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12

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ON THE COVER

Some scale modellers enjoy modelling the more obscure aircraft types. Peter Rake is one of them - this one is his Albatros D.XI, which is our latest full size free plan construction feature.

MARCH 2013 NO.160

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CONTACT

OLD WARDEN MODEL FLYING WEEKENDS FOR 2013 CONFIRMED

ModelAir, the organisers of the three Model Flying Weekends held annually at Old Warden Aoerodrome, announce that for 2013, there will be a reduction in entry price for these full-weekend flying events and that the model flying times will change from a 10.15am start/5pm finish, to 9am start/6pm finish - 2-1/4 hours extra flying time!

However, there is a caveat to these extended hours, that between 9am and 11am and 4pm and 6pm, there may be some full-size activity on the airfield.

For obvious safety reasons, during those periods, free flight flying will be restricted to the area of the airfield from the control tower to the near edge of the main runway (North/South) and from the road hedge to the edge of the peri track leading to the private hangarage (East/West).

See the *ModelAir* website *www.modelair.info* for full details and restrictions. If you are Facebook users, you can join the ModelAir Team on their Facebook page.

For you Diary, the 2013 Old Warden Model Flying Weekends are: 11/12 May, 20/21July and 7/8 September.
Any queries, contact Sheila on 07799132999.

WOODSPRING WINGS 2013 DATES ANNOUNCED!

After the disappointment of 2012, when a totally soggy situation at the Woodspring Wings club's home field dictated cancellation of their big annual west country model show, *Woodspring Wings Model Aircraft Club* announces their intention to stage a display on the 6/7 July, this year. The show will be presented in association with *Weston Model Flying Club*. This preliminary announcement hopefully allows 'regulars' to this popular model flyoing meet to 'pencilled in' the date.

More information will be forthcoming with the entry forms and the invitations to fly that will be sent out when the detailed planning commences.

NORTHERN MODELLING EXHIBITION RETURNS FOR 2013

Following its successful debut last year, The Northern Modelling Exhibition will be returning to EventCity, Manchester on Saturday 2nd March and Sunday 3rd March 2013.

The event, which showcases the cream of UK modelmaking is the largest of its kind in the North West of England and last year attracted over 7,500 visitors.

Over 40 modelling clubs and associations will be featured with fascinating displays and demonstrations, there will be plenty to see and do for all ages.

Around 1,000 exciting models from across the spectrum will be on display including live steam and electric railways, boats, meccano and rockets along with action from radio controlled cars, planes, helicopters, trucks and tanks in the arenas and flying zones.

Stock up on vital supplies from the 100 leading specialist suppliers who will be at the exhibition - check out all the latest products all under one roof.

Advance tickets are on sale now, apply before 15th February for discounted prices see www.northernmodellingexhibition.co.uk or call 01926 614101 for further information and ticket sales.

The Northern Modelling Exhibition is the sister show to the long running and popular London Model Engineering Exhibition which takes place this year from 18th to 20th January 2013 at Alexandra Palace.

See www.londonmodelengineering.co.uk for further details.

IMPRESSIVE POWER PEACE OF MIND

NEW ZP ELECTRONIC IGNITION ENGINES

Dino DiGiorgio doesn't build models. He builds masterpieces. For him, dependability and ease of use are as important as power when choosing an engine. That's why he had no trouble trusting this beautiful Focke-Wulf to a new ZP Platinum 62cc engine. ZP engines are built using the same core components as the Zenoah™ magneto engines he and other scale masters have relied on for years.

What sets ZP engines apart is an advanced electronic ignition system that makes them incredibly easy to start and operate. It also eliminates the weight of magnetos and a bulky PTO shaft. This, along with their abundance of torque, is why ZP engines are able to deliver remarkable power-to-weight performance using a variety of props.

The new era of gas engine simplicity and power is here. Get to horizonhobby.co.uk right now to learn all about it and find the ZP engine retailer near you.

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One of the best features of a ZP engine is one you won't find in the box—the unbeatable service of Horizon Hobby product support. You'll probably never need it, but knowing the best team of product support pros in the business has your back is just another reason ZP engines are one of the greatest values in RC.

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NEW 10cc SPARKIE

Time was, when spark ignition engines available to aeromodellers were converted lawnmower engines and the like, in sizes that suited only really big model aircraft.

It's all come a long way since then and the latest from **Horizon Hobby** will be particularly welcome because it is a true model aircraft engine in the style with which we are familiar. **The EVOLUTION 10GX** is a 10cc (0.60 cu.in) displacement unit that provides spark ignition performance for a typical 'club-field' size model aircraft which, or course, includes scale models.

It features a capacitive discharge electronic ignition system that automatically controls the timing advance, to ensure that the spark arrives as just the right time throughout the rev. range. The engine features a front mounted pump carburettor that ensures a constant fuel feed with minimal risk engine 'flame-out', which supplied factory-set for ease of starting and reliability.

The electronic ignition module that comes as part of the package is compact and includes battery hook-up leads, shielded spark plug lead and cap, RF resistor type spark plug and compact 'conventional, model-style' side mounted muffler, while engine mounting is typical of the style we are all used to with our conventional glow-plug type engines.

Add to all that the fuel economy of the petrol engine and lack of burnt fuel residue of the typical glow engine and the Evolution 10GX has clear appeal.

It weighs in at 15.3 ozs and typically swings a 12 x 6 propeller at 12,600 rpm.

ELECTRIC POWER IN THE BALANCE

Overlander, the battery people have introduced their new **RC-6C Pro 80W Balance Charger**, designed to charge 50% more powerfully than conventional AC/DC chargers. As the name implies, it delivers an 80 Watt output. It features the ability to run from a domestic AC power source, to check and charge nbatteries at home, together with a change-over to a DC power source at the flying field.

This new charger will charge all types of battery used for R/C modelling and can be obtained from any model shop for a RRP of £39.99.

PARKZONE PIPER ARCHER

Horizon Hobby has recently added a small size model of the **Piper Archer** aircraft to their electric RTF Parkzone range. This 36.8" (935mm) winspan replica has an air-frame moulded in Horizon's Z-foam material and features moulded-in surface detail includimg panel lines, access hatch-es and simulated corrugated flight control surfaces that are a feature of the full size.

Motive power is a 370 BL brushless outrunner motor, which is common to, and pre-installed in either of two versions, complete with 2S 7.4 volt 1300mAh LiPo battery. The full RTF version also features ready fitted airborne receiver/servo system and transmitter. Also available, for those who want to use their existing Spectrum-compatible transmiiter is their Bind-'n-Fly (BNF) version which comes without the transmitter.

For more information - www.horizonhobby.co.uk

Specifications

Wingspan:	935mm (36.8 inch)
Length:	650mm (25.6 inch)
Flying Weight:	466 grams (16.4 ounce)
Motor:	370 size 1300Kv brushless out runner
Prop size:	8.25x5.51 inch
Spinner:	1 inch
Battery:	2S 7.4 volt 1300mAh LiPo
Minimum radio:	4 channel
Servos installed:	SV80

MUSTANG TRIO

Ladies fear turning up to parties and other social functions in the same outfit and someone else there! Men are not so sensitive, but for those among us adept at turning up at he flying field with a new ARTF scale model, there can be a distinct possibility arriving to find a fellow club member with exactly the same model in exactly the same colour scheme - ARTFs are mass produced and only a minority offer a choice of finish.

So it's nice to find the **FMS** range from **CML Distribution** offering no less than a choice of three schemes for their 1400 Series North American P-51D Mustang.There's the chequer-board adorned 'Big Beautiful Doll', 'Gunfighter' and Ferocious Frankie', each to a wingspan of 55.1" (1400mm) and each in moulded foam that replicates panel lines and other surface detail.

Each version comes with all servos installed, together with servoless retracting main undercarriage, flap system driven by slow-motion servo, 4250 540 Kv outrunner electric motor, 66 Amp brushless ESC and four-blade propeller and is otherwise ready for the installation of receiver of choice and to set up with transmitter to suit - neither of which are part of the package.

Available from CML Distribution stockists for £239.99

KINGTECH TURBINES

The choice of motive power for gas turbine enthusiasts continues to expand. Always on the lookout for top quality RC Jet equipment, Ali Machinchy of **Al's Hobbies** keeps a careful eye on the world markets and their Jet Centre based in Milton Keynes can now offer the **KingTech** range of jet turbines. The KingTech G series are a true FuelStart turbine and will run on Diesel, Kerosene and JetA.

For any questions relating to any KingTech Turbines, contact Al at the Jet Centre tel: 01908 315999 or by email jets@alshobbies.com.

Also keep an eye on Al's website www. alshobbies.com for more info.

A-4 SKYHAWK WALK AROUND

The carrier-capable Douglas A-4 Skyhawk has been a favourite among jet modelers for quite a while now. It is one of the most successful modern combat aircraft and during the 25 years in which the A-4 was on the production line, 2,960 Skyhawks were built serving with air arms of not only by the US Navy and Marines, but also by the air forces of Australia, New Zealand, Israel, Malaysia, Argentina, Singapore, Brazil, Indonesia, and Kuwait.

Introduced in 1956, Skyhawks played major roles in the Vietnam War, the 1973 Arab-Israeli October War, and the Falklands Conflict in 1982. With a reputation for toughness and agility, Skyhawks remained a part of the American arsenal for nearly half a century - the U.S. Navy retired the A-4 as recently as 2003. Meanwhile, the battle-tested warrior continues to serve today among other militaries around the world.

This new addition to the **Squadron/Signal** series is Illustrated with 205 photographs, colour profiles, and detailed line drawings over 80 pages and provides excellent detail for scale modelers. It is available direct from ADH Publishing, in either soft back (£16.95) or hardback edition (£18.95.)

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Bristol BEAUFIGHTER Mk.10

Alex Whittaker admires Dennis Richardson's latest scale model

Dennis Richardson is one of our most distinguished practitioners of what many call 'practical scale'. This refers to highly detailed scratch-built or plan-built models, with good scale provenance but which, unlike competition models, are built to be flown at every opportunity. For many aeromodellers, such aircraft are the acme of 'Clubman Scale', more accurate and detailed than 'Sports Scale' models, but every bit as practical.

The model

The type modelled is a Beaufighter Mk 10, built to approximately 1:7.5 scale, giving a wingspan of 92 inches. There is a significant family connection: Dennis's father flew

HTER

Boulton Paul Defiants with 141 Sqdn, then went on to Beaufighters, His Defiant Squadron was badly mauled during the height of the Battle of Britain. This marked the end of the Defiant's brief front-line service with R.A.F Fighter command and the Squadron was sent to Scotland to lick their wounds. Once there, they were re-equipped with Beaufighters.

Plan

The plan is from the pen of electric scale guru John Ransom and runs to four sheets. Dennis likes John Ransom's designs, and built a 1/10th scale version of the Beaufighter some years ago.

Construction

The design features traditional construction throughout, using mainly balsa and plywood. Dennis has incorporated some modifications, particularly to accommodate internal combustion engines.

Dennis also altered the fuselage from John's plan which shows the nose and cockpit attached to the wing, with a break behind the wing. He has plumped

The Laser 80 four stroke engines are neatly contained within the scale cowls.

The relative dihedral angles of wing and tailplane are evident in this shot.

for a one-piece fuselage, with dowel pegs engaging ply formers and also altered the wing construction to incorporate 1/2"x1/4" cyparis spars. In addition, he made the ailerons an inch longer and reduced the outboard split flap accordingly. It is worth noting that Dennis builds all his scale models in long-suffering Mrs Richardson's dining room, apparently with one eye on the telly.

Finish

Glass-cloth and resin with *Warbirds* paint. Dennis finished the model in his father's Squadron colours. Surface panel lines were drawn on, and "a bit of airbrushed dirt and silver wear and tear to panels, using pastel chalks and finger rubbing too in places, and a light mist of very thin white to simulate oxidation of the paint...".

Fuel proofer

Klasscote Matt. "Good stuff!", saith Dennis.

Engines

Two laser 80 four stroke engines fed by two SLEC 11oz tanks. One of the Laser 80s turned out to be 12 years old and had a different crankshaft nose thread to the new one purchased for this project. The bespoke spinners were turned up to the

Nifty air intake detailing on the model.

Appropriate detailing around the scale cowl and exhaust.

correct profile, and crankshaft thread, by a friend (in steel).

Propeller
Two 14x8 props, which deliver 7,500 rpm. Power is just about right.

Exhaust
Dennis was able to use the standard Laser exhaust, which is entirely enclosed by the cowl, and exits at the bottom.

Lights
These are from *Braincube Models*: twin landing lights, Port and Starboard LEDs, and rear white LEDs.

Retracts
Dennis used *Century* units which have been filched from his temporarily retired Sturmovik. The wing strut legs were widened to take the larger wheels.

Wheels
Kavan 5" Ultralight Pneumatic wheels.

Crew
Rubber moulded types from *J. Perkins Distribition*. They are surrounded by a little home made cockpit detail.

Distinctive exhaust stubs faithfully modelled.

Crisp cowl detailing, with barely noticeable, but eminently practical fasteners for a twin.

Dennis had to widen the undercarriage struts to take the 5" wheels.

Dennis relocated and altered his Sturmovik undercarriage. Century retracts used.

Pilot's notes

The model looks very convincing in the air, with just the correct amount of power to replicate the original performance. On long, low, full-flap, wheels-down approaches, she looks particularly convincing. Of course, any scale twin, powered by Laser four stroke engines, has that indefinable magic! Dennis was pleased with how she balanced, with just a bit of lead shot and resin in the engine cowls, to bring the fore/aft balance point to the required position. Dennis reports that:

"There is no real drama in flight; cruises around nicely, turns well on ailerons, handles nicely on the ground, flaps very effective, no great trim changes, adopts a realistic attitude on descending, and needs lots of power on approach, but lands slowly". ■

The 97" span Beaufighter, from the John Ransom plan, has loads of character

Fixed gun position on the Beaufighter.

Distinctive air intake bulge on leading edge.

Model Specification

Beaufighter Mk 10

Plan:	John Ransom
Scale:	1:7.5
Wingspan:	92"
Weight:	18.5 lbs
Engines:	2 x Laser 80 four stroke
Props:	2 x 14"x8"
Retracts:	Century
Flaps:	Split outboard
Wheels:	5" Kavan Ultralight Pneumatic
Light:	Braincube Models

The model answers well to the ailerons.

Ashbourne SCALE DAY 2012

Alex Whittaker files his photo report of this superb end-of-season event

The Peter Neate Tiger Moth, now owned by Ian Redshaw.

1/3 rd. scale Fokker Triplane now owned by Tony Hill. I think we featured her a while ago when she was all yellow.

Once you have taken off from the Ashbourne strip it is open fields.

It was a strange morning travelling to Derbyshire - sunny and then thick fog, causing me to pull the ragtop over and wait until it cleared. Five minutes later, it was bright autumnal sunshine again, and one of the best flying days of that dreadfully wet year.

Variety

Ashbourne has been running for some years now and is one of my favourite Club events. It is friendly, delightfully low-key, and the sheer variety of types will gladden the heart of any scale modeller. At Ashbourne you can even take-off from tarmac and land on grass. It is an interesting field, bordering an old industrial estate and looking over farmers' fields. From my point of view, I only had a fifteen-degree angle of opportunity to get my flying shots whilst also avoiding the tips, radio masts, factory roofs, an other visual impedimenta - all good clean fun.

Kamikaze

Martin Lilley made me smile. He came kitted out with a nifty Banzai bandana as he flew his electric FMP Zero. This ARTF spans 1,400 mm, and was fitted with a 4s 3000 battery pack. It looked the part and flew very well.

Concorde

Sadly radio-control Concorde models remain few and far between. However, determined Tony Murray made it all look so easy. His model weighs 13 lbs, but is only 48" in wingspan. It is an electric model, fitted with HET 70mm electric ducted fans. Canny Tony designed her from scratch, and she is built mostly of foam and balsa. She is fitted with spring air retracts. I was astounded at how slowly Tony could make her fly on those long flat approaches, on what seems like a tiny wing area, with quite a substantial weight. She looks magnificent in the air.

Thunderbolt

Another very impressive, scratch-built, electric-powered scale model was Jim Harrison's Fairchild-Republic A-10 Thunderbolt. She is 77" in span and weighs 18 lbs. She is powered by 2 x HYK 1600 KV motors, powering 2 x Wemotec 90mm Electric Ducted Fan (EDF) units. This power train requires 2 x 77 Amp Jeti ESCs, and 2 x 6s 5000 lipos, backed up with a 5 Amp U-BEC. All told there are 11 servos in this very ambitious scale aircraft. She too has spring air retracts. She is covered in *Easycoat* polyester shrink film with *Humbrol* enamel on top. Radio is *Spektrum* DX 18. She displayed very quick acceleration, was smooth in the air, with a good turn of speed, and yet had safe low speed handling. A wonderfully

Tony Hill's geared-Zenoah 38 powered Sopwith Pup from the Balsa USA kit.

creative project, and a great example of the electric powered scale model.

Young scale man

Ryan Oakley is ten. He was flying a range of models. He told me that he was particularly proud of his *Parkzone* Messerschmitt Me 109G. It spans 1100 mm and weighs around a kilo. It has an Elite 480 motor. In fact, he flew two or three models all day. Good lad!

Large scale

Noted scale men and good mates Keith Pyrah and Doug Jeffery brought two large and stunning scale models to the meeting. The first was a truly immaculate one third Piper Cherokee Archer. The second was their recently completed 37% scale Luscombe Silvaire which is utterly sublime. Anyone who built the Keil Kraft scale kit all those years ago will know that the Luscombe is beloved of generations of scale modellers. I was able to get a good few photos of both these outstanding models, so stay tuned for more on this one in FSM in due course. Keith does the designing and most of the building of these scratch built models, with able assistance from Doug in terms of the finishing and technical know-how. Don't forget that Doug is the all-important test pilot, too. Incidentally, they had an amazing purpose-built trailer to carry these fastidiously detailed models up and down the country. Makes a nice change from the anonymous white van, or the over-packed estate car.

Tigercat twin

I can remember when Grumman F7F Tigercats were a threatened species, but

Great lad! Ryan Oakley is ten and he flew all day. This is his Parkzone Messerschmitt Me 109G.

Banzai! Martin Lilley was flying his electric FMP Mitsubishi A6M Zero. 1400 mm span.

Nifty Nettie is an ace pilot. Here she is with Tim Hooper's electric Waco.

The Blackburn B2 in flight. Very pretty aeroplane.

Ken Dallow now has two Fairey Flycatchers. I think they are only examples on the UK scale circuit.

Built by Peter Neate and now owned by Ian Redshaw, HP 42 'Helena'. More details soon.

Paul Marsh's Junkers Ju 52, banking nicely in the late autumn sun.

Bill Sellars' electric ASM Tigercat about to touch down. She is fitted with three-blader props.

Truly exquisite 77" span, electric powered, Fiarchild-Republic A-10 Thunderbolt A-10, scratch-built by gifted Jim Harrison.

Jim Harrison's Fairchild-Republish A-10 Thunderbolt shows off its electric powered pace.

ARTFs have changed all that. Brian Sellars flew a crisply schemed *ASM* ARTF Tigercat Twin. This has 2 x KMS motors, with 2 x 75 Amp ESCs. It sported two, 3-blader, 12" x 6" props. Even a committed glow fancier such as myself notes that electric power seems increasingly the way to go with scale twins.

Rothmans Stampe

This well loved *Precedent* kit was very popular a few years ago, and much admired now. As always, examples do fly well. I think this one belonged to my auld mate Ken Dallow. It was involved with an amusing altercation with Dennis Richardson's Nieuport on the strip. I think both models were unharmed.

Peter Neate Tiger Moth

Much missed Peter Neate was one of our most gifted scale modellers. We have seen his formidably accurate Tiger Moth before in FSM, but she remains my favourite Tiger. She looked superb flying low with the rolling Derbyshire hills in the background. A truly individual scale model, the Tiggie is now owned by Ian Redshaw, who acquired her from Peter's son John who is very keen to see his Dad's creations continue flying. Peter lives on with his fine models now being shown to a new generation, which is as it should be.

HP 42 Helena

Ian has also recently acquired Peter Neate's historic Handley page HP 42 Helena, which he should have refurbished by the time you read this missive. Aaah! happy memories of the *Airfix* plastic kit, and

Chris Poyser's well-weathered 1/4 scale Zero from the Meister kit.

Keith Pyrah's Piper Cher Archer. Exquisite.

Keith Pyrah standing and Doug Jeffery next to their Piper Cherokee Archer. Feature soon.

Utterly convincing: Keith Pyrah's Piper Cherokee. Wow!.

Just a taster of the quality of scale detailing on Keith Pyrah's Luscombe Silvaire. Watch this space!

Highly distinctive cheeky mush on the lovely Luscombe Silvaire. I have adored Luscombes since my Keil Kraft days.

then going to school next day, still peeling the polystyrene cement off your fingers! More shots of the lovely Helena soon.

Balsa USA Nieuport

Noted scale modeller and plan designer Tim Hooper has converted the well-known *BUSA* Nieuport kit to electric power. She cruised about the ether effortlessly all afternoon, looking very smart in her silver *Solartex*. Tim's partner in crime, the ever-delightful 'Nettie', was flying all afternoon too. At one point she was flying Tim's lovely own-design electric Waco bipe. Tim also flew his own-design all-silver Blackburn B2, one of my favourite ,quirky, bipes. All in all, a good advert for high quality electric scale models.

Junkers Ju 52

Well known scale modeller Paul Marsh flew a goodly variety of models, and his silver Ju52 caught the eye. This was a *Graupner* kit-built 'Tante Ju', with 3x400 motors for electric power, on *Graupner* 6x3 props.
Demonstrating his versatility, Paul also flew a rare beast in these days of electric scale power: a glow-engined CM Pro C-160 Transall Twin. Paul has fitted two OS . 25 FP engines, and they made wonderful listening.

Flycatcher

Fore-mentioned Ken Dallow still has the only Fairey Flycatcher of which I am aware on the UK scale circuit. In fact, he now has two. The first, built to the famous Brian Taylor plan, was 58" in span and weighed 11lbs. She was powered by an ASP 120 FS. She spent much of her early life in a model shop window. She remained un-flown for thirty years, until gallant Ken rescued her, but that is another story. The Dallow Flycatcher No.2 is bigger at 1/4 scale, and was designed by Ken himself.

Fokker and Pup

Tony Hill was flying a large, 1/3 rd scale Sopwith Pup. This spanned 108" and weighed in at 37 lbs. Urge comes from a

geared Zenoah 38cc petrol engine, turning a 34"x10" prop. Tony built the model from the *Balsa USA* kit. It amused me when Tony's told me that: *"It used to be electric"*. The Hill Clan also flew a nifty 1/3rd scale Fokker DR1 in an interesting scheme. This was from the well-known *Glen Torrence* kit, and DLE 111 powered, driving a 30"x10" prop. It was a lovely model, but the office was empty, making my snaps look a little odd.

Zero

My old mucker Chris Poyser was flying a lovely big Zero built from the well respected *Meister* plan. This had been extensively weathered and 'dirtied up' by his close mate Ian Redshaw. She is built to 1/4 scale, spans 108", and weighs 38 lbs. More than ample power is delivered by a Zenoah 80 Boxer Twin, driving a 26"x10" prop, cut down (and the tips rounded) to 25"x10". Now, prop selection is a crucial part of getting a large scale model to look, sound, and fly correctly, and Chris has achieved all three with his Zero. I also like the Nipponese pilot. He looked extremely determined.

Midlands Culture

From the moment you arrive at Ashbourne they spoil you. Head Chef John Lewis had devised a local delicacy for us all: piping hot North Staffordshire Oat Cakes, stuffed with bacon and melted cheese. Probably a kiloCalorie a bite, but in the sharp late autumn nip, who cared? The taste you ask? Exquisite.

The Verdict

Club events, when well-run like this one, are probably the most fun of all. No Trade, no crowds, no long waits to fly, and the company in the pits was the best you could find anywhere. I learned an awful lot just chatting to the builders, which is what scale cameraderie is all about. Grateful thanks to Chris Poyser and the Ashbourne Club for their gracious invitation!

Majestic and ambitious 48" span electric powered Concorde, scratch-built by Tony Murray. See text.

Superbly modelled SPAD by Dennis Richarson.

Ken Dallow's very neat Precedent Stampe SV4.

Tony Murray fettles his Concorde.

Paul Marsh's CM Pro C-160 Transall on short finals. Twin OS .25 FP glow engines.

Paul Marsh starts one of the OS .25 FPs in his Transall C-160.

FULL SIZE FREE PLAN

PART 1

A pugnacious looking little beast, isn't it?

Albatros D.XI

A 1/6 scale, electric powered, scale model designed by Peter Rake. The prototype model is built and described by Pat Lynch

Some time ago, Peter asked if I'd be interested in building a 1/6th scale Albatros D.XI. Needless to say, I hadn't the faintest idea what a D.XI was and then realised it was a typical Rake choice - a couple of scruffy three-views and three or four blurry photos were the sole references I could find - and only two of the type were built. It was suggested that the lozenge camouflage might appeal to me (I'd never tried it) and it was a simple design.

Now intrigued, I agreed to do a test-build, but while researching D.XI lozenge patterns I stumbled across some Fokker D.VII photos and that really appealed to me. In my search for suitable D.VII plans, Peter obligingly agreed to draw up a 1/6th scale version to my specification ... but that will be another story!

The two D.XI variants had some distinct differences. The version with serial number 2209/18 is shown on the plan. This had a varnished ply fuselage and traditional tapered Albatros ailerons. It also had a two-blade propeller. Serial number 2208/18 had mauve and a green painted fuselage, balanced, straight ailerons and a four-blade prop. The painted fuselage version was chosen as I rather liked the brightly painted fuselage and modifying the ailerons shown on plan was very simple - even using the same parts.

The D.XI model was quite a straightforward build. The fuselage is a basic box-section frame with curved turtle-deck top formers and a large built-up cowl where a rotary engine would be in the full size. The wings are of simple construction with ailerons in the top only - each with a separate servo. Tail parts, undercarriage and other parts are quite simple to build. As with other Albatros aircraft, the rudder linkage is via an internal pushrod while the elevator has dual pull/pull cables that exit the upper and lower fuselage.

My version uses a Turnigy 42-series motor - mine was a 4260, maybe a little overpowered and a 4250 should do fine. The ESC was a Turnigy 60amp Plush with switching regulator - again, somewhat under-stressed but that is how I like electric setups to be. All servos are GWS Park HPXF - 19 gram, ball-race types that have proven very reliable. The receiver is an ASSAN 8 channel 2.4 GHz. model. Now, onto the construction.

Building the fuselage

There are several balsa and ply parts that need

Nothing unusual about the basic fuselage structure, exactly what you'd expect from a Peter Rake design.

An undersize cockpit cut-out, combined with a slit in the balsa aids getting a good fit in this area.

The bulk of the cowl is built as part of the fuselage with the front section added from laminated balsa parts.

laminating or edge-joining and these were done first. The fuselage has two identical sides of 3/16" balsa sheet and square strip. I used hard balsa for the longerons and pre-curved them by soaking and pinning over the plan until dry after which the 3/16" square uprights and sheet rear parts were added. These two sides were then joined with the doublers, forward frames, cross pieces etc. until a rigid box was created - with everything nice and square.

The rear of the frames were brought together and joined with sheet parts and spacers using the plan to get things square and vertical. Almost the whole model was built using 'Superphatic' glue - I'd not tried it before and was quite impressed. It is NOT a gap filler but if the joints fit well and, if required, clamped tightly, it is dry to handle in about 30 minutes. Otherwise medium thick CA is used, plus a little epoxy for engine mounts to the firewall, or over bindings fixing wire to fuselage formers etc. I tend to avoid epoxy behind the balance point to help keep the back end as light as possible.

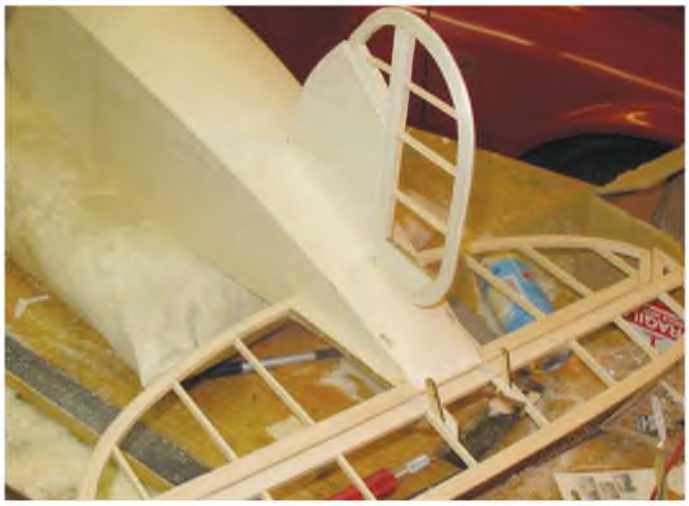
The fuselage sides and bottom were sheeted with 1mm balsa taking care not to allow any warping. Before the upper sheeting is done, several more things needed attention - the various half-round formers on top, the rudder pushrod, linkage and rudder post, plus several brass tubes across the forward fuselage which will support the two inverted 'V' shaped top wing supports and the large diagonal braces to the lower wing.

The D.XI has no wire bracing but instead, relies on a semi-rigid set of braces between the fuselage and the lower wing. All these brass tubes were bound to their respective formers with thin copper wire and epoxied.

To save weight down the back, and if not making the varnished fuselage version, it may be possible to cover the sides and bottom in tissue or film - I didn't think of this until everything was sheeted!

The laminated parts in place, shaped, glassed and sprayed with primer. Pat opted for glassing to add strength and weight where weight is needed.

Centre section strut wires plug into tubes and are bound and soldered at the apex.



Closed loop exits for elevator links, block balsa around the tail end and how the tail surfaces fit can all be seen here.

Brass strips, with soldered nuts make for a very secure inter-plane strut fixing.

The fuselage top is sheeted with 1.5mm soft balsa - I put mine on in four sections to help negotiating that steep rear deck. Card templates trimmed to fit exactly, helped to make neat joints in the sheeting. This is particularly important if a stained finish is desired.

Next to add are the previously laminated cowl parts which, together with some side formers and sheet balsa 'cheeks' can be sanded down to match the fuselage shape. I chose to glass the front end of my model anticipating some less-than-perfect landings. Two layers of 3/4 oz cloth have produced a very strong structure - with the weight where it is needed most. Covering the wooden cowl with glass and epoxy not only adds strength but I like the smooth, but slightly imperfect surface - a bit like a metal cowl that has taken a few knocks in its time!

The motor mount is a ply box fixed to the firewall. Take care to assemble these parts correctly as they give the motor the required amount of side and down thrust. This was put together and attached with 5 minute epoxy.

Undercarriage

The undercarriage is a straightforward exercise in wire bending and soldering. The various parts were shaped according to the plan and fastened to the ply cross-members with metal 'P-clips' and then bound and soldered in-situ. The legs are first fixed to a spreader bar and the axle bound and soldered to the centre of the spreader. Thick hat elastic 'bungees' at the axle ends provide a degree of springing. The wire legs are thickened up with scrap balsa or bass and sanded to an oval section. To fix cladding to wire as is often done in WWI models, I clean the wire with alcohol to remove any grease or oil, thoroughly rough the surface with sandpaper or a coarse file and fix the wooden parts with medium CA. The fix is almost instantaneous and seems at least as durable as epoxy.

The wheels were made from a 1/16" ply and 1/4" liteply sandwich with a brass tube bearing. Soft 1/2" spongy rubber cord with the ends CAed together make a tyre that will last longer than the model (in my hands anyway!) Card cones were fitted to wheels to represent the metal spoke covers used on many Albatros aircraft.

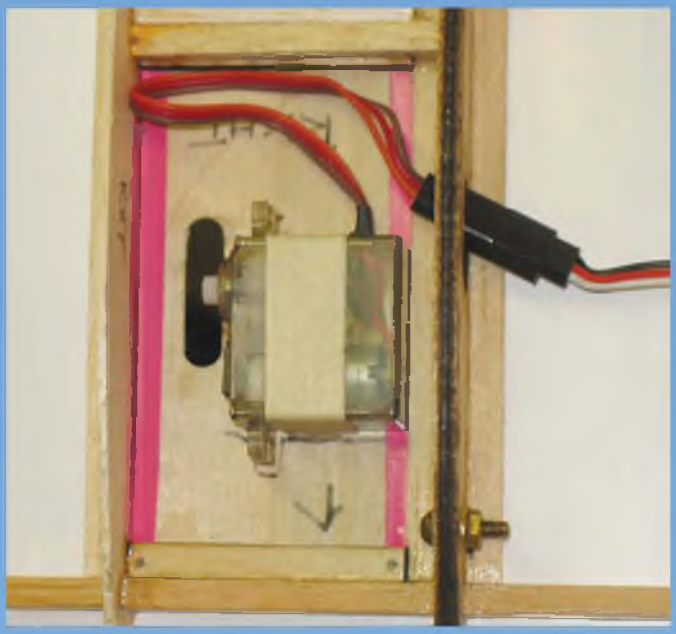
Tail parts

Apart from the laminated outlines, the tail parts couldn't be much simpler. Some 1/4" sheet parts plus some strip sliced off the edge of a medium-hard sheet form the internal framing. The outer shape is laminated from several thicknesses of 1/16" X 1/4" balsa strip, soaked and formed around pins on the plan until dry. The strips are then glued together and to the frame. The 3/16" fin was sheeted with soft 1mm balsa. A couple of shaped balsa blocks hold the fin vertical and in line with the fuselage centre.

The tailplane slots into the fuselage from the rear, after covering is complete. A ply tailskid and built-up fairing will also be fitted after covering. Before blocking in the fin and rudder, the rudder internal horn and pushrod must be fitted. The horn is of strip brass soldered to the wire rudder post and the pushrod from carbon fibre tube with wire inserted into each end. The rudder post rotates in a brass tube bearing bound and lightly epoxied to a rear ply former.

On with the wings

The D.XI wings are of simple construction. The upper wing is a one-piece affair with the two spruce (or bass or even hard balsa) spars spliced at the centre. The tips are built up from several strips of reasonably soft 1/16" balsa wetted and shaped around a suitable template - or around a bunch of pins on the plan as I did! The laminations were glued together with Superphatic, then clamped and allowed to dry. The upper wing is more complex than the lower one as it houses the aileron servos. This is not quite scale as the original had cables from the aileron horns running along the wings and down



Masking tape around the aileron servo, and the servo glued to the hatch means it can still be removed easily if required.

into the cockpit via pulleys. Servos in the wings are MUCH simpler.

Assembly of the top wing began with the spars pinned to the board and the major ply and heavier balsa ribs glued in place. The already fabricated tips and the leading and trailing edge strips were then fixed, followed by the remaining ribs. Some laminated soft sheet is glued at the centre section trailing edge to be sanded to an airfoil section later. A ply panel under the wing centre provides a surface to screw the centre section struts to the wing. The wing centre section was sheeted with 1/16" balsa with the grain span-wise.

At the outer ply ribs, small brass lugs are fixed, into which the big ply interplane struts are bolted. These mounting plates are detailed on the plan and should be made carefully as they secure several critical components in position. The top wing also needs servo housings - a simple ply servo hatch screwed to some supporting hardwood strips between the spars and adjacent ribs.

Powering away from take-off, the Albatros D.XI is an unusual but attractive model.

The ailerons can be built from the plan if the '2209' version is modelled or, with slight changes, the balanced ailerons of '2208' can be constructed. I did the latter type which is not shown on the plan, simply adding or altering the plan components to suit the shapes I determined from photographs (and imagination). (Of course, you could always refer to the 'Albatros Experimentals' Datafile by Albatros Productions - PR).

The lower wings are built up in the same manner, but without ailerons or servos. The root of each panel is sheeted and has a sturdy ply panel fitted on the underside for a brass securing strap that connects each wing to the other and to the fuselage. Alignment of the lower wings is via heavy wire 'dowels' inserted into tubes in the wing roots and across the fuselage. Also on the lower wing are some hardwood anchor blocks for those huge, wooden diagonal struts - such a characteristic part of the D.XI. The struts will later be epoxied into these blocks.

All the wing components were sanded to give the leading edges, tips and trailing edges the correct section. I sanded the bass trailing edge (TE) using some masking tape across the ribs to prevent sanding them and a length of 1/16" wire behind the TE to prevent the sanding bar going too far.

The big interplane struts are of 1/8" ply and had their edges rounded and the top and bottoms bevelled to match the angle at which they are bolted the wings. Some clearance here is needed as the wing needs covering and photos of the real aircraft shows a slight gap. Brass nuts are soldered to the metal tabs on the ply ribs to make installation a little easier and the tabs will need to be bent at an angle to suit final assembly.

The lower wing diagonal struts were first shaped from 1/16" wire and carefully adjusted to fit easily into the brass tube in the fuselage and the mounting blocks in the lower wing. These must fit without any stress as they can easily distort the lower wing (How do I know that....?). The wire is clad with some 3/16" X 3/4" balsa, grooved and glued each side, then shaped to taper at each end with an oval cross section. These braces seem to be varnished wood in the original and so were 'wood-grained' by applying a coat of gloss dark brown first, and later wiping on some yellow with a soft cloth, leaving streaks to represent wood grain. Strips of *Solartex* were added at intervals representing the cloth binding so prominent in reality.

The upper wing is fixed to the fuselage with a pair of wire struts bent up according to the plan. The lower ends are inserted into brass tubes across the fuselage and the upper fore-and-aft sections are brought together and soldered prior to being clamped to the wing underside with nylon plates. This can be done after covering and painting. The upright sections of these struts were clad with some 1/4" bass and sanded to an oval section.

With all the main parts built, the model was disassembled and all surfaces sanded smooth and joints examined ready for finishing and covering. ■

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Plan price £29.50 Plan No.262
Component Pack £175.00

From the building board of electric ducted fan scale expert Chris Golds, this 84" (2,134mm) span model is the 'Interceptor' version of the famous jet bomber. Prototype used two Hacker B50-16L motors and two ten-cell 3300 NiMH power packs. Four sheet plan shows retracts and flaps. Plans are supplied complete with step-by-step written construction sequence.

PIPER SUPER CUB

Plan price £16.50 Plan No.146
Component Pack £95.00
G/F Cowl price £17.50

A great first-time scale model for novices and sport fliers who want real scale accuracy. 79 ins span 1:5.33 scale model suits a range of engines .40-.60. Two sheet plan. Glass fibre cowl available.

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PLAN PRICE £19.50 PLAN NO.275
COMPONENT PACK £65.00

A 50" (1270mm) wing span sport-scale model of the delightful American homebuilt aircraft, this design is an excellent introduction to the world of radio control scale modelling, featuring simple airframe structure that will result in a scale replica ideally suited to regular club-field flying on a regular week-upon-week basis. 1/6th scale replica suits .26-.30 four stroke engines, or .20-.25 cu.in. two strokes. Four function radio systems required.

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A 68" (1727mm) wingspan 1:6.4 scale model of the pre-WW2 German biplane fighter for 4-function radio control and .70-.90 cu.in. fourstroke motors. Can be built without recourse to glass fibre mouldings for items like engine cowl and wheel spats.
Two sheet plan.

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PLAN NO. 269
COMPONENT PACK: £110.00

A 1/7th scale 80" (2032mm) wing span sport-scale model of the early German WW1 aircraft designed for .60 cu.in. size four stroke engines and four function radio control operating rudder, elevators, ailerons and throttle.

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An 80 inch (2032mm.) wingspan 1:4.33 scale model for .120 cu.in. motors and four function radio control systems. No moulded cowl required - all wood construction. Three sheet plan.

FE8

PLAN PRICE £19.50
PLAN NO.267
COMPONENT PACK £88.00

Accurate 1/5th scale 75.6" (1920mm) wing span replica of the British early WW1 'pusher' fighter. Requires .78-.91 four stroke engines and four function radio control system. Excellent for electric conversion.

FELIXSTOWE F2A

PLAN PRICE £19.50 PLAN NO.276
COMPONENT PACK £110.00

An amazing 1/16th scale fully flyable replica of the British WW1 maritime patrol flying boat. Model spans 100.5" (2553mm) and suits two .25-.30 cu.in. two stroke engines. Can be flown from water, or from land using a take-off dolly to safely landing on its hull. Prototype model won "Best of Show" at the prestigious Toledo R/C Expo in USA. All the detail is there on the plans for an impressive model.

FOKKER D.VII

1/4 PLAN NO.241, 1/5 PLAN NO.242
PLAN PRICE (EITHER SCALE) £26.50
COMPONENT PACK 1/4 £125.00
COMPONENT PACK 1/5 £120.00

1/4 scale spans 82.5" (2095mm) for 30cc (1.8 cu.in.) two stroke engines. 1/5th scale spans 65.7/8" (1673mm) and suits 15.cc (.90 cu.in.) four stroke engines. BE SURE TO QUOTE SCALE REQUIRED WHEN ORDERING!

HAWKER FURY

PLAN PRICE £17.50 PLAN NO.091
COMPONENT PACK £125.00

A 1/6th scale replica of the RAF's most elegant 1930's biplane fighter. 60" (1524mm) wing span model requires four function R/C gear and .60 cu.in. motor.

D.H. 103 HORNET

PLAN PRICE £22.50 PLAN NO.052
COMPONENT PACK £130.00

80" wingspan sport-scale replica of the hottest production piston engined fighter ever. Suits engines .40-.53. Original retracting undercarriage unit included with the plans.

BOEING PT-13 STEARMAN

PLAN PRICE £19.50 PLAN NO.243
COMPONENT PACK £99.50

A 58" (1473mm) wingspan replica of the famous bi-plane radical engined trainer aircraft of the WW2 era. Designed for 700 size electric motors, but with option of i.c.engine power using a .52-.60 four stroke engine, with modifications shown on a separate plan sheet. (Ready-cut wing ribs and fuselage formers available - see below) Three sheet plan.

TIPSY JUNIOR

PLAN PRICE £19.50 PLAN NO.286
COMPONENT PACK £95.00

A 1:3.44 scale, 79" (2006mm) wingspan replica of the late 1940s Belgian light aircraft, designed to suit .90-1.20 cu.in engines. Designed by Philip S.Kent, the model features all built-up balsa/ply construction throughout and makes an excellent entry into R/C scale modelling. Rudder, elevator, aileron and throttle controls.

AVRO AVIAN MONOPLANE

PLAN PRICE £19.50 PLAN NO.278
COMPONENT PACK £110.00

Designed by respected R/C scale expert Philip S.Kent, this quarter scale replica of the radial engined version of the 1930s air racer spans 96" (2438mm) is an ideal/introduction to the world of large scale. The model suits 1.50 cu. in. size four stroke engines and requires four function radio control operating the basic control functions of rudder, elevator, ailerons and throttle. Conventional wood airframe structure throughout.

SOPWITH CAMEL

PLAN PRICE £14.50 PLAN NO.188
COMPONENT PACK £79.50

1/6th scale replica of the famous RFC WW1 fighter biplane, for .24-40 size motors and four function R/C. 56"(1422mm) wing span.

SOPWITH PUP

PLAN PRICE £16.50 G/F COWL PRICE £17.50
PLAN NO.177 COMPONENT PACK £135.00

Superb, true-to-scale 1/5th scale replica, features accurate outlines and rib-for-rib reproduction of the full size wing structure.63 ins. (1600mm) span model is of manageable size for transport and offers realistic flight performance.For.60size motors and 4 function radio. Glass fibre engine cowl available.

BUCKER BU180 STUDENT

PLAN PRICE £26.50 PLAN NO.015
COMPONENT PACK £120.00

The R.A.F. maritime recce/ anti-submarine patrol aircraft, modelled by renowned electric scale expert Chris Golds. 86" (2185mm) span model flies on four Speed 400 electric motors, driving pusher props. Full step-by-step written building instructions.

050/12

WHAT DO THE CUT-PARTS SETS CONTAIN?

The components, in balsa and ply that you would otherwise have to trace off the plan onto the wood and then tediously cut out prior to commencing building! Basic strip and sheet wood not included. Be ready to start building as soon as you unfold the plans!

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AVRO 504K

It served in both WW1and in WW2 (just!) and was built in unprecedented numbers and sold worldwide. A true aviation classic

Among the military aircraft of any particular aviation era, it is generally the fighter aircraft that are regarded as the glamorous and classic types. Other types do the vital 'real' work on which the outcome of overall combat situations depend, but such exploits and endeavours tend to go un-noticed and unsung. The Avro 504 can claim fame in a different manner.

First flown on 18 September 1913, powered by an 80 hp (60 kW) Gnome Lambda seven-cylinder rotary engine, the Avro 504 was a development of the earlier

Two views here show the Shuttleworth Museum's airworthy pristine example that can be viewed any day of the week at their Old Warden airfield, Bedfordshire.

Avro 500, designed for training and private flying. It was a two-bay biplane of all-wooden construction, with a square-section fuselage. Production during the WW1 period (1914-1918) totalled 8,970 and continued for almost 20 years, making it the most-produced aircraft of any kind that served during World War I, in any military capacity. Over 10,000 were built from 1913 until production ended in 1932.

A long service career...

Small numbers of early aircraft were purchased both by the Royal Flying Corps (RFC) and the Royal Naval Air Service (RNAS) prior to the start of World War I, and were taken to France when the war started. One of the RFC aircraft was the first British aircraft to be shot down by the Germans, on 22 August 1914. The pilot was 2nd Lt. Vincent Waterfall and his navigator Lt Charles George Gordon Bayly (both of No.5 Sqn RFC).

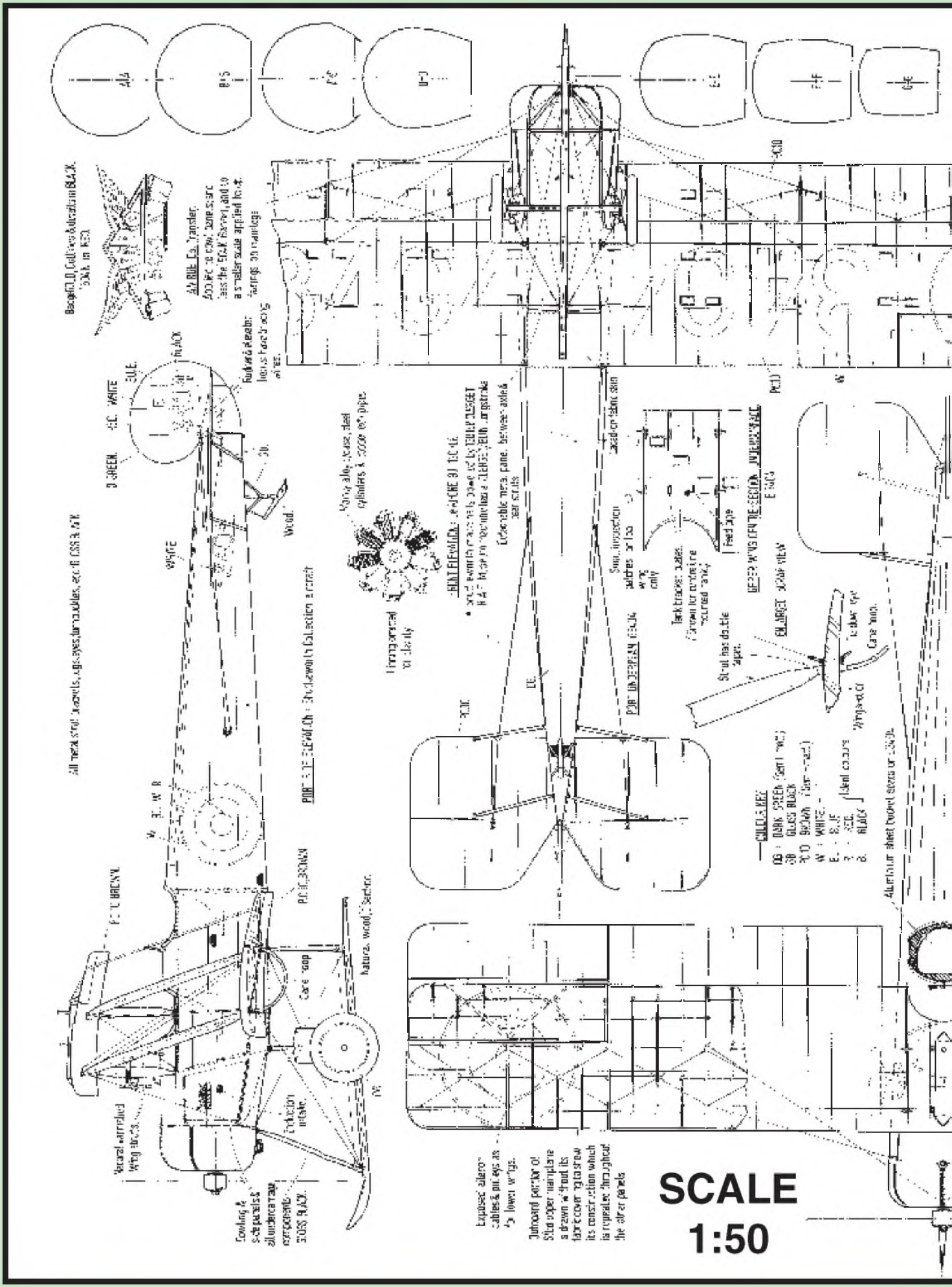
The Avro 504 was the first aeroplane to strafe troops on the ground as well as the first to make a bombing raid over Germany. It was also the first Allied aeroplane to be downed by enemy anti-aircraft fire and was Canadian fighter Billy Bishop's first army aircraft.

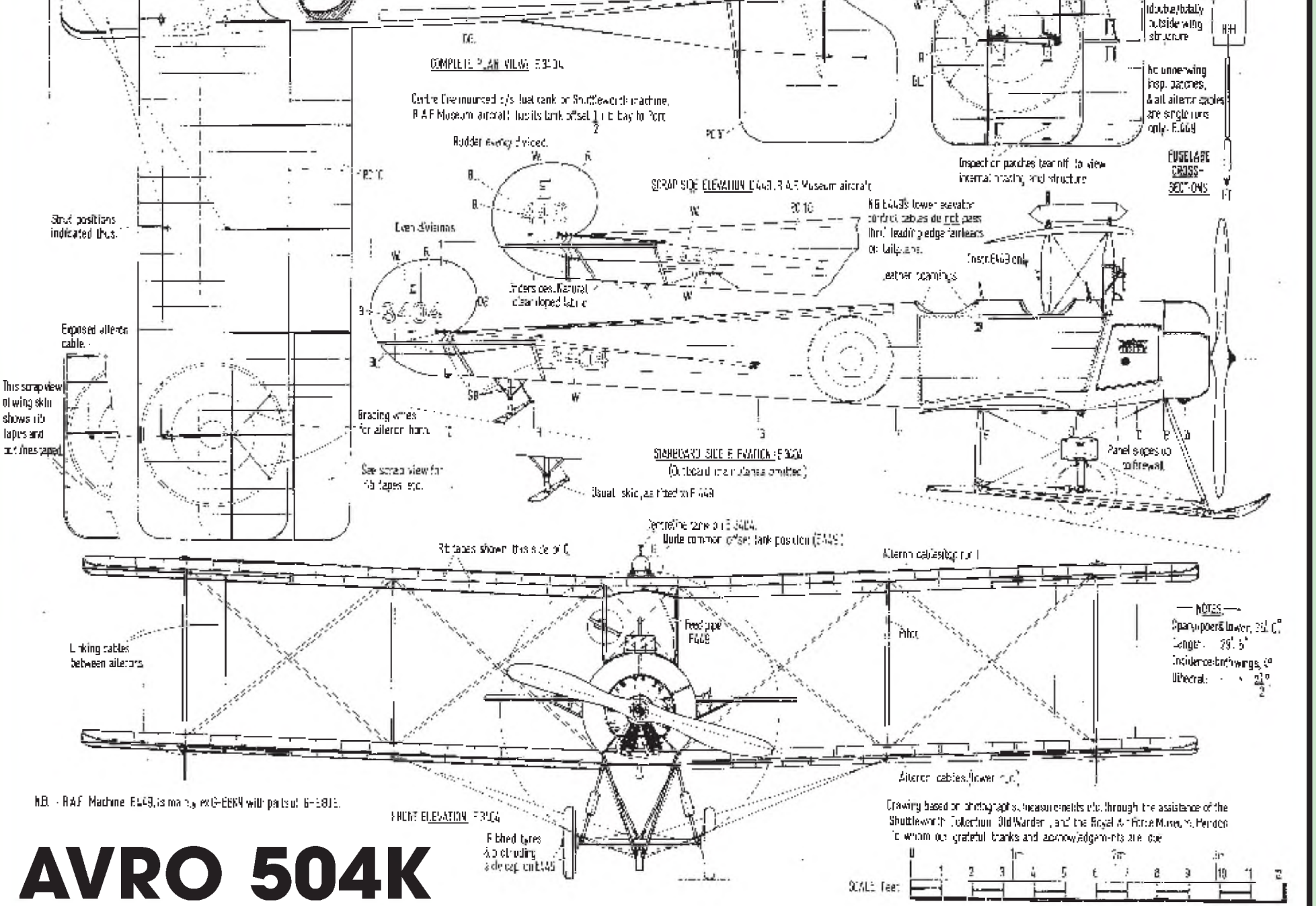
The RNAS used four 504s to form a special flight in order to bomb the Zeppelin works at Friedrichshafen on the shores of Lake Constance. Three set out from Belfort in north-eastern France on 21 November 1914, carrying four 20 lb (9 kg) bombs each. While one aircraft was shot down, but the raid was successful, with several direct hits on the airship sheds and destruction of the hydrogen plant.

As the requirements for military combat aircraft began to be better understood, the '504 very soon became obsolete as a front-line aircraft. From then on, it came into its own as a trainer, with thousands being built during the WW1 period, the major production variants being the '504J and the mass production '504K, which was designed with modified engine bearers to accommodate a range of engines, in order to cope with periodic engine shortages and more than 8,000 Avro 504s had been produced by the end of 1918.

During the winter of 1917-18, it was decided to use converted '504Js and '504Ks to equip Home Defence squadrons of the RFC, replacing ageing B.E.2cs, which

AVRO 504K SCALE DRAWING




COMPLETE PLAN VIEW
Centre Div mounted o/s fuel tank on Shuttleworth machine,
R.A.F. Museum aircraft has its tank offset 1 bay to Port
Rudder overly divided.
Struts positions indicated thus.
Even divisions
Exposed aileron cable.
This scrap view of wing skin shows rib tapes and lacing lines taped.
Bracing wires for aileron horn
See scrap view for rib tapes etc.
SCRAP SIDE ELEVATION E449, R.A.F. Museum aircraft
Inspection panels tear off to view internal fitting and structure
FUSELAGE CROSS-SECTIONS
N.B. E449's lower elevator control cables do not pass thro' leading edge fairleads of tailplane.
Leather coamings
Panel slopes to firewall
STARBOARD SIDE ELEVATION E449
(Outboard interplane struts omitted)
Usual skid, as fitted to E449
Rib tapes shown this side of C.
Aileron cable stop on I
Feed pipe E449
Pilot
Linking cables between ailerons
NOTES
Span upper & lower, 36' 0"
Length 29' 6"
Incidence: tin wings, 3°
Dihedral 2½°
Aileron cables, lower wing
N.B. - R.A.F. Machine E449, is many ex G-EBKN with parts of G-EBOE.
FRONT ELEVATION E449
Ribbed tapes
Drawing based on photographs, measurements etc. through the assistance of the Shuttleworth Collection, Old Warden, and the Royal Air Force Museum, Hendon
To whom our grateful thanks and acknowledgements are due
SCALE: Feet
0 1 2 3 4 5 6 7 8 9 10 11 12

AVRO 504K

AVRO 504 VARIANTS

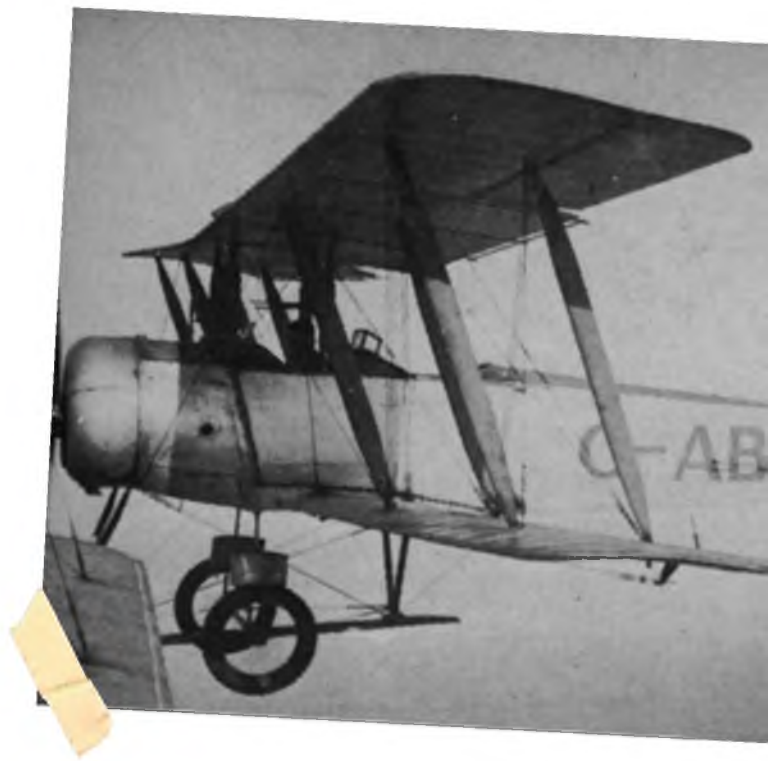
- **504A:** Modified with smaller ailerons and broader struts. 80 hp (60 kW) Gnome engine.
- **504B:** Version for RNAS with larger fin. 80 hp (60 kw) Gnome or Le Rhône engine.
- **504C:** Single-seat anti-zeppelin aircraft for the RNAS. The 504C was fitted with an extra fuel tank, in place of the observer.
- **504D:** Single-seat anti-zeppelin aircraft for the Royal Flying Corps. Six built.
- **504E:** 100 hp (75 kW) Gnome engine. Ten built.
- **504F:** 75 hp (60 kW) Rolls-Royce Hawk engine. One built.
- **504G:** 80 hp (60 kW) Gnome engine.
- **504H:** Used for catapult trials. 80 hp (60 kW) Gnome engine.
- **504J:** Used as a trainer. 100 hp (75 kW) Gnome or 80 hp (60 kW) Le Rhône engine.
- **504K:** Two-seat training aircraft. The 504K had a universal mount to take different engines. Single-seat fighter conversion used for anti-zeppelin work. Several were assembled in Australia by Australian Aircraft & Engineering. 130 hp (100 kW) Clerget, 100 hp (75 kW) Gnome Monosoupape or 110 hp (80 kW) Le Rhône 9J engines.
- **504K Mk.II:** Hybrid trainer based on 504K fuselage with 504N undercarriage and wings and powered by rotary engine. Built under licence in Mexico as Avro Anahuac.(9)
- **504L:** Floatplane version. 150 hp (112 kW) Bentley BR1, 130 hp (100 kW) Clerget or 110 hp (82 kW) Le Rhône engines.
- **504M:** Three-seat cabin biplane. Only one was ever built. 100 hp (75 kW) Gnome engine.
- **504N:** Two-seat training aircraft. Redesigned postwar trainer for RAF with 160 hp (120 kW) Armstrong Siddeley Lynx engine. 598 built.
- **504O:** Floatplane version of 504N. First aircraft to fly above the Arctic Circle in 1923 Oxford Expedition.
- **504P:** Unbuilt version of the 504N with side-by-side seating.
- **504Q:** Three-seat cabin biplane. The 504Q was built for the Oxford University Arctic Expedition. Only one was ever built. Armstrong Siddeley Lynx engine.
- **504R Gosport:** Reworked trainer with revised, lightweight structure. Five prototypes flown 1926 to 1927 with various engines (100 hp/75 kW Gnome Monosoupape, 100 hp/75 kW) Avro Alpha, 140 hp/104 kW Armstrong Siddeley Genet Major and 150 hp/110 kW) Armstrong Siddeley Mongoose), with the Mongoose chosen for production aircraft. Ten were sold to Argentina, with 100 more built by FMA under licence in Argentina. At least six were exported to Estonia, remaining in service until 1940, and an unknown number to Peru.
- **504S:** Two-seat training aircraft. Built under licence in Japan by Nakajima.
- **Yokosuka K2Y1:** Japanese version of the Avro 504N, powered by a 130 hp (100 kW) Mitsubishi-built Armstrong-Siddeley Mongoose radial piston engine, 104 built.
- **Yokosuka K2Y2:** Improved version of the K2Y1, powered by a 160 hp (120 kW) Gasuden Jimpu 2 radial piston engine. 360 built (K2Y1 and K2Y2).
- **U-1 (Uchebnyi - 1)** Avrushka: Russian copy of the 504K. Over 700 built
- MU-1 (Morskoy Uchebnyi - 1): Russian seaplane version.

Specifications (Avro 504K)

Length:	29 ft 5 in (8.97 m)
Wingspan:	36 ft (10.97 m)
Height:	10 ft 5 in (3.17 m)
Powerplant:	1 x Le Rhône Rotary, 110 hp (82 kW)

Performance

Maximum speed:	90 mph (145 km/h)
Cruise speed:	75 mph (126 km/h)
Range:	250 mi (402 km)
Service ceiling:	16,000 ft (4,875 m)
Rate of climb:	700 ft/min (3.6 m/s)



had poor altitude performance. These aircraft were modified as single-seaters, armed with a single Lewis gun above the wing on a Foster mounting, and powered by 100 hp (75 kW) Gnome or 110 hp (80 kW) Le Rhône engines. A total of 274 converted Avro 504Js and Ks were issued to eight home defence squadrons in 1918, with 226 still being used as fighters at the end of World War I.

Following the November 1918 Armistice, the type continued in service as the standard trainer of the newly formed Royal Air Force, but large numbers of the type, declared surplus to requirement were available for sale, both for civil and military use and eventually, more than 300 504Ks were placed on the civil register in Great Britain, to be used for training, pleasure flying and banner towing. Civil-registered 504s continued flying in large numbers until well into the 1930s and many were used to give 'Joe Public' their first taste of flying with the proverbial local 'five-bob-flip'.

Just after the end of of WW1, the embryonic air service of the newly formed Soviet Union used both original Avro 504s, and their their own Avrushka copy of it for primary training as the U-1 in the early 1920s, usually powered with Russian-made copies of the Gnome Monosoupape rotary engine. This Russian version of the '504 was replaced by what would become the most produced biplane in all of aviation history, the Polikarpov Po-2, first known as the U-2 in Soviet service in the late 1920s, as the '504s direct replacement.

Avro 504s were sold to China. These were training versions, but were pressed into service to participate in battles among Warlords and used as bombers, with pilot dropping hand grenades and m odified mortar shells.

The improved, redesigned

ABOVE: Lewis Gun in Foster mount installed above the upper wing of one of the single-seat Avro 504K aircraft employed by one of the Home Defense Squadrons during 1917 to combat Zepelin airships, at that time engaged in bombing raids of Britian.

BELOW: Two examples of the Avro 504K on the British Civil Register. The one on the right is G-EASF.

and radial engined 504N with a new undercarriage was produced by Avro in 1925. After evaluation of two prototypes powered by Bristol Lucifer and Armstrong-Siddeley Lynx engines respectively, the Lynx powered aircraft was selected by the RAF to replace the 504K. A total of 592 were built between 1925 and 1932, equipping the RAF's five flying training schools, while also being used as communication aircraft. The '504N was also exported to the armed forces of Belgium, Brazil, Chile, Denmark, Greece, Thailand and South Africa, with licensed production taking place in Denmark, Belgium, Canada and Japan.

The '504N was finally replaced in RAF service in1933 by the Avro Tutor, but small numbers continuing in civilian use until 1940, when seven were impressed into RAF service, where they were used for target and glider-towing.

Considering that the basic Avro 504 design actually pre-dates the WW1 era when aeronautical design was still very much a cut-and-try business, one must concede thatthe boys at A.V.Roe Company definitely got it right! ■

BELOW: Last of the line for the Royal Air Force was the Avro 504N, which discarded the rotary engine in favour of the seven-cyliner 160 hp Armstrong Siddeley Lynx engine. A total of 598 examples were built.

PART 1

EVEN MORE DETAIL IN NEXT MONTH'S ISSUE

AVRO 504K

Essential close-up detail for anyone wishing the model this all-time classic biplane.

1: Centre fuselage showing fabric access panel stitching and cockpit mounting stirrups. 2 & 3: Rear fuselage showing control cable runs. 4: Engine cowl showing panel lines. 5: Hinged access panel on front fuselage side. 6: Air blower on left side cowl rear. 7: Stitching line and access panel line at rear cowl. 8: Propeller boss showing Hucks Starter socket. 9: Engine cyliner detail. 10: Draw-pin to engine cowl access panel.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11-13: Aileron close-ups. 14 & 15: Upper wing top surface showing control horn, control cable and cable guide pulley wheel. Aileron control cables are all external to wing surfaces. 16: Inside the rear cockpit. 17: Rear cockpit windscreen. 18 & 19: Two views of the front cockpit.


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20: General view of the centre-section wing-to-fuselage struts. **21:** Upper wing centre section front strut attachment bracket. **22:** Lower attachment of front C/S front strut. **23:** Rear C/S strut top attachment point. **24:** Further view of the C/S strut attachments. **25:** Lower wing root, showing the cockpit access tread plates. **26 & 27:** Two views of the lower wing interplane stut attachments. **28 & 29:** Propeller-driven generator mounted on front right interplane strut. **30:** Pitot head on left front interplane strut. **31:** General view of wing interplane struts.


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PART 3

MILES M.38 MESSENGER

Peter Shaw continues the construction sequence of his Graham Smith-designed, quarter-scale, 100" (2540mm) wingspan Miles M.38 Messenger, for engines in the region of 1.20 cu.in. This month he begins to pile on the detail

Welcome to Part 3 of my build of the Graham Smith-designed Miles Messenger. It is my favourite aeroplane, so building this model has been a real pleasure and whilst challenging, is not beyond the skill level of the average builder (of which I am one). You certainly do not need to be in the expert class to complete this model from the excellently detailed plan which really is a bargain from the *R/C Model Flyer* plans service.

I have now completed the airframe and have reached the detailing stage. This is where I start thinking in narrative terms and drifting into space, trying to imagine what the finished aeroplane will look like and how much detail to incorporate. Unfortunately I do more thinking than doing, a common trait of the scale modelling fraternity. I made the decision to try to apply as much detail as feasible without adding too much weight, bearing in mind that the original model, built by Graham, was completed within a weight target of 13lb. - some achievement for a 1/4 scale model of 100" span. I have the luxury of not having this target as the engine technology has improved since the original concept, however, I have made an attempt to keep the model as light as possible.

So with all considerations made, I decided to do the interior as near to scale as possible because the cabin is BIG and lends itself to doing a good job on seating, etc, so lets start with this detail.

The Cabin

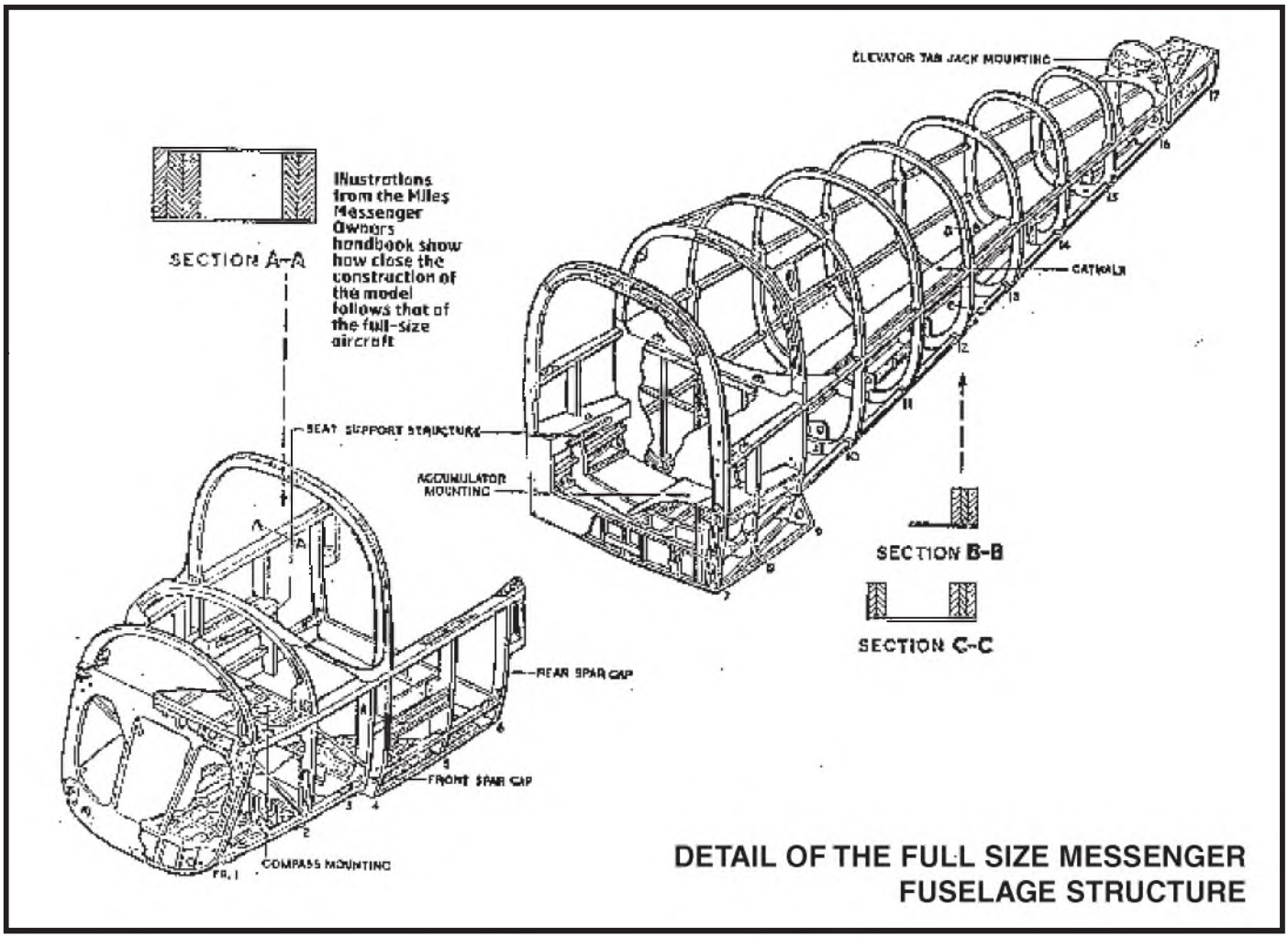
One of the challenges was making the front of the cockpit canopy - no commercial mouldings are available, or any that could be modified, so this necessitated making a former from balsa and ply. To do this I took some templates from the drawing to get the correct shape and after much carving and sanding, made a male former which was finished with primer. It does pay to spend time getting the surface finish as smooth as possible.

If I was to make it again, I would make some different angles for the run off when vacuum forming, however Gary Beaven, a fellow club member with a vacuum former, did a great job for me in getting a good canopy I could use. Gary will provide this service for prospective builders - I hope there will be a few - (contact details are shown at the end of this article).

One area where I took a great deal of trouble getting right, is the attachment of canopies - I used lithoplate to simulate the aluminium finish. I feel I get a reasonable reproduction of the real thing and, with the addition of miniature self-tapping screws, I think a very realistic finish has been achieved. I also use the canopy glue from *Zap* a really great product, which gives a great bond and seal, dries clear and is fuel-proof. I am fussy about this because it is the cockpit that people looking at a new model seem to study first - we all know, though, it doesn't help the model to fly any better! Study the photo and see what you think!

The cabin doors

Again the doors are a significant feature of the model, being of the gull wing type and fully operative for access to the cabin. I constructed mine exactly as detailed on Graham's plan - they are made from balsa and lithoplate (you can usually get used litho free from your local printers) and as I had some packs of simulated rivets, decided to apply these in the scale positions, gleaned from photos I have of the original aeroplane - I am sure these will add a little extra patina when



DETAIL OF THE FULL SIZE MESSENGER FUSELAGE STRUCTURE

painted over.

A feature of the door is the working lock mechanism (this took me some time to get right); it was a bit fiddly, but the immense feeling of satisfaction in completing a difficult task was well worth it.

The doors also are fully glazed with opening windows. I made the sliding unners from *Plasticard* as shown on the drawing and pre-bent the clear acetate over a hot plate to get the right radius to fit into the runners - I am pleased to say they work really well, so it is just another detail that aids realism. I made the handles from some old aluminium angle hanging around in my scrap box and it didn't take much filing and sanding to get a reasonable handle.

As the doors are fully working, a nice touch is to make the door lock stays, so that when the doors are opened they lock into place - very helpful when putting in the wing bolts.

The instrument panel

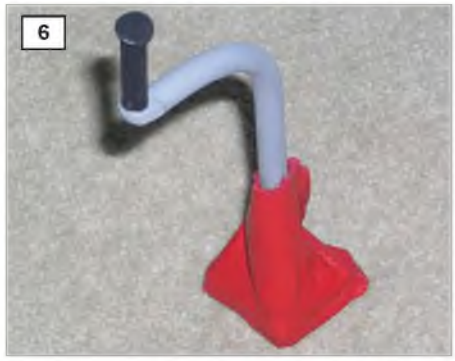
I like doing these and try to get them as accurate as possible. I used a balsa and 1/32" ply sandwich and cut out the holes for the instruments with some punches. I was lucky in having a very detailed photo of the instrument panel, so with a bit of thought and using some dials I had purchased from one of the shows, produced a reasonable facsimile of the instruments. Before putting in the dials, the whole panel was painted with a matt black acrylic model paint.

Switches were simulated from straight pins or bits of aluminium welding rod - again, small self-tappers were added to give that finishing touch.

Seats and carpeting

The basic structure of the seats was made from 1/4" balsa and blue foam, which is easily carved and very light. After finishing the basic shape, these were covered in thin real red leather - a perfect colour match for the real thing. I obtained this from a dolls house shop, along with the carpet - the owner told me that it was the off-cuts from making underwear for some show (!) in Brighton ... I am not saying what kind of show it happened to be but hey, the leather was nicely thin and stretchy, so

1: The first stage of the construction of the cabin seats, carved and sanded to shape from blue foam. Rear bench seat on the left, one of the front-row seats on the right. 2: The two individual front seats in place in the cockpit, also showing the instrument panel.



3: The two individual front seats and rear bench seat installed in the cabin. Red seat upholstery is very thin leather, with white piping in shiring thread.

4: A further view of the front cabin seats, viewed from the rear.

5: Finished instrument panel ready for installation. It is based on a plywood/balsa/plywood sandwhich and the dial positions were cut using punches.

6: The pilot's control column, fashioned from plastic tube. The gaiter cover is from thin leather as per the seat covers.

upholstery could begin.

Photos of the finished seats are shown, the white edging was some old shirring thread purchased from the local haberdashery. All the leather and trim was stuck in place using *Copydex*, which dries clear, is non-staining and gives a good lasting bond.

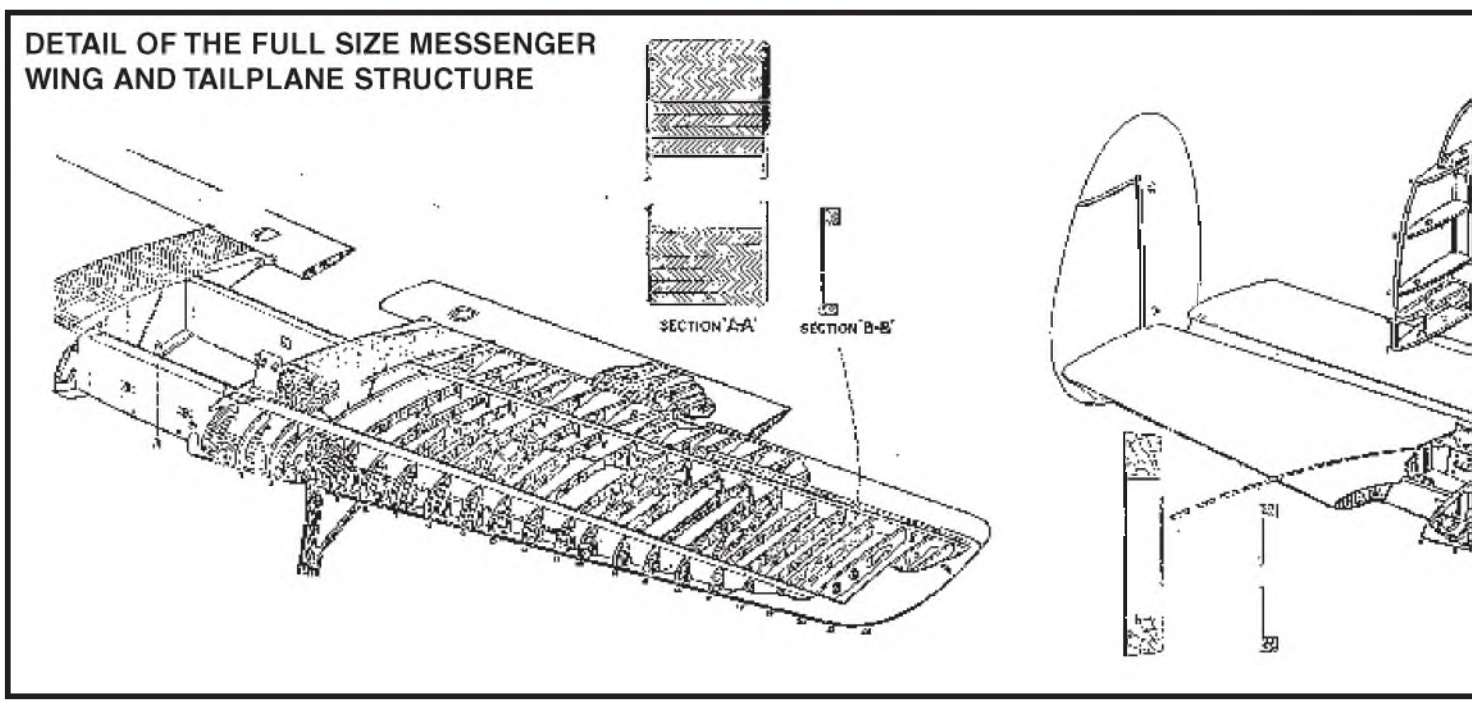
So now we are starting to build up the cockpit detail and other items to include are the control column, easily made from plastic tube, aluminium finishers to the door opening and the throttle quadrant - these are just additions and are relatively easy to make.

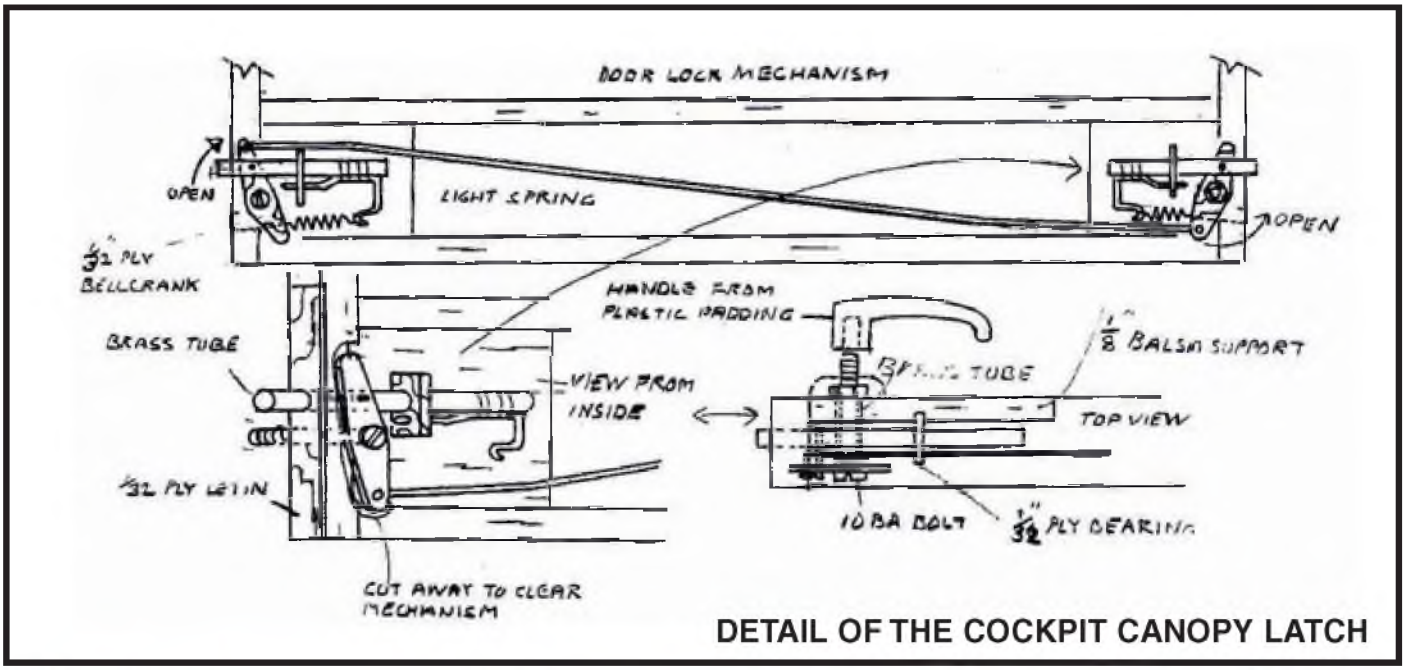
Windows in the passenger cabin

I chose to put in the scale positioned nuts and bolts. It is not a difficult task, but quite time consuming and fortunately for the 12BA nuts and bolts used, I had two box spanners which made the job much easier (at the end of this article I have given a list of suppliers that can supply the tools and bits and pieces that I have used in the completion of the model - I hope this will help!)

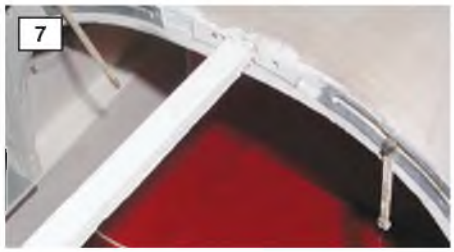
Main undercarriage

Basically, I followed u/c detail shown on Graham's plan, but changed my approach slightly by doing more lathe work and milling the shapes. I can honestly say that I have learned a lot in making this part,





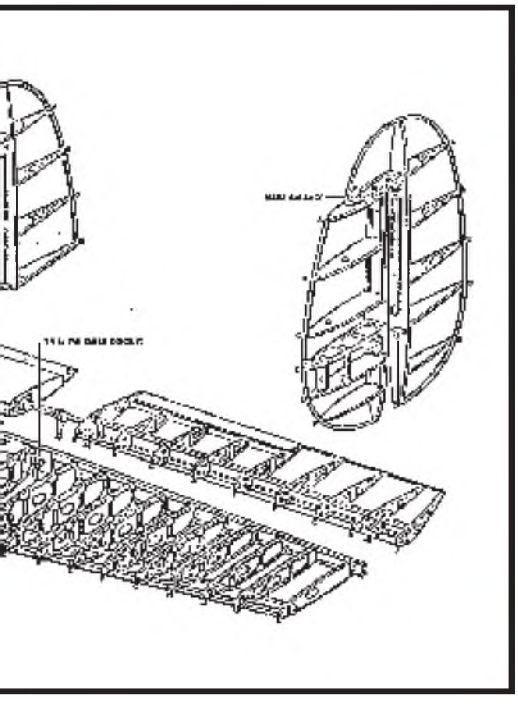
DETAIL OF THE COCKPIT CANOPY LATCH



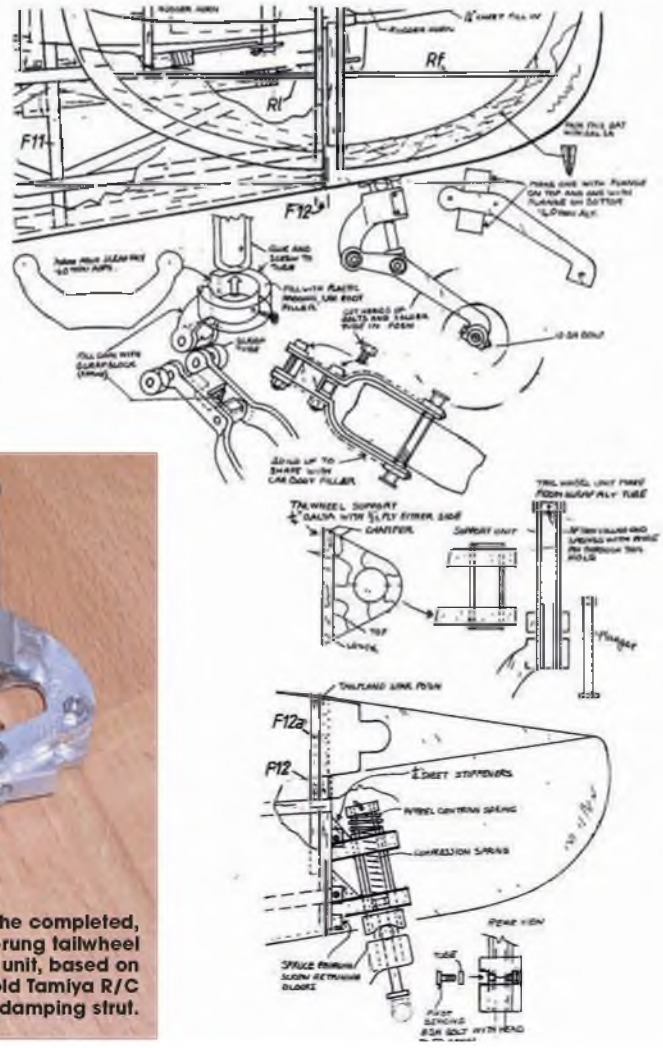
7: Detail showing the cabin door locking stays. 8: View of the fuselage undestide, shoing the lithoplate fuselage/wing fairings. 9: The blind nuts refered to in text, prefered by Peter Shaw to secure the main undercarriage to the wing mainspar.

particularly in operating a lathe and milling machine (a skill I did not have prior to starting this model). I learned how to produce tapers, boring and milling (saves a lot of sawing).

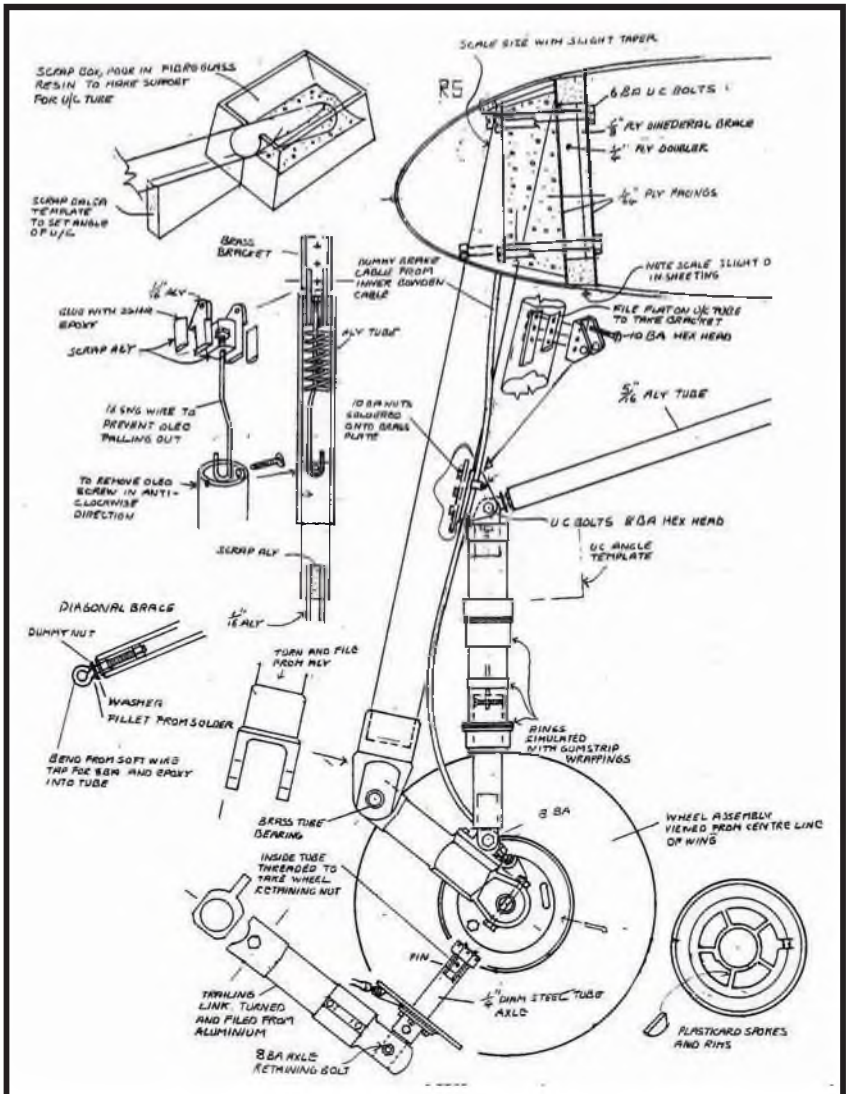
Each leg of the undercarriage consists of nine parts (shown in the photos), but it looks good when assembled - I hate to think what it would cost if it had to be purchased. Again, I deviated from the plan by using some blind fixing nuts to fasten to the main spar. I really like these which are a big improvement on the old blind fixing nuts. I should state that it is not necessary to go the route I did -



DETAIL OF THE TAILWHEEL UNIT



10: The completed, sprung tailwheel unit, based on an old Tamiya R/C car damping strut.



DETAIL OF THE MAIN UNDERCARRIAGE UNIT

following the plan gives a much simplified build.

The undercarriage, with all the hex-head bolts really does add to the models presence, but has to work and be strong enough to carry the landing loads of a big model, which will be considerable, as they are long in proportion to the body to give the STOL capabilities.

I did spend some time in doing the turning, etc, and produced a lot of swarf which I believe is common practice for learners like me, but the finished parts are well worth the trip (thanks are due to my wife Hilary to treating me to the lathe as a retirement present). My lathe is a *Seig C3* (I would love a Myford, but the budget wouldn't stretch to this, so the cheaper Chinese option was chosen) and is accurate and will do all that most modellers will require. I found it was easy to get hooked on this machining job and really had to exercise strict self-discipline to get on with all the other building.

Tailwheel bracket

This was made to plan with a few changes. I used an old pneumatic damping strut from an old Tamiya R/C car and then turned up the remaining parts from ali. It is self-castoring and adds a little more realism to the model. Full instructions are given on the plan and there is no need to turn up parts with the procedure shown. When finished it makes up to a lovely fully-functioning tail wheel assembly.

Next month

Well, the job is nearly done now and I am on the home straight. The model can now be masked off, undercoated and finished with *Klass Kote* epoxy paints, Miles Red and Cream - great 19330s/40s colours, which I think always look very smart. I use the *Klass Kote* as it is fuel proof and gives a great finish with even one coat, so little weight is added.

The finishing will include doing the scale propeller, spinner and all the little details such as the small lettering and final shots of the interior, plus a brief history of the Miles Messenger and details of basic measurements, etc.

Part of the joy of scale modelling is getting the detail, so hopefully covering this might enthuse other modellers to have a go. ■

11: Components of the main undercarriage, ready for assembly. Peter Shaw acquires a lathe for this job and learned the techniques required as the work progreesed. 12: In freshly turned metal, the assembled main undercarriage leg.

Suppliers list:

Hex Head nuts and bolts, plus box spanners, etc:	EKP SUPPLIES 01598710892 www.ekp.supplies.btinternet.co.uk
Balsa wood, ply, etc:	The Balsa Cabin Maldon Essex 01621 859711 wwwbalsacabin@hotmail.com
Vacuum forming, stencils and graphics:	Gary Beaven - gbgraphics www.gbgraphics@hotmail.co.uk
Small self-tappers, etc:	Model Fixings 01158548791 www.modelfixings.co.uk
	Nexus modelling supplies 01249 716113 sales@nexusmodels.co.uk
Fuel proof paint:	Klass Kote Epoxy paints sales@klasskote.co.uk

MILES MESSENGER

Full size copies of the plan for the MILES M.38 MESSENGER 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 £29.95 plus p&p
(U.K £2.50; Europe £4.00; Rest or World £6.00.
Please quote plan no. MF21

CUT PARTS SET FOR THE MILES MESSENGER

Get straight down to construction without delay!
This month's 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 £250.00
plus carriage (UK) £9.50, (Europe) £26.00

Order set CUT/MF 21

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, Totternhoe, Bedfordshire, LU6 1QX, UK. Tel: 01525 222573/ enquiries@adhpublishing.com.

Techno Scale

Mike Evatt

Alan Cohen's **'Hobby Specialties'** now offer spoked wheels specifically designed for R/C Electric and Park Flyers. They are made from 36 spokes of heavy duty Dacron thread woven into sturdy basswood rims and have shock absorbing lightweight foam tyres. The hubs are constructed of aluminum with an ID of .063" and have foam tyres. The screen-shot shows something rather more special! This is a pair of wheels with basswood rims made to look like bamboo with black Dacron upholstery thread for spokes. The hub will accept a .047" wire axle. Weight is approximately 3g for the pair. http://hobbyspecialties.com is the URL to visit.

David and Tracy Collins market some delightful rubber powered scale model aircraft. A rarely modelled fighter from WW1 the Phonix D.1 makes a great model. With a span of just 16 inches it is a real gem. Their short-kit includes laser cut contest grade parts, neoprene cord wheels, full size plan, and their printed tissue files so you can replicate the finish shown using your home printer. The kits are also designed to use Derek Knight's adjustable thrust buttons. Log-on to http://www.skylakemodels.com and you will be hooked!

Sydney RC Jets at http://sydneyrcjets.com.au attempts to bring you the latest and newest Radio Controlled Electric Ducted Fan Jets available from the leading manufacturers in the industry! Sydney RC Jets offers you a wide range of RC EDF Jets from the huge F-18 90mm, to the 50mm EDF Jet and right down to the mini J Power 35mm 2.4Ghz RC Jets. Spotted here was the unusual Lockheed SR 71-A Blackbird. This model for electric power, features twin 64mm electric ducted fans powered by two brushless motors and 35A digital proportional speed controllers, pre-installed electronics and operational retractable landing gear.

http://www.ssaclub.co.uk is the web address of the **Sheffield Society of Aeromodellers (SSA)**. This is a large group of aeromodellers mainly from the Sheffield UK area with many model flying interests - including slope soaring, indoor RC aircraft, electric powered RC aircraft, RC helicopters, control line and free flight including F1E magnet. The club has a number of slope soaring sites and electric flying fields in and around the Sheffield area. There are also club meetings including model shows, swap meets/ auctions, meals and demonstrations. A club with a substantive scale interest.

The website of the **International Model Airplane Plans Co-operative**, also known as the Co-op Plans Project, may be found at http://www.co-op-plans.com The plans on this website are the result of sharing between modellers and organized groups world-wide. Members, whether individuals or representing clubs or organizations, have agreed to contribute their own holdings into the common archives and to provide the skills and work to preserve and restore these plans such as the plan of the Stearman 73 Trainer shown in the screenshot. An excellent resource!

The website at http://www.iflytallies.com is a veritable Aladdin's cave of scale accessories for the discerning modeller. This is the place to browse for instruments,

Hobby Specialties can supply excellent scale wheels.

A not often modelled fighter from WW1 the Phonix D1 makes a great model.

A Lockheed SR 71 - A Blackbird for twin electric power.

The Sheffield Society of Aeromodellers website shows good scale content.

The International Model Airplane Plans Cooperative is an excellent resource.

Yes, LED displays are here to enhance your cockpit.

mines hyperspace for more TechnoScale Topics...

pilots, harnesses and Multi-Function Displays. Yes, LED displays are here to enhance the cockpit of the appropriate model.

Their 1" x 1" Economy Display, for instance, varies the display every 3 seconds. The screen shuts down automatically after 5 minutes of use and may be power cycled to resume operation if desired. This display is nicely visible, even in outdoor light. Optimal visibility is achieved with high contrast content.

Eastern Helicopters is your VARIO Helicopters source in Canada. It maintains a web presence at http://www.variocanada.com and is owned and operated by fine scale modeller Daniel Grandmaison. Looking for something a little different? Their model of the Erickson Air-Crane may be just the thing. This model can be fitted with a JetCat SPH5 turbine system. In contrast to the full-size machine, it is designed for a two-blade main rotor. For the turbine version an optional 6-blade rotor head will be offered in the foreseeable future.

Easy Tiger Models at http://easytigermodels.com supply a vast range of scale models from quite modestly sized electric powered foamies to a Monster Scale all-composite B-25. Their Giant Scale Corsair spans 95in and has a large enough cowl to easily accommodate a Moki radial engine. However I particularly like the Giant Scale Cessna 310 Twin shown in the screenshot. This has a span of 125ins, wooden wings, glass fuselage, nacelles, and tip tanks. It is designed for 26cc, 140 glow, or electric power. Includes retract set, too!

Highpoint Aviation at http://highpoint-aviation.org tells an interesting story. There was a property called High Point Acres until it was developed as a model airfield. HighPoint Aviation started out as a name for this property on top of Knobley Mountain in West Virginia and has grown into an entity that provides R/C flight information, education, and services, hosting for a local R/C Club, and best of all, an R/C flight destination. The property was first used as an airfield when Maynard Hill and a support team from the DCRC Club, used the site for an altitude record attempt in the Autumn of 1967.

The **Pilatus Porter** was developed as a whole robust high-wing flying system that is suitable for a wide variety of applications, including Passenger Service, Search and Rescue, Parachuting, Aerial photography, Surveying, Glider Towing and much more. This aircraft is known for its Short Take-off and Landing (STOL) performance on almost any terrain. The **Esprit Model** version, the Pilatus PC-6 Porter Scale 260 (ARF), is just as impressive. This model is capable of taking off within a distance of 195m and land in under 130m with a payload of 1500kg. Check it out at http://www.espritmodel.com

The **Lunak LF-107** was built in the early 50s, in the Czech Rep. It was used as a trainer for future jet pilots or in local clubs for sailing and aerobatics. It had very impressive flying characteristics with a win at the World Championship. Only five aircraft are still known to exist around the world from over 200 built. **Icare** at http://www.icare-rc.com market a superb version of this scale soarer with a span of 4.75m as an ARF all moulded kit. This model is an all moulded reproduction of the original all wood construction. ■

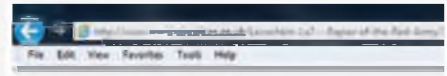
Looking for something a little different? The Erickson Air-Crane may be just the thing.

A Giant Scale Cessna 310 Twin by Easy Tiger Models.

The HighPoint Aviation Story.

The Pilatus PC-6 Porter Scale 260 (ARF) from Esprit Model.

The Lunak LF-107 from Icare.



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

mikeevatt@hotmail.com

SWARMS of Fun!

Bruce Corse visits a laid-back Aussie Scale Rally in the heart of cheese-making country!

The S.W.A.R.M.S. in this case being the South West Associated Radio Modellers Society - this small but thriving club is situated deep in dairy farming country in South West of Western Australia, near the country towns of Bunbury and Capel ("where the cheese comes from", everyone says!). The club (current membership 35+) has been in existence since 1974 and is in the process of buying its present flying field, currently leased, set in idyllic grassy countryside populated by Friesian cows and gum trees. No neighbours apart from cows and kangaroos, and a large, partly-mown field with hard runways and excellent buildings make this a great place to fly, or visit.

Despite the smallish membership, the club has excellent facilities - a large flying area, distant from habitation, with a big mown area and concrete runways, large club building with catering/coffee-making facilities and a fire (it gets cold down here in winter), a sizeable tool-shed and large covered pit areas (UK readers take note - the covers are for keeping the sun off models and modellers...) Club members can fly at any time of the week, which suits the shift workers and farmers in their off season. Club days are held on Sundays. Interest groups include Scale, Sport, IMAC and

100% Pure Evil! Clint Richards' 40% Extra 260

increasingly, seaplanes. Members are determined to make SWARMS the best-equipped club in the State - they've already got the best canteen!

Once a year the club hosts a Scale Rally, a for-fun event in which all comers are welcome, there is no competition or judging, just lots of models and lots of flying. A great deal of quality work was performed at the previous Sunday's busy bee in preparation for the event, leaving the field in pristine condition for the rally and the good work done by the cows in the out-field during the week was also a bonus (no, eating the grass!) The Saturday was well attended and a great deal of flying was done - aerial activity ceased around 5-30pm and members plus visitors settled into pre-dinner drinks as the sun settled in the west, the aroma of the meat cooking on the BBQs putting everyone in a very good frame of mind; weight watchers were not invited to the BBQ!

This was to be your scribe's third visit to the Scale Rally - I made the 200km trip down from Perth on Sunday, along with several other fliers, arriving just in time for the advertised pilots' briefing at 10 a.m. The Sunday weather proved to be better; less windy than Saturday and it was not long before a variety of scale planes were buzzing around over the field. Several of these had flown here previously and when discussing this with the pilots, each one of them indicated how they really enjoy flying at this field and can't get enough of it. I could have had a lie in - the appointed hour came and went with no briefing in evidence other than a few old friends sitting round sharing a coffee - this is a very laid-back event!

There was not much hint of the sun at first with some dramatic clouds and a bit of a breeze. No jets and few electrics were in evidence but superb models were there in abundance - I hope readers enjoy the photographs and that I have conveyed a little bit of the flavour of the event.

IMAC Aerobatics ("Extra, Extra!")

As is increasingly common today, many of the large scale models were of Red Bull Air Race-style aerobatic aircraft, which are just as capable in the air as their full-size counterparts. These exciting models kept the spectators keen and the pilots on their toes for much of the meeting. Club Secretary Scott Pittick had the biggest of the lot, his Composite ARF Super Extra 330 - at 3.1m/ 10ft span and DLE 170 two-cylinder, two-stroke powered, it runs a three-blade carbon prop and weighs in at 19.5kg. Scott is the third owner, having flown the Extra for two years. This immaculate model is eight years old. Scott was rarely out of the air with the big beast and put on faultless high-speed aerobatic displays. (If you are wondering why so many SWARMS members choose *DL Engines* petrol-power, it's because Scott is the W.A. agent for these motors).

Danny Anspach was busy flying a *World Models* Extra, DLE 30 petrol powered. Another IMAC style model belongs to Club President Clint Richards' whose huge 40% Extra 260 is called '100% Pure Evil'! The three-year old model is powered by a 3W 15T Competition engine which hovers it like a giant raptor. Clint also campaigns a huge 33% *World Models* Ultimate bipe - it has a 100cc *Desert Aircraft* engine and is flown with considerable 'gusto' - last year, despite the strong and variable wind, Clint promised me a runway tail-touch photo opportunity with the bipe ("Don't risk anything on my account, Clint." "It's only a plane, mate...") - and he delivered! 15yr-old Harris Morrison from Wanneroo has campaigned a green *Dolphin Co* (W.A.) 33% MX2 for eighteen months. At 2.2m/ 7ft4" span the model has a DLE 55 engine on a 23x8 prop. Newer full-size aerobats like the MX2 (the first all-composite aerobatic plane, based on the earlier Giles) and the curvy Sbach are helping to break up the dominance of the Edge and Extra types in competition. In 2008, a Red Bull MX2 raced a Spitfire around the Isle of Wight to mark the 70th anniversary of the first Spitfire produced. (The Spitfire won, taking 9 minutes versus 11). Harris's new model is a second-hand 2.7m/ 8ft10" Extra 260 from the *Pilot* kit, with a custom paint job - Harris has flown the Extra for six months in IMAC competitions. The three-blade carbon prop spans 24x12.

Scott's Super Extra on one of its many sorties.

Danny Anspach's World Models Extra, DLE 30 petrol powered.

Nigel Ruffle brought his scratch-built 1/3rd scale Smith DSA1.

Red Arrows circa 1966? Adrian Byrne's terrific Diamond Four formation model.

Graeme Woodcock's neat PT19 from the Airborne kit.

Ray Anderson brought along his gorgeous big Hellcat once again - superb realism.

My indoor flying buddy from Perth Eric Bevan campaigned his second-hand *Probuilt* Extra 300 all weekend. The 1.9m/ 6ft3" Extra is powered by a 52cc 3W petrol engine and flies really well - the only decent photo I managed to take was of Eric bringing the model in for a very neat landing - dead-stick...

Big models and more ...

There was a good turnout from Wanneroo Aeromodellers, north of Perth. Nigel Ruffle (ex-Maidstone, "dahn in Kent", 26 years ago) brought his scratch-built 1/3rd scale Smith DSA1, DLE 30-powered, from a 1986 magazine plan. On Futaba 2.4GHz gear, the model is five years old and has the original scheme and markings of the stubby prototype - a US homebuilt designed by Frank Smith. Adrian Byrne, also from Wanneroo, campaigned his 1/3rd scratch-built Fly Baby biplane all weekend. Based on a *Balsa USA* plan and DLE 55-powered, fewer than ten of the full-size were built. Adrian sourced a fiberglass cowl from Canada and uses *Multiplex* 2.4GHz gear with telemetry.

Adrian impressed spectators and pilots alike with his other model(s?) - the *Diamond Four*, which was a plan feature in the December '95 issue of former sister magazine A.M.I. The plan was a tribute to it's designer, the late Peter Hales. The Diamond Four is a four-jets-in-formation model, designed for .50-.60 2 stroke engines but converted to electric by Adrian. It represents a diamond formation of four Red Arrows-like aeroplanes connected by 1cm/ 1/2" diameter aluminium, carbon fibre or similar tube, built-up wings and boxy fuselages with sheet balsa tail surfaces on each model.

Adrian's has a 2m/ 6ft6" wingspan, elevator on the tail-end Charlie, ailerons on the two outboards and the electrickery in the leader - folding 13x6 prop, 42/60 motor, 60A Turnigy speedy and two 3s 3300 LiPos in series. The model was launched from a plastic tubing ramp, flew extremely well and drew a round of applause - if you squinted a bit it looked just like four Folland Gnats in tight formation.

South African ex-pat Ray Anderson brought three superb large-scale models to the meeting. Ray recently arrived in WA from South Africa to join his brother-in-law in the local wine industry. First out of the box was his 1/4 scale Fly Baby - monoplane version, scratch-built over six months from a friend's '70s magazine plan in 1986, but looking like a brand-new model - it's older than Ray's grown-up children! As you should be able to see, the model has a lot of character in the air.

Originally scratch-built from the RCME plan and designed by Eraldo Pomare, Ray knew the designer in South Africa. It was Ray's first attempt at glass-fibre construction and the model has been retired more times than Cliff Richard! Sporting landing gear or floats, the model still has some nostalgic features such as a single aileron servo. It originally had scale flying wires but Ray usually leaves these off now. With nylon and dope covering it has slight under-camber on the wings. Originally designed to fly on 10cc, Ray used a Webra .61 Blackhead at first but the model now flies on a Super Tigre .75/ 12cc. Here's hoping it's still around the next time Halley's Comet visits.

Ex President Graeme Woodcock brought his new *HobbyKing* 2.3m/ 7ft6" Piper Cub (yes, it's yellow). For $170 you get an all built-up large-scale model with working suspension and a very scale-like appearance. Graeme runs his Cub on a 20cc RGC petrol engine which swings an 18x6 prop. Graeme's neat PT19 US Trainer is from the Airborne kit and is powered by a .46 glow motor. KAMS (Kalamunda) club life-member Ken Wansbrough came from Perth for the weekend. Ken had a model of an interesting Australian light-plane prototype, a Victa Airtourer, from the *Sportsman Aviation* kit. Ken's version has a 1.7m/ 5ft6" span with a .60 two-stroke up front. John Knowles brought a second Airtourer - the one with the blue canopy is John's.

Ian 'Humphro' Humphryson's *Black Horse* Chipmunk ARF is now five years old and had its first flights for two years. Powered by a .91 4-stroke and at 1.8m/ 6ft span, the Chippy is a great flyer ("and lander" according to Humphro). For comparison with the Chippy a *HobbyKing* 1.8m/ 6ft Super Chipmunk was flown very nicely by Piero

Harris Morrison's Extra 260 from the Pilot kit, flown very precisely by this young IMAC pilot.

Harris's model looks great with its custom paint job, here coming in for a greaser of a landing.

Adrian Byrne sniffs the air prior to committing aviation with his Fly Baby biplane.

The scratch-built Fly Baby flies a treat on a petrol DLE 55.

Ray's Fly Baby uni-winger is older than his grown-up kids! Great flyer with oodles of presence.

Ken Wansborough brought this tubby Victa Airtourer based on the Aussie light plane prototype.

Sabatino. The ARF model runs an ASP .91 four-stroke and a Turnigy 13 x 8 prop.

Warbirds are go!

No scale rally would be complete without the presence of military subjects - their fascination never fades. Danny Anspach's *ESM* Razorback P-47D has a DLE 20 petrol engine with fiberglass body and built-up wing. The authentic-looking saucy nose-art comes from a truckers' accessory shop - the one on the tail of Danny's Extra is only just suitable for a family magazine! Ken Wansbrough's 1.2m/ 4ft *EFlite* Stearman ARF was a $2 raffle prize! After crunching the dummy engine, Ken has scratch-built a nice replacement after waiting 18 months for an ordered part

This is the scene on the flight-line at SWARMS Scale Rally 2012.

Ex-pat S. African & ace scale builder Ray Anderson models the new SWARMS uniform - $50 gets you the cap and super-smart monogrammed polo-shirt, with police chequers!

Ray's Fly Baby uni-winger is older than his grown-up kids! Great flyer with oodles of presence.

Ken Wansborough brought this tubby Victa Airtourer based on the Aussie light plane prototype.

Medic! Graeme Woodcock gets down & dirty with the big HobbyKing Cub.

The HobbyKing Cub is fantastic value and Graeme's example flies great on a 20cc petrol RGC.

which didn't show up. Ken's *Great Planes* SE5A ARTF is a really neat little WWI fighter which looks good in the air. At 65cm/ 26" span the little bipe flies on 1300x3S LiPos.

Ray Anderson's magnificent Hellcat and Fw190 have both featured in *Flying Scale Models* before. The Hellcat is 18 years old and has David Boddington's seal of approval - DB drew up our FSM Hellcat plan from Ray's model. Originally scratch-built from a Brian Taylor plan, Ray increased the wingtip thickness for stability and made many more constructional changes. A 45cc Super Tigre glow and 20x6 Bolly prop provide the urge. Ray's glorious big 1/5th scale Focke-Wulf 190 is much modified from a 21-year-old Topp kit, crashed and rebuilt seven years ago. The FW's engine is a 25cc Super Tigre. The model has *Mick Reeves* electric retracts and a *Unitracts* tail wheel. Ray absorbed many magazine hints when finishing and weathering this excellent model. Both of Ray's warbirds have superb realism both on the ground and in the air.

In addition to his Extra, Club President Clint brought along a big P-47 and a very neat four-motor electric B17 RTF. But the biggest model of the weekend after Woody's Cat was Clint's huge Phoenix K8 RTF 6 meter/ 20ft vintage scale glider - just add radio - he says it is an excellent kit. Clint's glider pilot, Eddie Meester, is an F3B and F3F pilot and say's the big glider is "Easy!" The K8 is towed aloft by the owner's big Extra. There were few incidents at the meeting, luckily, despite the occasionally strong and gusty winds, but there were some minor skirmishes attributed to mechanical/ electronic failures or plain old brain-fade! A smaller K8 (still a big model though) was towed

The big K-8 made several flights and this spot-landing is typically realistic.

Humphro Humphryson's Black Horse Chipmunk ARF is 5 years old.

On a .91 4-stroke and at 1.8m/ 6ft span, the Chippy is a great flyer and lander.

HobbyKing 1.8m/ 6ft Super Chipmunk flown very nicely by Piero Sabatino.

Piero's Super Chipmunk pilot ejected some time ago but failed to clear the canopy...

Piero Sabatino's Super Chipmunk in the air. Pilot has moved to the back seat!

He who hath the biggest toys, wins. Clint Richard and huge Phoenix K8 RTF 6m/ 20ft vintage glider. Clint's pilot Eddie Meester carries the glider.

up by Clint's Extra but failed to release. In the ensuing gyrations in which it was feared that both models might be lost, the glider's wings folded and resulted in one of the two unfortunate total losses of the weekend (with no damage to life, limb or property luckily).

Giant-Scale Models

One giant-scale model which graced the runway was Rob 'Woody' Woodhead's new PBY Catalina. Readers may remember Woody's massive Hughes Spruce Goose which has featured in the past on both the cover and centre-spread of UK model magazines. His latest effort is the magnificent Cat - two years ago it was giant slabs of foam in his garage, at the meeting it was fully assembled and taxied back and forth as a demo. The Cat is 2.6m/ 8ft6" long, has a span of 4.4m/ 14ft6", a wing chord of 0.6m/ 2ft and the tail spans 1.2m/ 4ft. It weighs 'about' 24kg/ 53lb empty and is powered by two 30cc DLE petrols.

There are two pneumatic systems aboard, one to operate the retracting wing-tip floats, the other for the retracts. There are twelve servos powered by twin battery packs through a power box. To operate all of this Woody acquired an eight channel Futaba 2.4GHz radio - the model needs all eight channels with elevators, rudder and nose-wheel, ailerons, throttles, two air switches, gear doors & electronic engine kill.

All of the gear is in waterproof boxes and being air operated the big Cat will be able to taxi down a ramp, lower the tip floats, then when floating, retract the wheels, close the nose wheel doors, taxi out and take off, doing the reverse on landing.

Last year Club Treasurer Anthony Amadio brought a half-scale Piper J3 Cub along for static display; yes, you read that correctly, HALF-SCALE! The aircraft ('model' sounds wrong, somehow) was nearing completion and came as an ARF from Bill Hempel in the U.S.A. The Cub has a 4.57m/ 15ft wingspan and is 3.65m/ 12ft in length; AUW is 36kg. The flat-bottomed wing has ailerons only as the Cub is able to fly very slowly. Control surfaces and movements are HUGE! The engine is a fearsome four-cylinder petrol DL Engines Triple-two 2-stroke, on a 34x10" prop. Anthony, whose family were active in the kitchen and raffle event all weekend originally ordered a 60% Cub but it was too big(!) Both Woody and Anthony need certification for their giant 25kg-plus models, the bug in the Vaseline is that there was no suitable inspector in W.A., it being only the size of Western Europe! However, local man Ian Clapp and KAMS club stalwart Neil Giggens were both hoping to step up to the plate soon (STOP

Interesting RTF (foam) Boeing B-17 brought along by club pres., Clint Richards.

At 65cm/ 26" span Ken's little WWI biplane flies well on 1300x3S LiPos.

Aerotow for the K-8 behind Clint's big Extra.

Bring it on Woody! The huge PBY Catalina is prepped for some showing off / taxiing prior to it's certification. What a model!

STOP PRESS! Soon after the show, this is the maiden flight of Rob Woodhead's magnificent Catalina, the first giant-scale model to fly in W.A. (photo: Anthony Amadio)

PRESS: subsequent to the event, Woody has obtained giant model certification AND his MAAA Gold Wings flying badge and the Big Cat has flown successfully - there should be a picture hereabouts).

In Summary:

As per the previous year your scribe won TWO prizes in the big raffle - this time a cap and a mini back-pack! Once again, the rumour that I only bought two tickets is untrue... However the two top prizes (a beautiful DL35 petrol engine from Scott Pittick and the biggest i/c helicopter I've ever seen donated by Alan from the Collie club, the winner could pick which one they wanted) - BOTH went to the same person, who wasn't even present at the draw! Whoever you are, Mr D Jones, there were mutterings I can tell you!! As for the event, well the weather was excellent apart from the ever-present wind, the company was terrific as was the organization, the models were superb and although the numbers were down a bit this year compared to previous years it was still a great weekend. Well done to Brianna, Nadine, Pat and Kylie who served great food and drinks all week-end. Resident chefs Brady, Anthony and Troy really excelled over the hot barbecues and they had the patrons coming back for more. My thanks go to Ron Waller, SWARMS newsletter editor (see the link below and check out Ron's newsletters especially for the jokes!) for help with preparation of this article, and to all my friends at SWARMS.

See you next year! ■

Links: S.W.A.R.M.S: www.swarms.org.au Loads more images: http://photobucket.com/SWARMS2012

Another big warbird by Ray Anderson; this is his wonderful Fw190, originally from the Topp kit.

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On Silent Wings by Chris Williams

SCALE SOARING

The Topaze trilogy

It was a couple of years ago now that I first produced a plan for the Sheibe-Loravia Topaze, a fifteen meter sailplane that was the French licensed version of the German Scheibe SF-27. This coincided with being the first plan I had drawn in CAD, and was thus itself a bit of a milestone. The model, built to 1:3.5 scale, performed nicely enough, but the fuselage proved to be a bit vulnerable to any sort of sideswipe situation when landing, with the consequent flexing causing the fabric at the rear of the fuselage to split, and allowing the Liteply formers to disintegrate.

Obviously a fix was required, so the plan was duly modified, leaving only the dull, nagging question: were the modifications going to be adequate? I started off knocking out the new fuselage formers with my trusty scroll saw with the purest of intentions: I was just going for a trial fit on the jig to see if everything worked. Having been diagnosed with Repetitive-' Plane-Syndrome many years ago, I was aware of the similarity with malaria, so it should have come as no surprise that I went into a sort of daze and finished up with another Topaze. This one, too, performed very nicely, the modifications were entirely satisfactory, and you might have thought that would be the end of the matter.

RPS, however, once it has you in its grip, never lets go, and before long insidious thoughts such as "if flies this well at *1:3.5 scale, how much better would she be at 1/3rd?"* In the old days such thoughts as those could be easily deflected on the basis that it would be a real pain in the derriere to go about scaling up the plan with ruler and pencil, but the advantage of CAD is that the whole thing can be done in minutes with a few clicks of the trusty mouse. Thus it was that the building of Topaze number three got underway.

Based on plenty of previous experience, I knew the larger model could be built with exactly the same dimensioned materials, and that the twin 14mm wing joiners would be adequate too, so it really was a case of déjà vue. It might be worth reflecting on the massive changes to model design with the advent of the personal computer and the A4 printer. The Topaze's fuselage formers were originally designed in *DevFus*, a computer programme written specifically for this purpose. Not only does it draw the formers, but also the jigging supports that allow you to build the fuselage nice and straight,

Author with the two early versions of the Topaze.

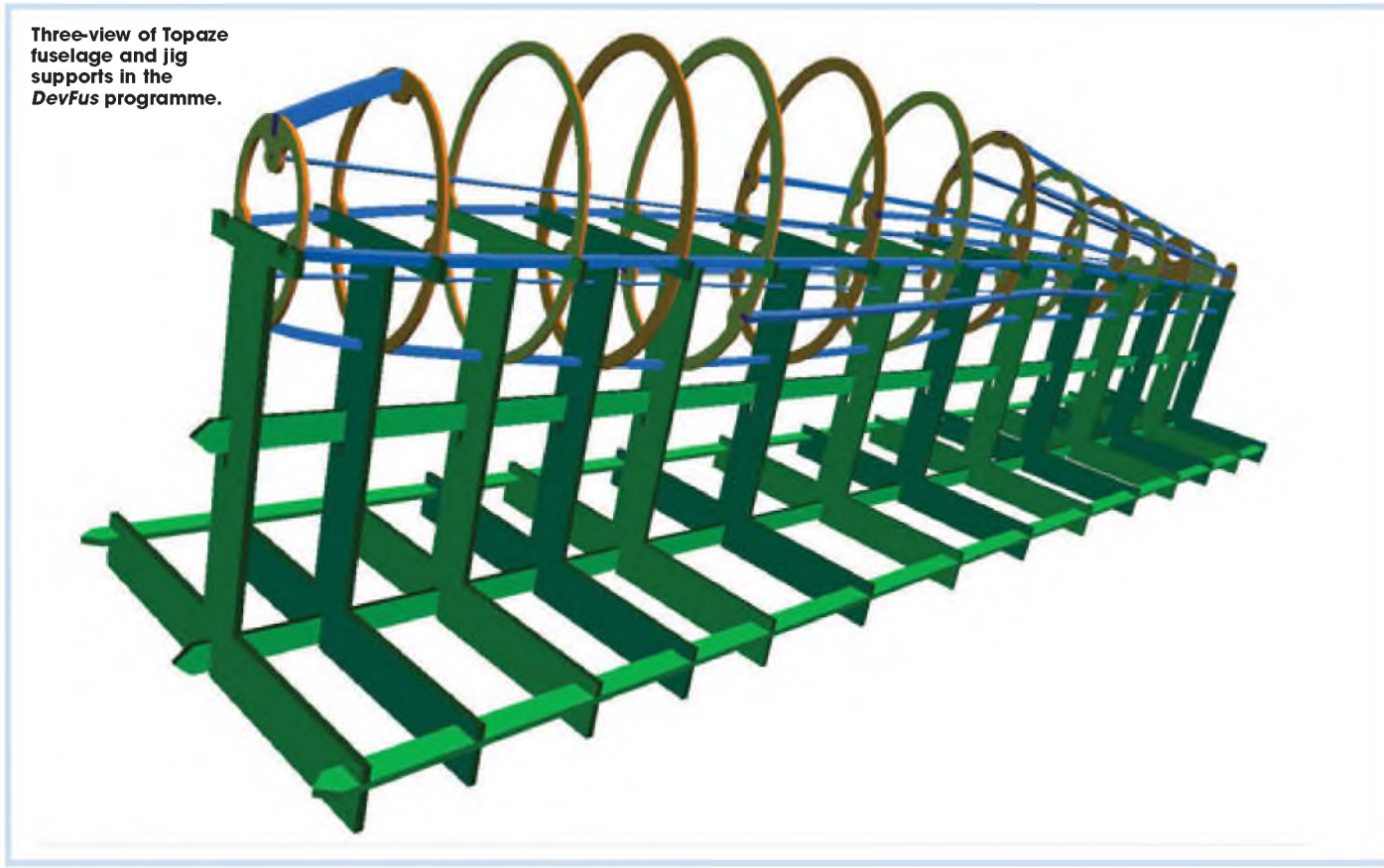
and also to fit the fin and tailplane at the proper rigging angles relative to the jig bed.

I may have mentioned the jig before; this is made up from two pieces of right-angled Ali bolted together to leave a slit in the middle, down which the bolts that hold the right angle brackets (to which the jigging supports will be attached) can be slid up and down the desired stations. A steel rule is attached to the jig bed to allow the accurate placing of the formers in their desired positions.

Most of the parts for the Topaze will fit on a piece of a A4 paper, those that don't will simply require a position mark to be added to allow the two sheets to be joined together. Use of a fuselage jig removes the need for a fuselage plan, but the wings are a different matter.

Yet another computer programme, *Compufoil* in this instance, is used to both plot the ribs and draw the wing's planform with the rib stations on it. I have found that by importing the plan into *Adobe Illustrator*, it can be moved as necessary over the A4 template and the pages printed out in double quick time, especially if you set your printer to 'draft' mode. (You can also print out the raw wing planform and ribs in A4 direct from *Compufoil* complete with registration marks for easy joining) Now you have twenty or so pieces of A4 paper waiting to be joined together, which is not as daunting as you might think.

The secret is twofold: first you print out each piece with plenty of overlap to allow for correct alignment. Then, you use a straight-edge to align the spars or the LE, whichever is the most convenient as you go along. Masking tape is excellent for the joining job, being much easier to lay flat than Sellotape. It is the ease with which you can modify your drawing and quickly print out the parts you need that is the essence of CAD, and it just goes to show that if a crusty old shellback such as myself can do it, then there must be hope for us all. Meanwhile, the bigger Topaze went together with the ease born of familiarity until, just before Christmas, the finished product lay on the bench all shiny and full of aviation type allure. After a brief pause, the winter monsoons have



Three-view of Topaze fuselage and jig supports in the *DevFus* programme.

1/3rd scale Topaze under construction on purpose-made aluminium jig .

The finished 1/3rd scale version of the Scheibe-Loravia Topaze.

1/3rd scale example of the pilot figure from *Tailored Pilots*.

reinvigorated themselves, so the maiden flight will have to wait, but as I am now freshly retired, I sincerely hope to make the most of the first opportunity that comes along, even if it should be during the week...!

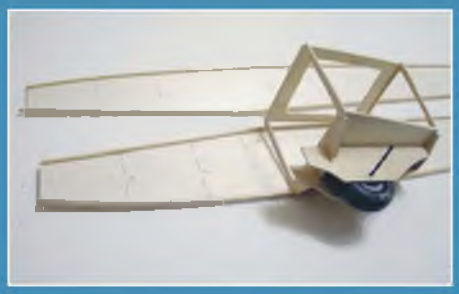
Manning the office

There can be little doubt that the finest scale model ever built would still be somewhat tarnished if the figure in the cockpit didn't match up to the quality of the airframe. Many people have the patience to build their own pilots, but unless endowed with the skills of a professional sculptor, often fall short of producing a convincing head and face. It is extraordinarily difficult to find a commercially produced pilot figure with a high degree of realism, and in the scale gliding world the top-of-the-tree item has been, up until now, the pilot figures produced by the German *Axel* concern. These are of an unquestionably high quality, but suffer from limited production with a long waiting list, and come with an eye-watering price tag. Now, *Tailored Pilots*, a subsidiary of *YT International*, has entered the fray with a range of pilots of their own, ranging from 1/6th to 1/2 scale.

Needing someone to man the Topaze's office, I availed myself of one of their 1/3rd scale pilots, and I must say he really does look the part. Although the arms and legs are position-able to a certain extent, the posture and neck positions are fixed, and it's here that the 'tailored' part of the company's name comes into play. The figures can be built to order, requiring the customer's input as the type of model and the space into which the pilot must fit. The prices reflect the quality of the product, so don't expect bargain basement, but if you have poured your heart and soul into your scale pride and joy, you might just want to finish the project off in a suitable manner...

Thinking the unthinkable

Hang on to your hats now, I'm about to relate events that to some might verge on heresy. It is a fact that on some days and in some situations, it's very difficult to get a pure glider aloft. It may be that the wind is non existent, so the slope is out, and the tug pilot has a case of the sulks, so flat field flying is out, or it may be that you live in a part of the country when neither option is available anyway. So what is the answer? Well, for some time now people have been doing the unthinkable, they've been



Basic parts of the 1/5th scale Duster fuselage.

Cockpit fairing framework for the BJ-1 Duster.

Two electric Dusters, the 6th scale version in the foreground.

sticking a motor in the front a pure glider. Strangely though, fact and fiction have been gradually converging, as it is now quite possible to buy a full-size glass sailplane with 'sustainer' in the nose; this being an electric motor with a fold-away prop...sound familiar?

With the amazing availability of all sorts of electric power systems these days, the way forward seems a no-brainer, but a little bit of research shows that although the power train is relatively cheap up to a certain model size, once you go over that size, the price increases exponentially. Thus it was that I eventually chose to electrify the *California Sailplanes* BJ-1 Duster at 1/6th scale, as mentioned several issues back. The model performed extremely well, if a tad fast in flight and was somewhat overpowered with the electric gear I had chosen due to my lack of experience. It was almost inevitable, then, that the thought of scaling the plan up to 1/5th, but using the same power train should occur to me one sleepless night...

As previously mentioned, scaling up a digital plan is a relatively easy process, so construction soon began. As with the Topaze, the size was larger, but the material dimensions were substantially the same, so the combination of more benign Reynolds numbers, and a lighter wing loading should, in theory at least, bring about a more glider-like performance.

The chance to put it to the test came about on a bright and breezy New Year's Day at White Sheet Hill in Wiltshire, after what seemed like the longest monsoon in UK history. A brief hand launch on the flat (boyhood habits die hard!) showed that everything was more or less in order, so the taps were opened and away she went. As predicted, everything happened at a slower pace, and although that has been the only flying session with the new model so far, she looks to be another keeper, as they say. As many before me have discovered, an electric glider is an excellent no-fuss way to fly, and it's not the sound barrier that prevents the building of a 1/4 scale version, but rather the price barrier!

Tailpiece

The occasion of the Duster's maiden flight also provided the opportunity to maiden the 3rd scale Topaze. She, too, proved to be an excellent flier, slower and even more scale-like that her two previous stablemates. Two maidens on New Year's Day seems an excellent way to start the year, and I hope it continues along similar lines... ■

The 5th scale Duster on its first flight on new Year's Day.

The 3rd scale Topaze enjoys the first day of 2013.

THE QUIET ZONE

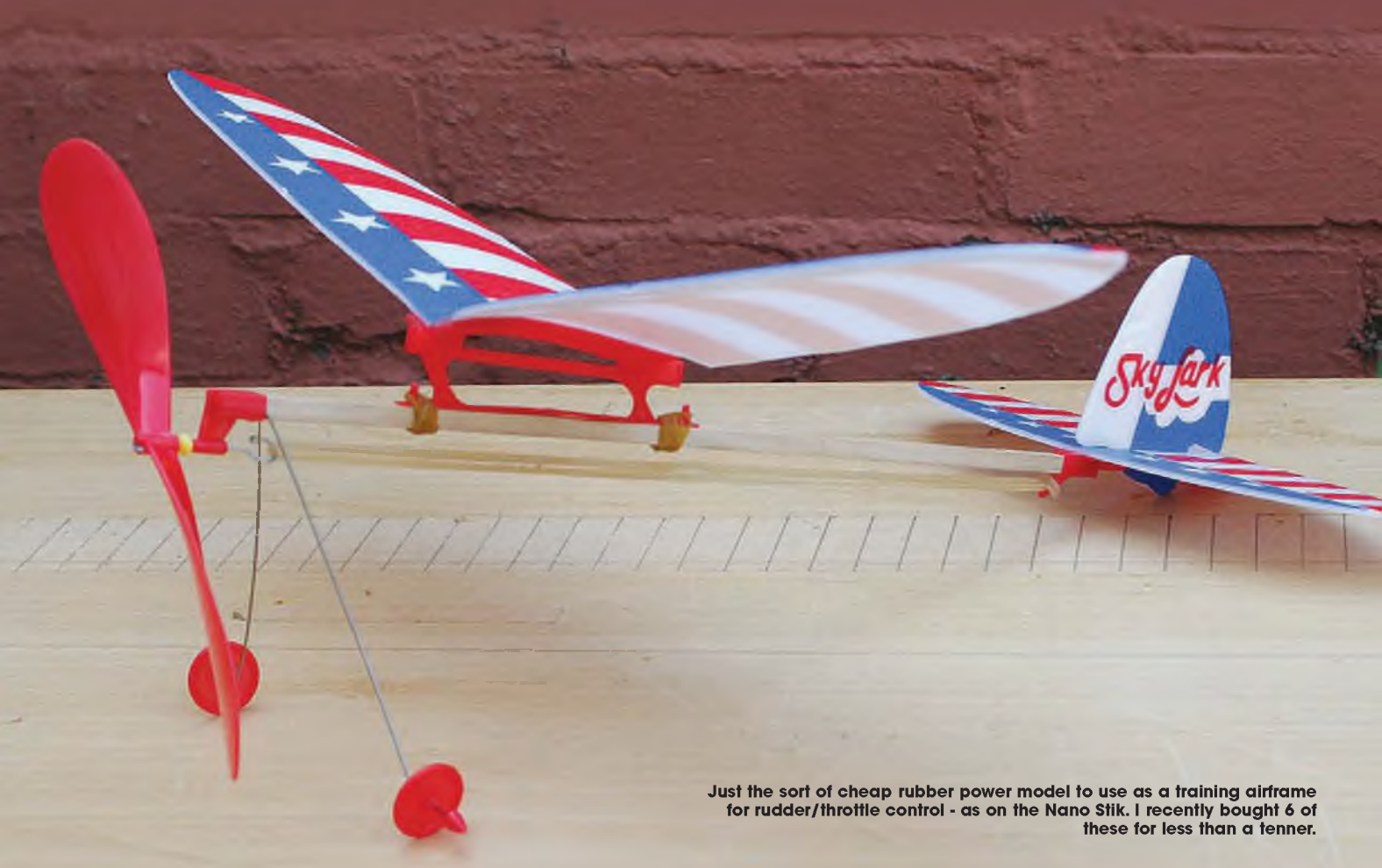
R/C SCALE ELECTRICS BY PETER RAKE

As I sit down to write this, Christmas is just a few days off. Yes, I am fully aware that it will all be long over and done with by the time you get to read these words of wisdom, but that's how column writing works; copy dates are at least two months before the item actually appears in print. Hopefully you got all the wonderful new modelling goodies that you were hoping for and that you haven't managed to destroy most of them by now.

That, of course, won't be too likely for the experienced fliers amongst us, but is a distinct possibility for those of you new to the hobby. Yes, it's a sad fact of life that model longevity is directly related to modelling and flying experience. The longer you've been at this 'ere modelling lark, the longer your models are likely to last.

Now, as those used to my ramblings may already have sussed out, all this talk of novice fliers can only mean one thing; our beloved editor has again asked me to explain, in my own stumbling fashion, a few more of the basics of electric flight. It's absolutely no use you more experienced types groaning, that's what he asked for, so that's what you'll get.

Because what I have in mind takes a slightly convoluted path (nothing in the least unusual there then) you'll have to forgive the fact that there will be many references to non-scale models. Since I'm



Just the sort of cheap rubber power model to use as a training airframe for rudder/throttle control - as on the Nano Stik. I recently bought 6 of these for less than a tenner.

trying to guide novice 'electolites' towards building, and flying, successful models, it is a necessary evil. Bear with me through this and we will eventually get to scale models.

GET OFF YOUR ARF

If you're really new to this hobby, there's a more than fair chance that your route into it was via one of the many excellent RTF (Ready To Fly), or ARF (Almost Ready to Fly) models that seem to fill the shelves of model shops these days. There's also an equally fair chance that by now, all you have left is a severely unwell ARF, or one so heavy with glue that it no longer flies well enough to make it worth the effort.

Nice as these models are in the right hands, they all too often end up in the hands of someone who doesn't really know how to get the best from them; even worse, in the hands of someone who hasn't the first idea of how to fly them.

In the latter instance, it was probably a model totally unsuitable for a novice flier, sold simply because the prototype was famous, glamorous or extremely fast. Yes, you, you know exactly what I'm talking about. We've all heard the stories of the non-flier who absolutely must have a model WW2 fighter. I know he won't be able to fly it, you know he won't be able to fly it and, it would seem, the only person who doesn't know that its life expectancy can be counted in seconds is the person actually buying it. Afterall, it's a toy aeroplane, how difficult can flying it be?

I've worked in the retail section of the model industry and I've actually seen it happen. They come into the shop never having flown anything more technical that a kite, but knowing that they'll have no trouble with a Spitfire. Besides, they're leaning to fly with one of the few ARF models actually suited to the complete novice, so will be fine in a couple of weeks. 'Slow-Stik' to Spitfire? Not really a natural progression, is it?

Well, fortunately for the rest of us, either the remains of the 'trainer', or the unstarted 'next model' can usually be acquired quite reasonably. As long as the gear to the ARF/RTF is still working properly there are some bargains to be had by new modellers who really are prepared to put in the time to master the intricacies of flying a model properly. Yes, I'm afraid that means having it go where you want it to for more than 20% of the flight, rather than just reacting to what the model wants to do for the remaining 80%.

By the time you've reversed those numbers you're probably just about ready to move on to something a little closer to your dream model. Not ready for it yet, but getting closer. A simple scale model, perhaps, rather than just another assembly of moulded plastic parts that cost the earth to keep replacing.

WHERE'S ALL THIS LEADING?

Stop asking daft questions, I'll get to it eventually. Since I'm supposedly talking to novice pilots here, the rest of you can just mill around for a while. You'll either be one of the few who so enjoyed the feeling of those few minutes you were flying your model before it terminated itself and you just have to do more, OR one of those lucky enough to know someone virtually giving away just such a model.

The star prize of my Christmas presents, the little Axion Polikarpov I-15. Totally typical of the many RTF models available.

If the Nano Stik was your flying toy style gift you are lucky. A nice set-up on 2.4 GHz and with replacement actuators that use plugs and extension leads.

50p for some foam plus a little glue and paint and you have a rather nice home grown model for thrust steering equipment. Certainly cheap enough to experiment with.

Well, you could just keep shelling out for replacement parts until you get the hang of it, or you could take what you have by way of radio gear and actually BUILD a model to put it all into. Yes, I appreciate that may come as something of a novel idea, but surely it's better to repair a balsa wing, fuselage or whatever than buy another plastic one? For a start it's likely to be cheaper, but mostly because you'll actually learn something about modelling. No you fool, not prancing around on a catwalk or flashing your bits for the papers. We may be talking about bits of a model, but those aren't the sort of bits I had in mind.

So, whichever of the two aforementioned routes have got you to this point, it's time to start thinking about what to do with those functioning radio components and somewhat less functioning foam bits. What to do with the crumpled foam is easily answered; throw it in the bin. It's what happens to the radio gear that matters at this stage of the game.

Once you've checked that it really is all functioning as it's supposed to, and replaced any items that are performing in a less than optimal manner, it's time to start looking for a suitable model into which to transplant your radio gear.

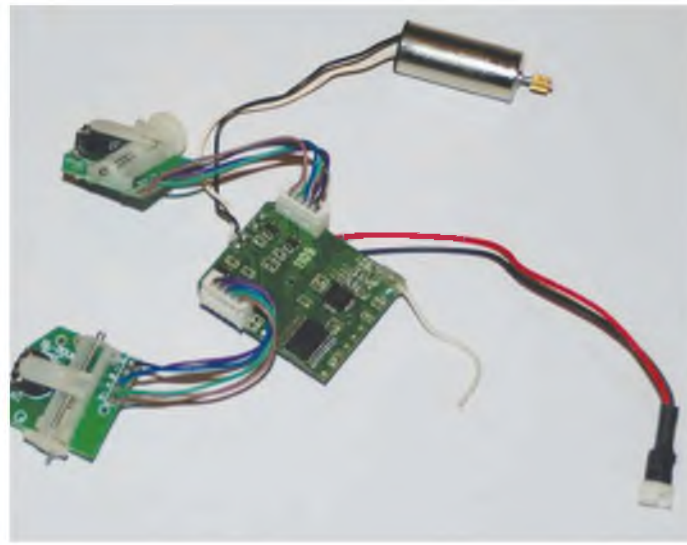
WHAT MODEL?

Not too surprisingly, my first answer to that question really ought to be along the lines of it being one of my designs, but that might not necessarily be the ideal route for you to take. There are definitely some very easy to fly models amongst them, but they may not actually suit the equipment you have in front of you. This will, of course, depend on what model the gear was salvaged from in the first place. That will determine how big the new model is to be, how many channels you have available and what type of servos it uses. Since this could get quite deep from here on I'll work through things in stages and keep it as general as I possibly can.

Starting at the very minimal end of the scale, let's assume the model you started with was more of a flying toy than a real model aircraft. Basically you are likely to have just two channels with which to concern yourself and need a very small, light model into which to fit them. Unfortunately for you, this is probably the most complicated gear for which to substitute with a suitable replacement simply because it has to be so small and light. Undoubtedly it can be done, and I have built some very nice little models for just such gear, but you need to understand the limitations of the equipment before charging ahead.

This type of equipment is likely to fall into one of two types. You'll either have a motor unit, receiver and magnetic actuator (that funny looking little thing that made the rudder waggle), or you'll have a receiver and two motors that steered the model by varying the thrust. Either can be used to good effect in a homemade model, but you have to watch the weight, size and construction of any model you build. In either event, since you actually need something with which to learn the basics of flying a model, it really needs to be more along the lines of radio interrupted free-flight. In other words a model that will fly itself but allow you to determine where it flies, how high it flies and when it lands.

Typical of what you will salvage from a 3 channel RTF model. The receiver has two servos and a speed controller built into it and runs on a single LiPo cell.



Even helicopters can play their part. This gear was salvaged from a single rotor, 4 channel helicopter and makes for good 3 channel aircraft gear.

Unfortunately, at this level about all you can do is look around, see what others are doing with similar gear and experiment until you get it right. On the bright side, materials are cheap and you'll use very little of them to produce your models. Although far from scale, some of the cheap models intended for rubber power make highly suitable airframes for your donor radio gear. There are even some scale rubber power models that could be used.

The only real warning I can offer here relates to the magnetic actuator I mentioned earlier. Be EXTREMELY careful how you remove it from the injured model. Actuators work as tiny electro-magnets. You pass a current through the coil and the magnet attached to the control surface (usually the rudder) moves within the coil. Yes, these are very simple devices, but also extremely fragile. As you can probably imagine, any break in those hair-fine wires between the coil and the receiver somewhat complicates passing a current anywhere that will do any good. So, unless you're much better at soldering than I am, never pull on those wires to get them out of the model. If they pass through a tube it's probably far better to leave them that way and incorporate said tube into your model. A functioning actuator carrying the weight of a carbon tube is far preferable to a non-functioning one without the tube.

Removing the gear from the trust-steered type models is much easier, but yields heavier gear that is a little more restrictive of what it can be fitted to. However, it is pretty rugged stuff and many differing models have been successfully flown using this equipment.

MOVING ON UP

The next step up the chain of deceased RTF models that has generously donated its organs, would be one of those lovely little micro RTF types of which we see so many. These usually have two linear output servos mounted onto the receiver board and some have other servos plugged into sockets on the board. Now we are starting to talk about REAL radio gear that can be used in a multitude of different model types.

Yes, the models will still need to be quite small and lightweight but, because the radio is of 'conventional' format, everything learned here can be applied to much larger models. As such, this seems like a good point to finally get into what I intended to write about. Oh come on, so what if it's taken me more than half the column to get to the point, after all what else do you have to do that's better than reading this? Oh no you don't, NOTHING beats reading this.

So, before I plunge into the intricacies of structures for electric scale models, let's just take stock of what equipment we actually have before us. If your starting point was a three function RTF model there's a fair chance you'll have a geared, brushed motor unit, a receiver 'brick' and at least one single cell LiPo. Alternatively, there's just a chance that your 'donor' model used a receiver and separate servos, but the principle remains the same. Similarly, it won't really make too much difference if you started out with a four function model. All that does is that you'll have an extra servo to play with.

From our point of view, it isn't how many channels the original model used that determines our next step, but what size motor it had fitted. Some, like the *Vapor* and *Minium* ranges use a geared 6 mm motor that is, to be charitable, not the most potent power package imaginable. The terms skin, pull and

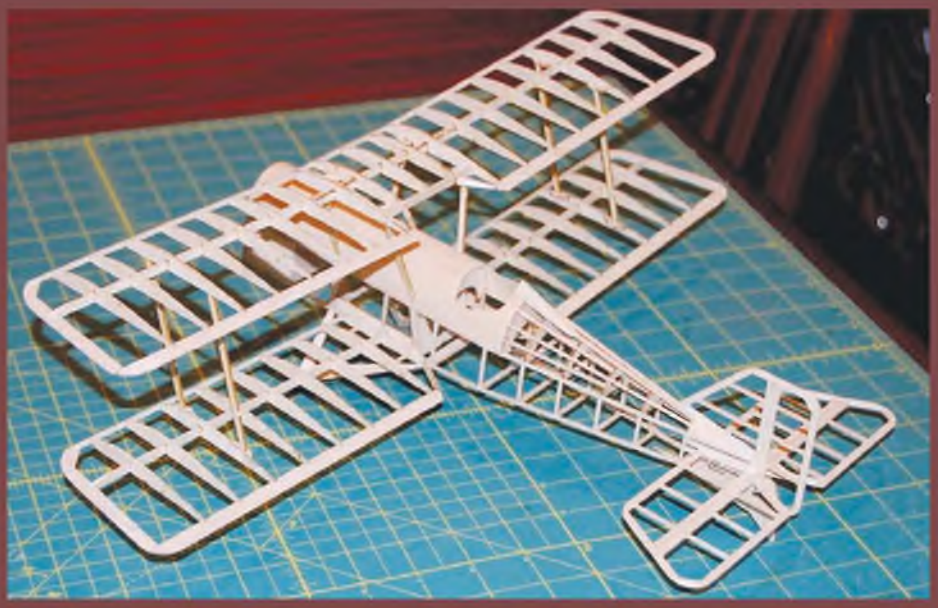
This 18" span SE5a uses gear very similar to that seen elsewhere, but with a more powerful motor than supplied with the original model.

rice-pudding leap immediately to mind - as in it won't pull the skin off a rice-pudding. (I put that in there for our Colonial friends who may not have got the point otherwise.)

Seriously though, you really do need to know which motor you have in front of you before you decide anything else. Think about it logically; if your original model weighed in the region of 20 grams and flew quite slowly on large wings, it's highly unlikely that the motor will suit a faster flying model of twice that weight. Similarly, if you can't visualise yourself building a 20 gram scale model, it's time for a bit of a re-think. There's no need for gloom though because despite the slightly puny motor fitted to some models, most receivers are capable of using much more powerful units.

So, if you feel unable, or unwilling to build very light scale models, but still want to use the original motor, there are various non-scale options available. By their very nature, rubber power models are designed to be as light as possible and use minimal power for much of the flight. Lightweight, not difficult to build (mostly) and with many attractive designs around, they are well worth considering for your first, faltering steps towards building your own models.

If your tastes lean more towards scale models, rubber power types are still a viable option, but many would benefit from a slightly larger motor unit than that supplied with your RTF model. Fortunately just a few pounds (the sort you spend, not those you gained by eating too much) will provide other motor units much better suited to our needs. Check around to see what maximum current the built-in ESC (Electronic Speed Controller) will handle safely and then start looking for a 7 mm, 8 mm or 8.5 mm motor unit with which to replace the original 6 mm unit.



Finally, what this was intended to be about: typical reinforced rubber power style construction suits these lightweights nicely.

These measurements do, of course, refer to the diameter of the motor fitted to the gearbox. Just be aware that not all motors are created equal. Some 8.5 mm units are quite a bit hotter than others and may prove more than your receiver can cope with. Be careful about motor choice because once the ESC has released its' 'magic smoke' it's of precious little use for anything.

If your motor unit simply plugs into the receiver, try to get one with the same plug, or simply cut the plug from your puny motor and solder it onto the leads of your new motor unit. It won't matter which way round you solder the wires because the plug isn't polarity dependent. It can be plugged into the receiver either way round so if your motor runs backwards one way, turn the plug round and you have a motor that does what it's supposed to do.

Okay, having run out of room again I'll have to leave it there for the moment. Next month we'll be taking a closer look at ideas for models to suit the gear discussed here and what I feel are good structures for creating those models. If you want to contact me in the meantime, you'll find me at *PETERRAKE@aol.com* ■

If you prefer to keep it simple this little foamy uses a Vapor brick and geared 7 mm motor. It cost around £3 to build so you can afford to use it as a trainer.

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