced by the new Albatros and Halberstadt biplane scouts.

The few Morane Ns left in service were returned to Home Establishment and some remained flying well into the war as training aircraft or hacks.

Moranés were also supplied to and used by the Imperial Russian Air Service, and although some sources refer to these as Type 'N's they were in fact type 'I's which were a development of the same airframe, fitted with a synchronised Vickers Gun and 110 h.p. Le Rhone engines.



Lt. Bayetto again, installed in his Type N. Note the Hotchkiss gun, with barrel pointing at the deflector plate on the propeller.



ABOVE: Detail of cockpit and Hotchkiss gun installation. LEFT: A Morane Saulnier Type I in French service. 'Kepi' head gear is the give-away as to the pilot's nationality!



Have you added BMFA membership to your Christmas list?



For details of the current fees or to join visit:
www.membership.bmfa.org

BMFA
 Chacksfield House
 31 St Andrews Road
 Leicester, LE2 8RE
 0116 2440028
 admin@bmfa.org

www.bmfa.org

Mr/Mrs/Miss..... D.O.B.
 Address.....
 Postcode..... Tel:.....
 E-mail..... Make Cheques payable to BMFA



VISIT THE ROTORWORLD WEBSITE

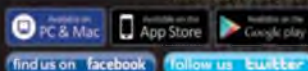
ALL THE LATEST R/C HELI ONLINE NEWS & MUCH MORE IS JUST A CLICK AWAY!



- LATEST NEWS
- REVIEWS
- FEATURES
- GALLERY
- VIDEOS
- EVENTS
- LINKS
- AND MORE...

ORDER ONLINE

MANAGE YOUR SUBSCRIPTION, ORDER ISSUES, BINDERS, BOOKS, SUNGLASSES...



MAKE SURE YOU VISIT US AND BOOKMARK
WWW.ROTORWORLD.CO.UK



From only £22.81^{inc. VAT, P&P}

- NEW! 10W Strobe Modules
- World renowned lighting systems
- Used by national scale champions and show pilots
- 20W Intelligent Lighting Controller
- 1.25W+ LED modules



Warbird Set

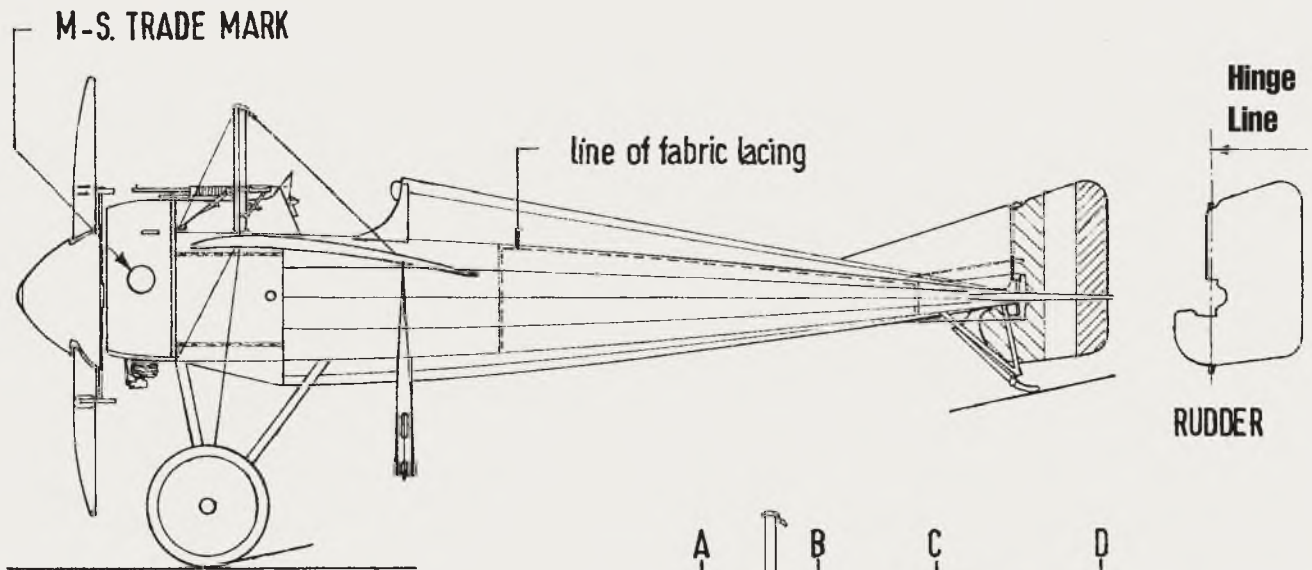
Everything you need to make your warbird shine! Navigation and landing lights plus our FlightLights v5 controller.

£93.20^{inc. VAT, P&P}



For details and ordering goto
www.braincube-aero.com

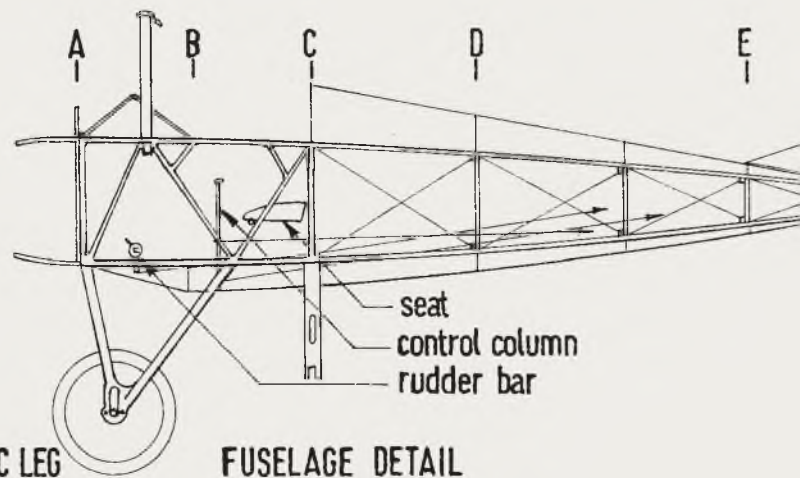
SCALE 1:40



80hp. LE RHONE

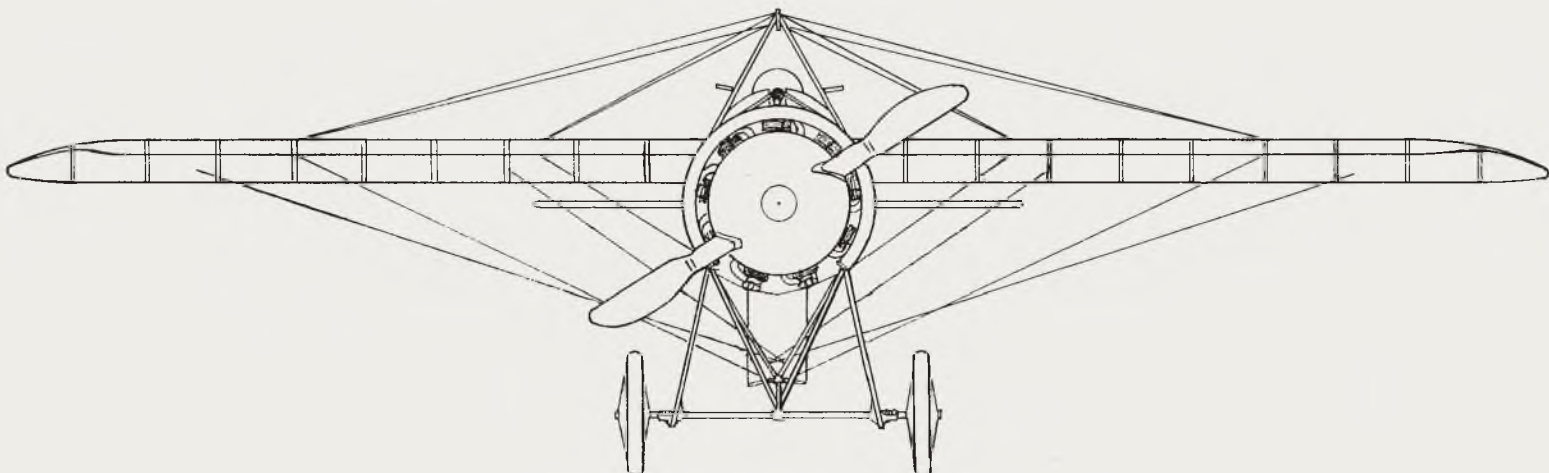


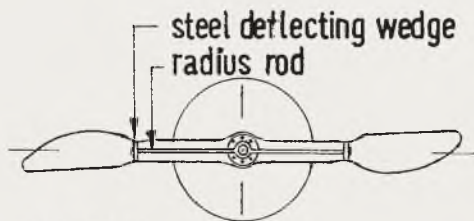
CENTRE U/C LEG



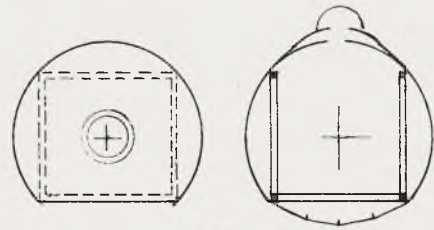
MORANE-SAULNIER

TYPE N





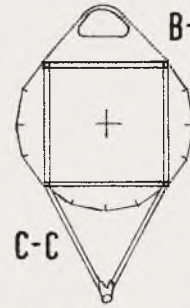
PROPELLER from rear



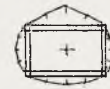
A-A

B-B

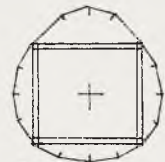
Fuselage Sections



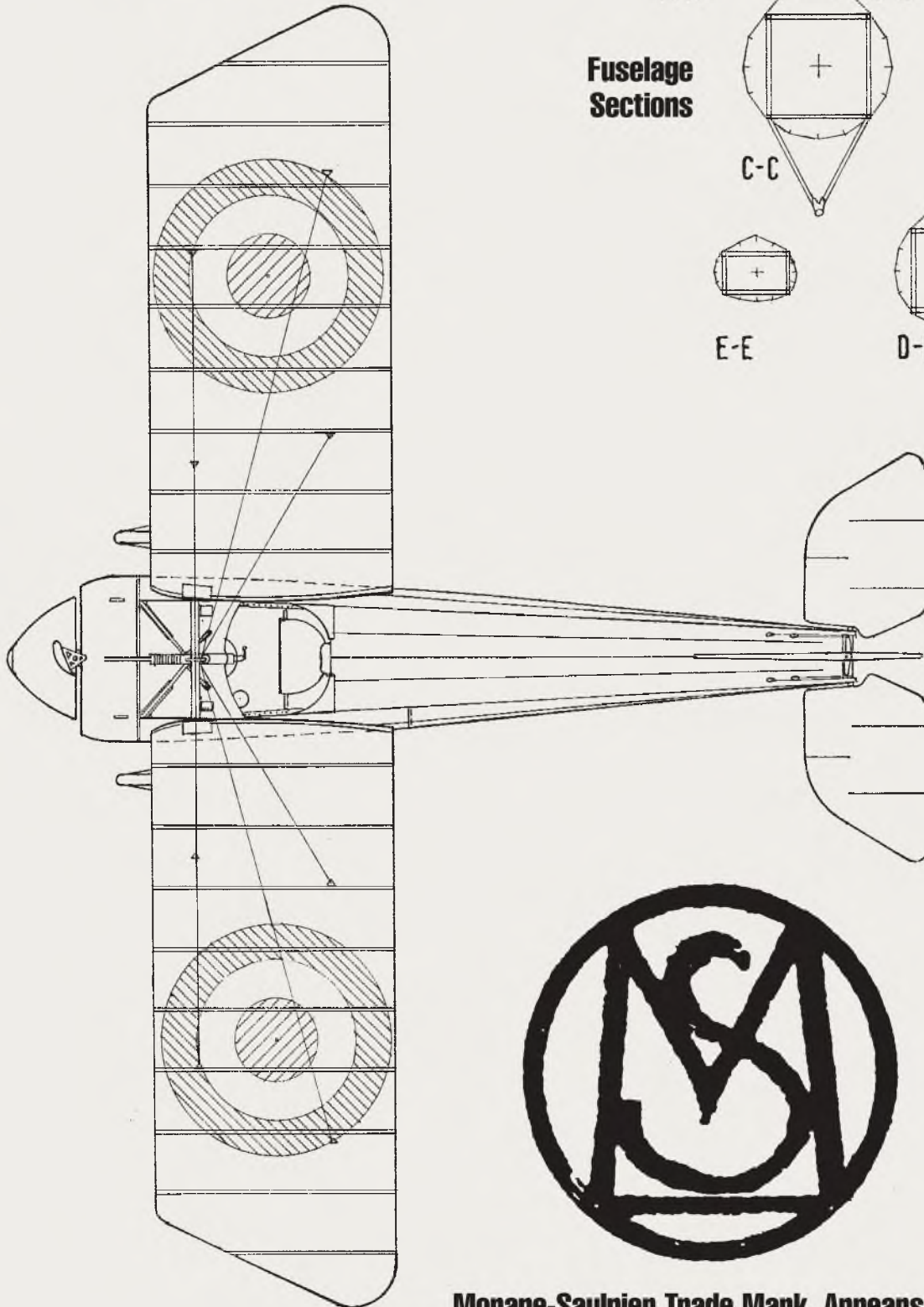
C-C



E-E



D-D



Morane-Saulnier Trade Mark. Appears on engine cowl both sides

SHORT

ADMIRALTY TYPE 184 SEAPLANE

The Short 184 was the only British aircraft present at the infamous Battle of Jutland. Alex Whittaker reviews Dennis Richardson's fascinating 1/8th scale model

Although now largely forgotten, the Short 184 was the first aircraft in history to sink an enemy ship with a torpedo. It was developed from a Admiralty specification of 1915 which attracted a number British aircraft manufacturers including Sopwith, White, and the



Short Brothers.

Short's design was deemed best suited to the Admiralty's requirement as the '184 built on the success of their earlier seaplanes. The prototype first flew in 1915 and featured equal span, three bay wings, and tractor power configuration. Designed specifically for off-water flying, the aircraft had two main step-less floats, and a tail float, complete with water rudder.

The wings folded for ship-borne operations and were slightly unusual in that, although the lower wing panels were of parallel chord, the upper wings increased in chord from the centre section outwards to their tips. Originally, ailerons were fitted to the upper wing only, and were 'single acting', relying on airflow alone to retain them in neutral. This was soon updated to





1: The radiator was placed above and behind the engine. Note filler cap. **2:** Torpedo and restraints are nicely modelled. The dolly drops off on take-off. **3:** The bay and rigging detail is impressive. **4:** Dinghy-like tail float has a water-rudder, too. Note scale wire skid. **5:** Graceful and rather interesting fin and rudder. Note slender scale size of bracing wire. **6:** Tail end of the torpedo - note propeller!

fully acting ailerons on both the upper and lower wings.

The fuselage was built with a box-girder construction, with wire bracing, and spruce longerons, the latter machined down over their length to reduce weight at the rear. Fuselage fittings were manganese steel to counter the intended

salt water operating environment.

Earlier Short seaplanes had lacked power, so the '184 was initially designed around the new Sunbeam Mohawk engine. The '184 was fitted with a wireless transmitter / receiver, which was powered by a wind generator. Communications back-up was provided by a box of

carrier pigeons.

In service, the Short 184 proved a popular type, despite marginal performance at high air temperatures. In all, 936 were built by a variety of Manufacturers and, most remarkably, variants stayed in service in UK and abroad until 1933.



The Model

Noted scale modeller Dennis Richardson is no stranger to these columns, as we have covered many of his designs before. Readers may remember his Macchi Folgore, his Handley Page Heyford, and his Grumman Avenger/Tarpon.

Dennis has the knack of searching out appealing but unusual scale subjects, and with the Short 184 he has excelled himself. The model is a very characterful and engaging aircraft, with that real 'wind-in-the-wires' feel to it. This is a serious traditional scale model with a wingspan of 96" and power from twin Laser 80 glow engines.

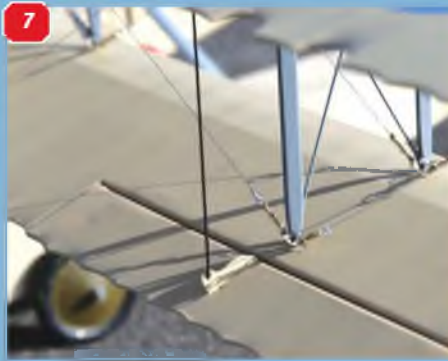
Dennis's inspiration came variously from Profile Publications monograph No.7, an old black and white TV documentary, and Australian Gary Sunderland's free flight scale model features as a plans construction feature in Flying Scale Models April 2010 issue. Dennis also used a copy of Windsock Datafile 85, 'The Short 184' by J M Bruce.

Armed with these, he set about scaling up Gary Sunderland's 47" span 1/12th scale plan (FSM 319 from ADH Publications). Gary's successful original model had used a 2cc diesel engine and had won a number of scale trophies, so it was a good starting point for the projected 1/8th scale R/C model.

Construction

Dennis reports that the building proceeded straight from the plan with a few obvious modifications to suit radio control.

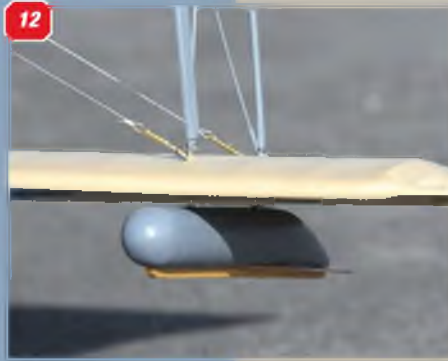
It is an all-traditional balsa and ply



- 7:** Rugged rigging terminations and pushrod that links upper and lower wing radiators.
- 8:** Attention to small details make a scale model; note the scalloped edges to ailerons.
- 9:** The Short 184 has tandem cockpits.
- 10:** Separate radiator on fuselage side.



It is hard to imagine a more appealing vintage military scale model.



11: A lot of work in the step-less floats. Note 3 1/2" Williams scale wheels. **12:** wing tip float; note skid. **13:** Dennis's take-off dolly!

construction, with the addition of cypress wing spars.

Floats

The floats are 24" and were constructed of balsa veneered in 1/64" ply, built around 1/8" birch ply formers.

Torpedo

Gary's original model was able to drop its torpedo. Dennis has yet to incorporate this feature.

Covering

The 184 is covered in Solartex, and then painted with Warbirds Paints to resemble natural doped canvas.

Engine

Power is from a brace of dependable

MODEL SPECIFICATION

Short 184 Seaplane: built to an enlarged version of Gary Sunderland's FSM plan.

Scale: 1/8th

Wingspan: 96"

Engine: Laser 80 glow engine

Dennis Richardson's Short 184 is Laser 80 glow-engine powered, spans 94" and is built to 1/8th scale.



Initial flights indicated the need to use co-ordinated rudder and aileron for the turns.



The Short looks superb in the air - atmosphere by the bucketful!



Dennis is certainly a six footer, so you can appreciate that the Short 184 is a large model.

Laser 80 glow engines, a type beloved of many UK scale modellers.

Rigging and wirework

The rigging is all functional as it is on Gary Sunderland's free flight scale model. It uses 10mm brass turnbuckles from a model boat chandlers, the copious wirework being mostly silver-soldered. The completed model needed 8 oz of lead distributed in the engine bay and in the tips of the floats.

Take-off Dolly

The take-off dolly is designed to drop off as did the original aircraft when flying off the earliest aircraft carriers - and craft more like seaplane tenders where the aircraft were simply craned into the sea. The model's wheels are Williams vintage types.

First Flight

It just so happened that I was present at Ashborne Scale Day 2014 with my cameras for the Short 184's maiden flight. All the photos here were taken during

that momentous occasion. For the first flight, Dennis decided to band-on the dolly to facilitate a short hop and recruited well known scale pilot Ian Redshaw to test-fly the 184. Dennis reports that he was worried that she might need judicious coupled rudder control.

The take-off was very stately, though it was clear that the model was certainly not underpowered. With all that wing area available she behaved in a very scale-like manner. Overall, her appearance in the air was utterly serene, looking particularly impressive when coming in on a low pass and after a few trim and exponential function tweaks, Ian had her turning on aileron and a little rudder very nicely.

The landings were long, shallow and very light, concluding very satisfying maiden flight of a really unusual and impressive scale model that epitomises much of what many of us feel is pukka scale aeromodelling. ■

STRUTS & WIRES

DR. MIKE HAWKINS F.R.A.E.S. OFFERS SOME PRACTICAL ADVICE

Many aircraft that are worth-while scale projects are festooned with struts and wires. My latest example is the double-bay triplane

Mitsubishi Type 10, but it is not in the same class as the *Bristol Boxkite* built by Gary Sunderland and featured some time back in FSM. You really could cage a canary in that one!

The thought of all these fiddly bits may discourage a would-be builder but it is not necessarily a marathon task.

The first point that needs definition is the scale standard to which you are building. The 'Museum Scale' model will require the rigging to exactly reproduce the original. Depending on the chosen subject you would be committed to airfoil section, RAF wires, scale turnbuckles and the like and good luck to you! I prefer to work to the 'Practical Scale' standard with wires and struts where they should be, but with fixings and brackets for modelling convenience rather than absolute accuracy.

If you want complete accuracy, go and talk to Mick Reeves about RAF wires and set up your lathe for the left hand thread on

one end of each turnbuckle. The methods I am currently using are rather simpler and you can judge from the photos whether the appearance meets your needs. The choice is yours.

The second point of definition is the names of the bits. The 'lifting wires' carry the weight of the aircraft and are in tension in flight, that is, under positive 'g' forces. The landing wires are in tension when you make a heavy landing or under negative 'g' in flight. In addition, the 'Incidence Wires' join the strut fixings, making the struts rigid so that one wing cannot slew over the other.

Incidentally I had a quarter-scale Bucker Jungmeister that developed visible and audible flutter on one wing in flight. I was able to slow it down before disintegration and fitted bracing wires between the struts - end of story.

The 'cabane' struts support the wing over the fuselage, whether they join at the centre line or not.

Struts

The cabane struts must be bound and epoxied to a former or stringer in the fuselage and so are usually made of wire.

(See pic 2). If they join at the centre line, two brass plates can be soldered between them with holes to take a 1/4 in. inside diameter rubber washer. 1/4 in. carbon fibre joining rods can slide through these holes, fixing the upper wing on assembly.

(See pic 3)

If the struts are separate (pic.2 again), a brass plate is soldered on top of each and a fixing bolt goes through into a 'T-nut' inside the wing.

I now make wing struts from 3/16 in. carbon fibre tube. You can cut this stuff with a mini saw, but I do not recommend this as you will have no teeth left on the blade when you finish.

A cutting wheel on a mini-drill is better. Wire loops are epoxied into the tubes at each end. I recommend a jig, a simple piece of ply, with a bolt at the length of the strut at each end. (See pic 4)

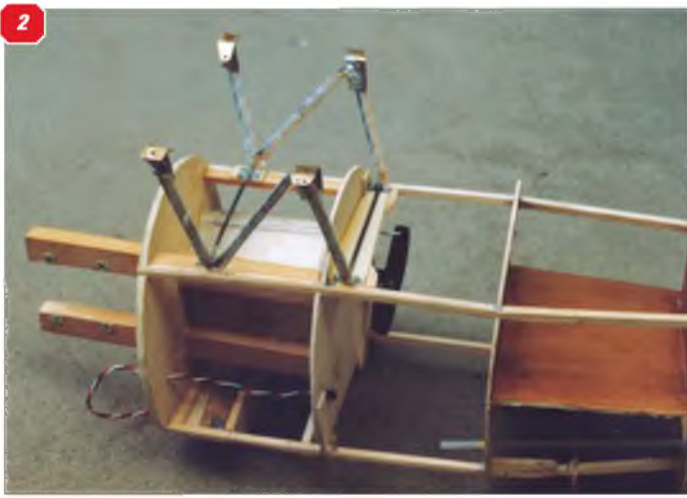
The loop is formed from an unrolled paper clip - just the right strength of wire, wound twice around a bolt one size larger for a clearance fit. The ends of the loop should have a slight kink in them so they push fit into the tube and metal-mending epoxy holds them safe.



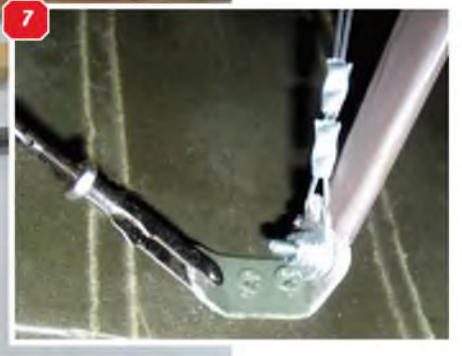
1

JUST IN CASE YOU'RE CURIOUS...

The Mitsubishi Type 10 was the World's first purpose-designed naval fighter aircraft, for operation from the World's first purpose-built aircraft carrier (that's a double first). Designed by Herbert Smith who had been Sopwith's chief designer during WW1, Smith went to Japan soon after the Great War ended and the aircraft first flew late in 1921. The type served with the Japanese Navy until 1930.. Needless to say, Dr. Mike has a passion for obscure aircraft types!



2: Example of cabane struts that splay outwards, showing the metal mounting shoes at the tops of the struts. **3:** Cabane struts that converge at the upper wing mounting position, showing the wing joiners. **4:** Forming the wire loop attachments that fit at each end of the wing struts. **5:** Finished struts and jig that spaces the loops at the strut ends exactly. **6:** All the parts that go to make up the struts, including the metal mounting brackets. **7:** Bracing wire/ strut brackets in place on wing. Note the aluminium cable swages to secure the rigging wires.



In all cases, the struts are faired to shape with hard balsa or ply and wrapped with Solartex, ironed on for finishing. (See pic 5).

Aluminium or brass angle brackets are made up, to be bolted to the strut and screwed to 3/16 in. ply braces within the already covered wing. Lock nuts are advisable. (See pic 6 & 7).

For my models, in the 60 to 80 ins. wing span range, 4-40, (2.5 mm.) bolts and nuts are fine. These brackets are individually cut

to shape with lugs for whatever bracing wires will be attached. Phillips head screws and a box spanner for the nuts make assembly much easier.

Use a 6-32 bolt (3 mm.) for winding the loops to give a clearance fit on the 4-40 mounting bolts.

Wires

I find the best material for these to be nylon covered fishing trace, available at a fishing

tackle shop.

For models up to 60 ins. span or so, the 60 lb. test grade is fine. For larger models such as my Mitsubishi Triplane, use the 90 lb. test strength.

I do have some very strong *Aramid* thread but it does not stretch at all. Consequentially, if the tension is not exact it sags and looks awful.

Incidentally, each aircraft in the RFC had its own dedicated rigger whose job it was to set



This view shows all the struts in place on the bare airframe. It's a triplane, so the wing struts pass through the centre wing and attach to the top and bottom wings.



8: Wing-strut attachment brackets, also showing cable swages. **9:** Rigging wire adjustable attachment clevis. Note the wire loop at the non-clevis end for attaching the rigging wire. **10:** Adjustable clevis and rigging wire showing the cable swages and the attachment bracket made from metal angle strip cut and filed to shape.



the wing incidence with an *Abney Level* and 'true up' the plane each day before flight so there is an historical background for a bit of work on your rigging wires.

The wire ends are fastened by two, small sleeves of 1/8 in. aluminium tubing (see pic 7), about 3/8 in. long, (the technical term is cable swage) slipped over the wires and double crimped with round nosed pliers. The aluminium is easily cut by rolling it under a modelling knife. If it is necessary to replace the wire or refasten it, the crimps can be undone by squeezing out the crimp with pliers.

One end of each wire is a loop through the mounting bracket. (See pic 8). The other end, chosen for ease of access when assembling the model, has a rigging connector and a spring steel clevis. (See pic 9). I suppose you could use nylon clevises on smaller, lighter models but for my size of 60 ins. span plus, steel is needed. 'Dubro' or 'GreatPlanes' are suitable brands.

60 lb. test wire is fine with a 2-56 clevis (standard size) adapter but the 90 lb. test wire should have the larger, stronger 4-40 size.

If you cannot get the rigging adapters, you can make them by soldering a loop

from a straightened-out paper clip or a split pin, to a suitable bolt with a tinned copper wire binding. (See pic 9 again) Similar methods can be used for closed-loop control wires. For the latter, install a 1/8 in. polyethylene (?) tube inside the fuselage so the wire can be threaded through from its exit point to come out in position for the servo attachment after covering.

Having built your model and covered the wings so that you can screw on the attachment brackets, (pic 10) it is necessary to assemble the model on a table so you can walk round it while adding all the struts and wires. It may help to suggest that your wife goes to visit her Mother, so you can get access to the kitchen table. (Length of away-day dependent on how much rigging there is to do!)

As I write, my wife is on the Upper Amazon in Ecuador, but my new model is not ready for rigging yet. You cannot win.

A warped view!

Incidentally, although two bay biplanes are more work, the pair of struts mean that the wings from each side can be removed as a cellule so that assembly at the field requires only sliding the wings onto their rods and connecting a few rigging lines via their clevises, to their fuselage anchor points. Also, in storage, the wing cellules can be elastic banded together, lower wing surface to lower wing surface, with chordwise 1/2 square balsa spacers between.

(see pics 12 & 13)

This is effective in preventing warps in storage.

If you have any queries, or, indeed, a better way of doing it, please email me at mikeh@samart.com



11: All wires fitted and rigged. Mike recommends working from a bench where there is all-round access to the airframe. **12 & 13:** Mike uses this system for storing, and transporting the wings and assembling wing panels to the fuselage.



Techno Scale

Mike Evatt s

I have always had a soft spot for the rather quirky looking Westland Lysander so was delighted to find not one but two kits by 'Easy Built' at the **Sussex Model Centre**.

Logging on to www.sussex-model-centre.co.uk will reveal Kit No. FF-58 The Westland Lysander, a 1/12 scale, flying model that uses the box and former method of construction. This Pre-1942 design is eligible for Society of Antique Modellers contests. The Lysander was a British army co-operation and liaison aircraft of WWII, achieving fame through its ability to operate from short stretches of unprepared airstrip and its clandestine missions to plant or retrieve agents behind enemy lines. This 48-inch span rubber powered version really looks the part.

The purpose of this website at <http://tandysmodelplanes.com> is to share **Tandy C. Walker's** lifelong interest in model aviation. Tandy has been a life long modeller for many decades and has built and flown control line stunt and combat, free flight, radio control sport, and quarter scale. His web pages contain an excellent photo gallery of *Flying Aces Club* rubber powered scale models as well as a number

of blow-by-blow construction photo articles.

The Vintage Model Company has updated its website.

Log-on to www.vintagemodelcompany.com and take a peek. It now includes many excellent photos of their products and whether you are new to model building or an old hand, they will have a kit to delight and entertain you. Their current range of precision laser-cut balsa kits hark back to an era of aero modelling where "stick and tissue" planes were all the rage and a Sunday morning at the park would see dads and sons flying (and crashing!) rubber powered aircraft in every direction. Almost all the kits in their ranges can be converted to radio control and many can take electric or I/C powered engines.

Since 1964, **Hobby Express** at www.hobbyexpress.com has offered quality products supported by outstanding service to their friends and customers. The Pilot-1 Waco YKS-6 1/4 Scale ARF is a delight. WACO (Weaver Aircraft Company) of Loraine, Ohio was one of the premier aircraft manufacturers of the 'Golden Age' of aviation (pre-1939). The YKS-6 was a

large cabin biplane with seating for 4-5 people. Its large wing area and overall lightweight allowed it take off and land in undeveloped areas common to the US in the 1930's. This is a model of the aircraft owned by the Deutsches Museum Flugwerft Schleißheim that was originally built as an ambulance aircraft in 1936.

The classic *Christen Eagle* aerobatic biplane has never been more lovingly rendered than in **Seagull Model's** meticulously crafted masterpiece. Check it out at www.elitemodelsonline.co.uk The sinuous curves are captured perfectly with crisp elegance. Even the laser-cut fuselage stringers are scalloped between bulkheads for better strength/lighter weight. Choice and selection of materials is exemplary also as is the slippery aerobatic profile of the beautifully finished balsa wings with their strong aluminium tube wing joiners, sheeted D box leading edge and painstakingly applied Oracover trim colour scheme! Enjoy!

Compact, quiet and almost vibration-free! That is the claim for the **O.S. Engines 49-PI Type II .30 Wankel Rotary Engine**. The 49-PI is ideal for boosting power in small-scale planes, reducing weight in



This 48-inch span rubber powered Westland Lysander really looks the part.



An excellent photo gallery of Flying Aces Club rubber powered scale models.



The Vintage Model Company has updated its website.



The Pilot-1 Waco YKS-6 1/4 Scale ARF.



The Christen Eagle aerobatic biplane is carefully rendered in the 'Seagull' version.



Compact, quiet and almost vibration-free!

course the web for more TechnoScale Topics...

mid-size craft and for dependable, user-friendly service in any application. Equipped with two needle bearings, a ball bearing and rotary design's inherent smoothness, make it a very quiet and virtually vibration-free option in power. The recommended props: 9x6, 9x7, 10x4, 10x5, 10x6, 11x4, 11x5

Log-on to www.osengines.com for a closer look.

Laser Engines celebrates 30 years of manufacturing! The first Laser engine was fired up in 1983. Since then Laser engines have been continuously updated and improved with new production techniques and materials. Laser engines have powered the winning models at three World F4c scale championships, over 25 British National Championships and countless other competitions over the world. More Laser engines are used in scale competition than any other make of engine.

Log-on to www.laserengines.com and catch a glimpse of their new Laser 155. This new engine is developed from the Laser 150 to give an engine with wide torque band and useful rpm range. With greater power than the 150 and capable of using propellers in the 16"-18" range, the 155 can be used in sport, aerobatic or scale models

with ease due to only a small increase in physical size over the 150.

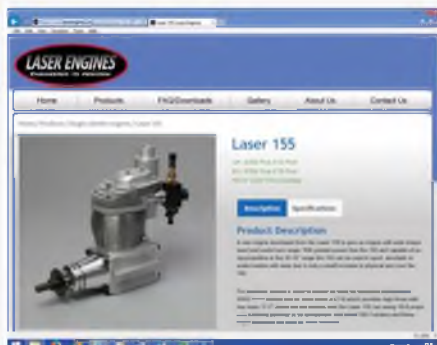
RC JETS UK at www.rcjetsuk.com stock a superb 1/6th scale replica of the world famous **Hawker Hunter**. This is of fully moulded composite construction and is designed to suit turbines of 80 to 120 Newtons thrust levels. Developed from the original design by Mick Reeves, a great deal of work has been expended to produce an accurate scale model that can be owned and flown by any competent model jet pilot. Supplied pre-painted in characteristic RAF colour scheme, much of the detailed work has been completed at the factory.

Scale Sailplane kits by marcslasershop.com offers laser cut wood short kits in 1:3, 1:3.5 and 1:4 scale from top scale sailplane glider enthusiast and designer, Chris Williams. They also offer select kits from scale designers John Watkins, Jim Owen and David Smith - and they specialize in custom laser cutting for radio controlled sailplanes. If you have a plan you wish to build, but want to take out all the time and work of cutting the parts, they can help.

For more details point your browser at www.scalesailplanekits.com

Century Helicopter Products with a web presence at www.centuryheli.com was established in 1987 to provide the radio control market with high quality R/C helicopters, high quality accessories, and performance upgrades. They are an all American company based in San Jose, California. They design, develop, and manufacture R/C helicopter products in the USA and overseas. Their 620 Size Electric Scale RC Helicopter ARF Kit looks fearsome. The mechanics features the acclaimed Swift NX ARF Electric RC Helicopter (CN1045) with a longer tail-boom.

<http://lafayetteesquadriellecl.files.wordpress.com> is the web address of the **Lafayette Esquadrielle Control Line Club** based in Missouri USA. The website contains much information and many images such as those of Grant Hiestand's 1/3 Scale Spacewalker shown in the screen-shot. This CL scale model was built by Grant Hiestand in 1993 for the Nationals. Grant Started out with electric power with a brushed Astro-Flight 90 electric motor and NiCad batteries. It was flown with down-the-line electronic controls for many years until it was switched over to 2.4Ghz radio control functions in 2013.



A glimpse of the new Laser 155.



RC JETS UK stock a superb 1/6th scale replica of the world famous Hawker Hunter.



Scale Sailplane Kits offer laser cut wood short kits in 1:3, 1:3.5 and 1:4 scale.



Century Helicopter Products's 620 Size Electric Scale R/C Helicopter ARF Kit looks fearsome.



Grant Hiestand's 1/3 Scale Spacewalker.



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

mikeevatt@hotmail.com

NOW MONTHLY!

SUBSCRIBE!

SUBSCRIBE TODAY AND GET
12 ISSUES
FOR THE
PRICE OF 11!!!



SUBSCRIBE NOW AT

WWW.AEROMODELLER.COM

ORDER FORM - AEROMODELLER

First name

Surname

Address

.....Post/zip code.....

Country

Telephone Number

Email Address

Please debit my credit/debit card for £

Visa /Mastercard /Maestro /other

Card No.....

Expiry date..... Start date

Security Number (last 3 digits on signature strip).....

Issue No (if applicable)

12 issues cost: UK; £55.00, Europe; £73.00,
 World-wide; £82.00 (Inc postage)

6 issues cost: UK; £30.00, Europe; £40.00,
 World-wide; £45.00 (Inc postage)
 Cheques payable to: ADH Publishing Ltd.

Starting from issue

Signature

Date

Please mail this form to;
 ADH Publishing, Doolittle Mill, Doolittle Lane, Totternhoe, Bedfordshire, LU6 1QX, United Kingdom
 Tel; +44(0)1525 222573 Fax; +44(0)1525 222574 Online; www.aero-modeller.com
 (Photocopies of this form are acceptable)

Classifieds



MANTUA MODELS UK LTD

Tel: 01753 856321 Fax: 01753 857444

179 Dedworth Road, Windsor, Berkshire, SL4 4JN

Open Mon-Sat 9.00 - 6.00pm

MANTUA AND AVIOMODELLI AIRCRAFT AND ACCESSORIES

Trade enquiries welcome for
our full range of aircraft

MASTERCARD/VISA

STEVE WEBB MODELS & HOBBIES

Tel: 01928 735225

Fax: 01928 735410

80 Church Street, Frodsham,
Cheshire, WA6 6QU

Mon-Sat 9.30am - 5.30pm **Closed Wednesdays**

MASTERCARD & VISA ACCEPTED

email: stevewebb@steve-web.demon.co.uk

super tigre

A new control line Super Tigre from Great Planes. The G34 C/L small in overall size 5-50cc and only 250g bare three choices of silencer. Very low price only £45.50 with plug fitted. Your dealer can supply these engines. Data sheet available from us on receipt of SAE.

Unit 11, Kingsley Park, Station Road, Kings Langley, Herts, WD4 8GW

Tel: +44 (0) 1923 270405 Fax: +44 (0) 1923 270129
Mob: +44 (0) 7918 715197 Email: motrot@aol.com

D.B. SPORT & SCALE

Quality traditional builders kits. Spitfire, Auster, Hurricane, SE5 Sopwith Pup, Piper Cub and more also Plan packs & accessories

www.dbsportandscale.com

Tel: 01792 897501

Major Credit cards accepted.

WWW.FLYINGSCALEMODELS.COM

The RC Hotel Corfu Greece

English speaking instructors. No more travelling for an hours tuition every weekend. Everything is at your doorstep.

FLYING SCHOOL

Learn to fly fixed wing and helicopter while on a holiday. Tuition from English speaking instructors. No more travelling for an hours tuition every weekend. Everything is at your doorstep.

Visit our web site for more information. www.rchotel.com

Tel 00302661099322 Mob 00306982420044

Email spiro@rchotel.com or rchotel@kar.forthnet.gr

The RC Hotel, PO Box 1567, Pulades, 49083, Corfu, Greece

ADVERTISE HERE

THIS SPACE COULD BE WORKING FOR YOU. TO ADVERTISE IN THIS SPACE
PLEASE CONTACT GARETH ON: 01525 222573

Vintage Limited Edition Prints



visit: www.aeromodeller.com for the full range



Vintage **AeroModeller** A3 Cover Artwork - *Limited Edition Prints*

AUSTRALIAN

FREE FLIGHT SCALE MASTERS 2014 - Gary Sunderland reports

Each year, free flight scale enthusiasts from southern Australia gather at Murray Bridge in South Australia to enjoy an informal competition. There is no static judging as such and the entrants decide which model is the best in each category - and which is the overall Champion.

In recent years, small radio controlled models have added to the fun and are encouraged to attend, but as yet, there are no prizes awarded for ARF models.

For 2014, being the 100th anniversary of the commencement of WW1, the emphasis was on aeroplanes from the 1914-1918 period and several new models were built for the occasion. Fittingly, the magnificent Albatros C.III 'Dragon Machine'. Built by Garry Odgers from Victoria was declared as the overall Champion for 2014. Garry spent most of the Saturday trimming the new Albatros and rounded it off with some perfect flying during Sunday morning's calm conditions.

1: Maris Disslers built this very nice 1914 R.E.P Monoplane. Yes, the all-red colour is correct and was standard on R.E.P aeroplanes (two years or more before Manfred von Richthofen). The original aeroplane is in the Musee de l'Air in Paris, complete with red colour scheme. **2:** Another of Maris Dissler's models is this Pfalz E.1 scout. The early German Pfalz types were built under licence from the Morane organisation. **3:** Rubber powered models were airborne in the calm morning air. Tim Howard-Brown launches his biplane to test the air. The roundel on the t-shirt is for the occasion. **4:** This nice Morane Parasol was another 1914 type flown at the event, joining the R.E.P, the Pfalz and my Jennin Taube and Bleriot XI for an early morning patrol. **5:** The writer's Collection ready to take to the air. The Bleriot and Taube are joined by a 1917 Airco DH4 and 1918 BE 12b nightfighter. **6:** The extraordinary Aviatik G-type was presumably Austria's answer to the Caproni Ca.3, and likewise had three engines. Needless to say, Dave's model is electric powered. **7:** Another Austrian type is the Phoenix Scout of 1918, another of Garry Rodgers' models. **8:** Gary's Odgers' incomplete Albatros C.III, with dummy exhaust Stack and machine guns as yet to be added, but in this state, it put in some excellent flights, to be selected among the participants as winner of the Masters trophy. **9:** Another winner from previous years is Dave Putterill's Blohm und Voss six-motor flying boat that also put in some superb flights. It 'alights' in a prototypical manner, but with a spray of sand, rather than water! **10:** Another spectacular flyer from the WW2 era was this flying wing 'projekt' by Dave Putterill. **11:** Small electric R/C models were also on show, including this nice Messerschmitt ME 109G with Galland hood. It flew well. **12:** Another nice ARF on display was this Stinson Reliant. The 'electric' boys had a number of ARFs airborne including a brace of SE5a examples and a number of twins from the WW2 era. A portend of the future, as R/C certainly obviates the retrieval problem. Oh, my aching bones!



Dave Putterill launches his three-motor Aviatik for a low circuit early in the morning.

DURAFLY®



**BALSA
SERIES**



1154mm



835mm



865g

The Fieseler Fi 156 Storch was one of the most iconic aircraft to serve in the Luftwaffe, seeing service in every German theatre of conflict during WW2. To this day it is still considered to be one of the best STOL (Short takeoff and landing) designs of all time. The Balsa Series Fieseler Storch from Durafly is simply a beautiful model which captures the essence of this iconic aircraft and is a model that any scale fan would be proud to have in their hangar.



Specification

Wingspan	1154mm	Wing Area	17.3dm ²	Servos	HXT900 9g x 6
Length	835mm	Prop	10x6	ESC	25A Turnigy w/BEC
Flying Weight	865g~880g	Motor	3530 NTM Brushless Outrunner		1100kv

Available at hobbyking.com

DURAFLY®



JUNIOR

Plug and Fly

Modern

History



The Durafly Junior perfectly captures the essence of vintage flight and design.

A classic design is timeless, but that doesn't mean they can't be improved upon using modern techniques.



Specifications

Wingspan : 1100 mm / 43.3 in.	Battery : 11.1V 1300 mAh Li-poly
Length : 765 mm / 30.1 in.	ESC : 20A Brushless
Weight : 695 g / 24.5 oz	Motor : DST-1100
Propeller : 8x6(Two blade propeller)	Servo : 9g x 4
Recommended radio system : 4CH	



Available at hobbyking.com