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BOWERS FLY BABY BIPE

from Netherlands

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FLYING SCALE MODELS - THE WORLD'S ON

ON THE COVER

Only one Bucker Bu182 Kornett ever flew, although four were actually built. Dr.Mike Hawkins F.RAeS built this 75" span model for .90-1.20 cu.in four stroke power and presents the construction feature, with plans, in sthis issue.

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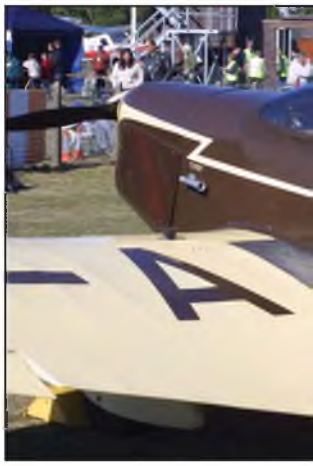

on...

LY MAGAZINE FOR SCALE MODEL FLYERS February 2012 No.144

CONTACT

The task of producing FSM each month is, quite often, a bit like going to Heaven, without having to pay the toll. It takes me to so many places and gives me access to so many interesting people which otherwise not be the case - and all to do with my greatest interest in life - aviation and aircraft.

The latest such experience came thanks to our feature this month on that modellers' perennial favourite, the Westland Widgeon, which is the subject of this month's full size free plan feature. We always like to expand such features as much as possible to assist would-be builders along the road to completion of the model.

The Widgeon feature led us to search for a full size example of the aircraft, to photograph for an *In Detail* presentation and that, in turn led us to the aircraft restoration workshops of *AeroAntiques* near Southampton. It was made clear to us beforehand, that their Widgeon G-AVHS was very much a work-in-progress restoration project rather that a complete aircraft, but since this was the only example of the type we could track down, the drive there seemed well worthwhile.

And so it was, to be able to see first hand the work of dedicated craftsmen bringing a long-since decommissioned airframe back to life as recorded in this issue.

Even more so too, to be able to view other amazing restoration and recreation projects, to full flying status, ongoing under the same roof. Some of it is truly gob-smacking, BUT, quite confidential and thus unavailable for photography.

Nevertheless, it was a day well spent - wonder where the heavenly quest will take the FSM camera next?

BARRACUDA BONUS...

Back in last October's issue of FSM, we ran news of the Fleet Air Arm Museum's Fairey Barracuda 'remains', about to go on display at Yeovilton, Somerset. As we indicated at the time, the WW2 era Barracuda torpedo bomber was neither the most elegant shape ever to grace the sky, nor the most popular aircraft ever operated from an aircraft carrier.

Beauty, or maybe just attraction, is however very much in the eye of the beholder and our piece certainly struck a cord with Davide Merlini in Italy, whose 74 year old grandfather, a long-time aeromodeller, has now finished his 20-year project for a control line model of the Barracuda.

For a control line scale model, it's a substantial size, spanning 70" (1,778mm) and has a .60 (10cc) engine. It features fully retracting undercarriage, plus operating flaps and throttle control operated from a four-line control system - two for the basic elevator control plus one each for engine/flaps and retracting undercarriage.

It must also be said that it is an outstanding example of the scale modellers' art - but then the pictures here speak for themselves.

At such a size, we bet there's quite a put on them thar lines!

RAF MUSEUM GETS RESTORED COMPER SWIFT

Co-incidences can be quite surprising, particularly this one, for the on-sale date of FSM December issue on November 10th, which presented Phil Kent's 1/3rd scale Comper Swift, was within a week of the unveiling, on November 3rd, of the latest addition to the Royal Air Force Museum, Cosford, of their newly restored, Comper Swift CLA.7 G-ACGL. The aircraft was unveiled by Alex Henshaw Junior, son of Alex Henshaw Senior, the original owner of the aircraft.

Alex Snr gained fame pre-WW2, as an air racer and long-distance record setter who later, during WW2, went on to test more Spitfires that any other test pilot. Alex Henshaw flew G-ACGL in several cross-country air races including the 1933 Kings Cup Air Race, when he won the Siddeley Trophy.

Henshaw Senior sold G-ACGL in 1934 and it passed through four more owners before reportedly being scrapped in 1942, but the remains were saved and secured by various aviation groups until 2008 when its parts were donated to the Royal Air Force Museum by Stanley Brennan of Manchester. Thereafter, the aircraft underwent a full restoration to static display standard by Skysport Engineering, Bedfordshire.

Of the 41 Comper Swifts made, with either Pobjoy radial or DH Gipsy engine, only eight remain - four in the UK, one in Argentina, two in Australia and one in Spain.

Comper Swift G-ACGL is now on permanent display at the RAF Museum, Cosford. The museum is open daily from 10am and admission is free.

MASTER MODELS *by Alex Whittaker*

Now you're thinking to yourself: *"That's not a Bowers Fly Baby ..."*, well, you'd be wrong!

Bert van Eijk's Stunning BOWERS FLY BABY Biplane

In scale matters, things aren't always what they seem!

After a bit, you begin to think that you know the classics, but every now and then, a model comes along that confounds and perplexes. Bert van Eijk's beautiful Bowers Fly Baby Biplane is just such a model. After all, the Bowers Fly Baby is an in-line-engined slab-sider monoplane; yes? Well, the answer is, in Holland, they may not be.

Roland's full-size

Roland Haarlem is a Dutch full-size pilot who wanted to build a unique example of the mega-famous Fly Baby home-built marque. However, he decided to add a US Le Blond radial engine, and to fair out the original flat fuselage lines with curved stringers. As you can see, the result is adorable. It updates the lines of Pete Bowers' 1960 original in a completely new direction. Noted Dutch scale modeller Bert van Eijk saw the full-size design, and reached for his building board. In fact, Bert's model is based on Roland's original drawings, so it is very accurate indeed.

Bert's model

This is a beautiful Class 1 scale model, of 1.8m span, built to 1:3.6 scale, and powered by a Laser 150. It is finished in the full-size's mock-US Mail livery.

Construction

The model was scratch-built by Bert to his own plan, based on Roland's full size CAD plans. She is of traditional construction throughout, although, when first completed, she was a bit tail heavy. Therefore, Bert redesigned the tail-section, mostly in balsa wood. Making the tail lighter allowed him to remove some lead ballasting from the nose (which was actually held within the dummy engine). He was able to do this, yet still preserve the correct fore/aft balance point. The scale detailing is exquisite, the overall fit and finish is impeccable and Bert used his trusty lathe, with milling attachment, on much of the scale detailing.

Scale engine

Bert designed and built his own dummy Le Blond radial engine. The cylinders are discs of plywood, and the

Lots of detailing on the undercarriage.

Bert built his own scale dummy engine using a Pringles crisp container for the basis of his crankcase.

The pilot in his office, surrounded by all that accurate scale clutter.

At first, a Bowers Fly Baby with radial engine takes a bit of getting used to.

Bert brought his Fly Baby Bipe over from Holland to the BMFA Nats in August 2011.

Really, this Fly Baby has it all, a round engine and two wings.

Spoof Air Mail badging adds character.

This "bomb" is a luggage container on the real thing.

Bert fabricated this elegant exhaust.

crankcase is made from Pringles crisp packaging. Miraculously, this had the correct scale dimensions. The cylinder and valve covers are based on hand-made wooden plugs, from which moulds were taken to cast the final epoxy and micro-balloon duplicates.

Bomb

The underslung 'bomb' on the full size home-built is actually a luggage carrier. Currently, it houses the full size aircraft's starter battery.

Covering and finishing

The model is covered in *Solartex* iron-on

Crisp louvre and legending detailing. Note Le Blond engine maker's plate.

MODEL SPECIFICATION

Roland van Haarlem version of the Pete Bowers Fly Baby Biplane

Model Plan:	Bert van Eijk
Builder:	Bert van Eijk
Scale:	1:36
Wingspan:	1.8m
Weight:	8.2kgs
Engine:	Laser 150
Prop:	18"x8" Classic
Covering:	Solartex

The rigging, and its fittings, are particularly impressive.

This shot gives you some idea of the excellent finish, but also the line of the stringers.

The whole model has the feel of a pampered home-built.

The Fly Baby Bipe wafting by - like the original, the biplane version is less efficient than the monoplane.

Bert also fabricated the scale tailwheel assembly.

covering, and spray-finished with *2-K* car paints.

Wheels

The wheels are entirely home made, including the home-moulded rubber tyres.

Exhaust

Bert designed his own exhaust. He fabricated it from stainless steel, which was then silver brazed.

Pilot's notes

The model impressed all of us at the BMFA Nats this year with its steady and scale-like flying style, despite the appalling gusts. To quote Bert:

"She flies like the real home-built, and shares the real one's reluctance to gain height!"

Bert also reckons that the large radial engine, plus all the struts and flying wires, greatly add to the drag. Mind you, in the air, all that is forgiven, since she looks utterly convincing. And that, after all, is the acid test of a scale model. ■

The pilot has full set of instruments.

Bert (left) competing at the 2011 BMFA Scale Nats at RAF Barkston Heath.

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by Dr. Mike Hawkins FRAes

With photos by Kuhn Sukasom Hiranpahn,
Editor of RC Core magazine, Thailand.

Bucker Bu 182 Korn

Try this manageable-size 75.5" (1918mm) span elegant German 1930s trainer for .90 - 1.20 size four strokes

Some time back I built a Bucker 180 Student to 1:4.5 scale, which flew rather nicely and is still available in the FSM plans range. I have now made the rather smaller, single seat Bucker Kornett using built up balsa wings instead of foam. These work equally well and do not flap quite so much when flying through turbulence!

The wings split for transport and the Kernett flies just as nicely as the Student.

The original (full size) aircraft was designed for simple, cheap construction with minimum of double curvature, which benefits the model. Oh for the simple life! The same Enya 90 or 120 motors, as were used in the Student are used for the Kornett. They would make a nice pair, if only the Student had not succumbed to a radio failure sometime back, during a visit to USA after I flew it at the Quarter Scale Meeting in Las Vegas.

These days, airlines are not so tolerant about taking large model crates as passenger-checked baggage. It was fun while it lasted.

Incidentally, queries that I have received regarding some other of my models in the *Flying Scale Models* range, would suggest that some experience building scale models from kits or plans is advisable before tackling a fairly major project such as the Kornett.

Options

The wings split in the middle into 38 in. sections for transport and it is necessary to remove the undercarriage legs to do this. If transport is no problem, then the wings could be made in one piece (e.g: you drive a container truck). Practically any 90 or 120 four stroke engine should be suitable to power this model.

Flaps are fitted, but were by no means necessary on the original aircraft. They could safely be omitted on the model. The model balances as shown, but with batteries, wires

and magic, could well use electric power. However, they DON'T sound right (mutters into his beard)!

The model may be built with closed or open cockpit as you wish. Note, with an open cockpit your cockpit detail has to be more carefully done!

Construction

My way of doing it. Yours may be better.

1. Fuselage.

This is made in three sections, which are then joined together.

Old fashioned engine bearers are used in the nose, as these give strength and the right thrust and downthrust can be built in. I use 6-32 x 1.25 in. truss-head bolts and

TYPE HISTORY

THE BÜCKER 182 KORNETT

Carl Clemens Bücker was born on 11 February 1895 With the rank of Oberleutenant zur See, he served as a pilot with the Imperial German Navy in World War I.

The 1919 Treaty of Versailles forbade aviation in Germany, so he went to Sweden and flew as a test pilot. He founded Svenska Aero AB and built Heinkel floatplanes under licence. He began to develop his own aircraft and in 1932, sold the company to Swedish Railway Workshops where it became known as SAAB, still very much in business today, selling fighters to the Royal Thai Air Force (amongst others).

With his Swedish chief designer, Anders Andersson, he moved back to Germany where aircraft construction was starting and their first production, the two seat Bü 131 Jungmann was an immediate success. This was followed by the single seat Bü 133 Jungmeister, which set a world standard for aerobatic flying.

Incidentally, all Bücker's aircraft were named after Naval Cadet ranks. He died in 1976, aged 81.

The Bü 134 was a high wing side-by-side two seater, like an aerobatic Piper Cub, but was not a success. Thereafter, the Bü 180 Student was a two seat light aircraft that made a number of long distance international flights, although the newly emerged Luftwaffe showed no interested.

Next, Andersson came up with the Bü 181 Bestmann, a monoplane side-by-side trainer to supplement the Jungmann. It was flown by General-Luftzeugmeister Ernst Udet and ordered as a standard trainer for the Luftwaffe. Production continued in France, Sweden and Egypt after World War II.

Meanwhile, Anders Andersson designed a single seat version of the Student , the Bü 182 Kornett as a low cost fighter advanced trainer. Bückers were develop-

Look no hands Mum! The open-cockpit version of the Kornett - clearly a nice stable aeroplane to fly, but nevertheless very aerobatic

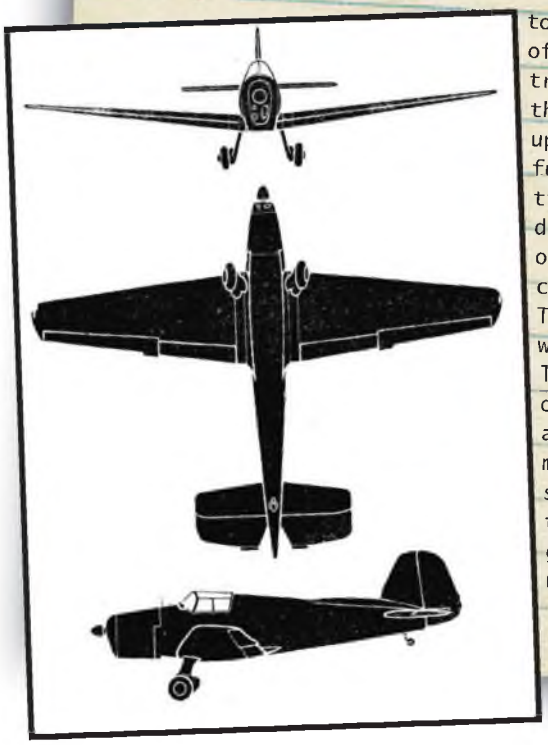
TYPE HISTORY CONT.,

ing their own 80 h.p. motor for this aircraft, but as it was not ready, a Czech 60 h.p.Walther Minor engine was fitted. Four were built, but as far as is known, only the first one flew. It was reported to have an excellent performance and full aerobatic capability. Perhaps to make it more resemble the Bf 109, it was fitted with flaps and possibly, as an afterthought, a poorly fitting and sideways hinged cockpit canopy.

Nose section on the wnclosed cockpit version.

However, it was, by later standards, an 'ultralight' with a flying weight of 450 kg. (990 lbs)and only 60 h.p. The Messerschmitt to which the pilots would progress, had 5.6 times the loaded weight and 17.5 times the power! Small wonder the Lufwaffe decided to stay with the excellent Jungmeister.

Perhaps the secret of the performance of the Bückers was Andersson's ability to design for maximum strength for minimum weight, with crisp and positive control action. In addition, the wing design of the monoplanes features a bi-convex section at the root, changing to a mildly undercambered section at the tip together with 3° of washout. The trailing edge of the wing was upswept at the fuselage junction by a dihedral break just outboard of the centre section. This fitted the wing to the lower contour of the fuselage and provided a more elegant solution than the inverted gull arrangement used by the Klemm Company.



captive (T) nuts to mount the motor in the bearers. The tank box is ply, as are the side front fuselage panels while the battery tucks in between the bearers.

The mid fuselage section is from 1/4 in. balsa sheet and allows for fabric covered side panels above the wing.

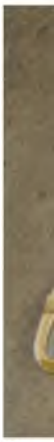
The rear section uses conventional formers and stringers, spliced together with the nose stringers, over F 4. 1/4" square spruce for stringers is very hard to find now. Do-it-yourself shops sell 1/4 x 2in. x 12 ft. laths which can be cut down to 1/4" square with a small (e.g. Dremel) circular saw. Not as strong as spruce, but stronger than balsa.

Install polythene tubes as leaders for the rudder cables and push-rod snakes for the elevator and tailwheel.

Join the three parts together and the upper nose and rear fuselage section can be planked with 3/32" sheet balsa, but using ply panels to support the tailwheel.

The nose cone is fibreglass, about 1/8" thick, say four or five layers of 2 oz. cloth. I used the same Plaster-of-Paris female mould as for my Student.

Basic, unskinned wing panels, showing the landing flap panels.



Fore,

2. Tail
The horizontal stabiliser is sheeted, top and bottom with 1/16" balsa. The fin is fabric covered and the rudder and elevators, fabric covered over a 3/32" balsa core. Rectangular ribs are used, planed down to section after construction.

With the Student, the tail was detachable to allow the model to be packed into a crate. I have not done this with the Kornett as I see no prospect (under present airline conditions) of transporting it in anything other than my Mitsu van.

The stabiliser is mounted on 1/4" balsa strakes attached to the side stringers but should not be glued in place until the wing also can be lined up with the fuselage.

3. Wings
With 1/2" balsa leading edge, 1/4" square mainspasr and 3/8" balsa rear spar, the wings are strong. The leading edge is planked with 3/32" balsa and spar webs are fitted between all ribs. The centre section is planked and capping strips used on open ribs.

Jigging tags on each wing rib ensure that the wing, built on a flat board, will have the correct degree of washout. Pack up the spars to fit.

The wing joining rods are 5/16" ground dural rod, sold in 12 inch lengths by *KS Engineering*. 5/16" carbon fibre rod would do or 1/4" steel as available.

The flaps are made from 1/8" ply, with nylon hinges into scrap balsa. Because of the dihedral break at F4, the flaps are not quite in line with their pushrods. The horn moves in a 1/16" ply box to allow alignment.

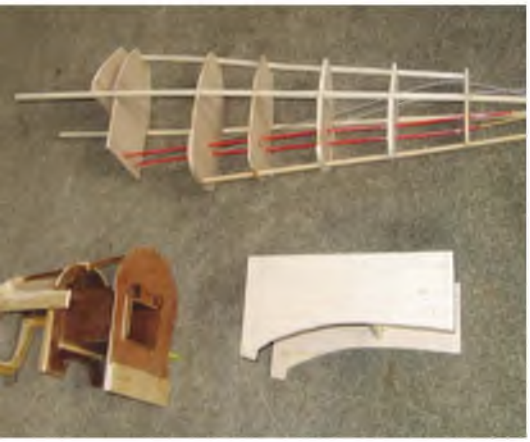
Ailerons are built on a 3/32" balsa core. Aileron servos are mounted on the removable hatch on the lower surface so access is possible. (Build them in with no access and you will need it, as sure as eggs have little chickens in them.)

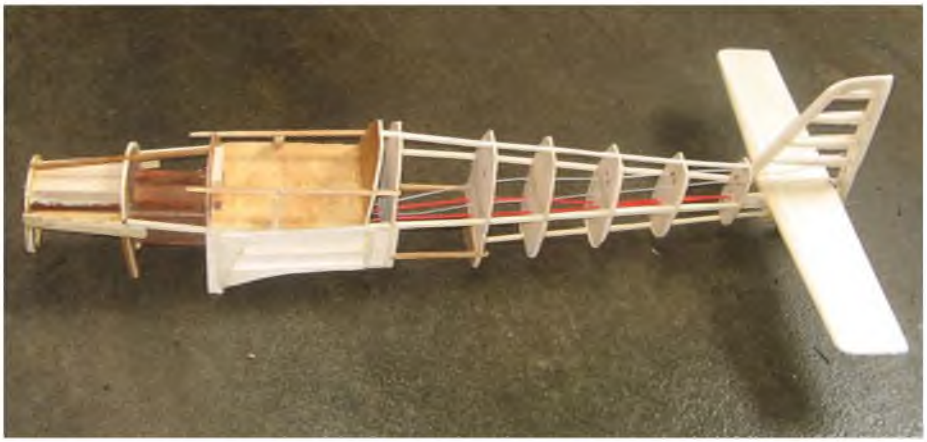
4. Undercarriage
The undercarriage legs sit one behind the other in a slot in a hardwood bearer in each wing. These are held in by two aluminium cover plates screwed to the bearer. The best way to cut the slot to fit, is with a *Dremel* type circular saw.

Brass plates are soldered to the legs to take the upper leg fairing and the lower semi-spat. The fairing is built around the leg, stuck to the tag with Evostick or similar glue. The spat is bolted to the lower tag. The fairing and spat are not stuck together.

I found a suitable fibreglass moulding for the spat in an old ARTF kit, but you can carve polystyrene waste moulds, (blue foam is best), and mould your own with three layers of 2 oz. glass cloth. I used the same 4 in. *Dubro* pneumatic wheels as on my Student.

Steel wire varies from fairly soft to as tough as titanium. Using soft wire will mean that the legs will tend to 'retract' as the model lands. Not good ! With harder wire, it


aft and centre section components of the basic fuselage frame.


Here the fuselage components have been assembled and brought together with the fin and tailplane.

Fuselage mated to the wing, which is now fully skinned, with ailerons and servos installed.

It's really beginning to look like an aeroplane now! The fuselage is fully skinned, tail feathers all in place, engine cowl all doneand the main undercarriage fitted.

Wheel spats for prototype model were canibalised from ARTF kit. Otherwise need to be moulded or carved from block balsa.

ENYA 90 four stroke installation. Note jack plug socket for ignition connection.

may be necessary to heat to dull red in order to bend the wire. After bending, the wire should then be tempered by heating to brighter red and plunging into cold water. At first, I did not do this properly and had to straighten each leg after the first few landings. It was necessary to remove the legs, cut off the fairings and re-temper the top leg bend. The fairings were then rebuilt and so far all is well.

5. Engine.

As with the Student, the model flies equally well with the Enya 90 with a 14 x 7 or the 120 with a 15 x 6 or 14 x 8 propeller.

The cooling vent under the front fuselage is non-scale, but allows adequate cooling for either engine. A remote plug connection is advisable and I use a mini-jack plug on the bat-

Radio and fuel tank installion in the fuselage. Plenty of room there.

Silencer exit and cooling vent under the nose.

tery and socket mounted in the cowl. The tank is a 10oz or 12 oz *Sullivan*, slid into its tank box from the rear.

6. Radio.
I am using *Futaba* 2.4 GHz, six channel with five standard *Hitec* servos and a retract servo on flap, set to give 45° on 'down'.

7. Details.
There is not a lot of surface detail on this aircraft. A fuel sight gauge and filler cap from a toothpaste tube grace the nose cowling. The wing root fairings are single curvature and made from thin ply.

A walkway on the right wing root is made from wet-and-dry paper with a thin aluminium edge and some small screws.

8. Covering and finishing.
Balsa sheeting is used where the original aircraft is ply and fabric where it is "mit Stoff bespannt".

I used some old American *Super Coverite* fabric which has been in my stock for a while and turned out to be a bit short on 'stickum' when finally used. In spite of a dab or two of *Balsaloc,* the wing covering started to separate when I first tried a few aerobatics as is shown in Kuhn Sukasom's photo. It is now stuck down again, but I would use *Solartex* if it is available.

Male and female moulds with the glass fibre nose cone.

The sheeted areas were finished with 3/4 oz glass cloth brushed on with two coats of either Polyurethane or Acrylic water based varnish. This gives a good surface for paint with only a little sanding and is reasonably 'ding' proof.

There is not much choice of colour scheme since only one aircraft of the type, flew. The model was painted with spray-can acrylic paint. 'Mist Grey' is about the right colour for RLM 63 grey.

Hold in some up-elevator and open up the throttle slowly! Designer Mike prepares for maiden flight.

TYPE HISTORY CONT.,

The tip section gave predictable and vice-free handling under 'g'-loads when close to the stall and is perhaps a reason why the postwar Zlin aerobatic airecraft, which used this feature, swept the board in the 1960s.

A friend of mine who flies aerobatics in full size and model aircraft told me that he had flown the Bucker Jungmann and that it was his favourite aircraft, because the control response was so crisp and positive.

On March 16th, 1943, the German Air Ministry

During Nazi era, even German civilian aircraft carried a prominent swatica.

issued an order that, as an economy measure, many captured and second line aircraft should be destroyed. This included the Student and the Kornett. However, well known service test pilot Capt Eric 'Winkle' Brown flew a Student just after the War and Andersson used to fly the Kornett, having removed the cockpit canopy, for his own enjoyment.

One day, he took off from the Bücker airfield at Rangsdorf and the engine cut as he crossed the railway at the perimeter. The company test pilots had advised him that, should this happen, he should not turn back, but go straight on and make the best landing he could. This he did, colliding with an apple tree and ended up in an allotment with the undercarriage and left wing torn off.

One of the allotment holders offered him some coffee and at this stage he found that the main

Final fate! Down and out in an allotment patch.

TYPE HISTORY CONT.,

fuel cock was still at the 'Off' position. There had been just enough fuel in the line to get him that far.

'The Law' then arrived, probably on a bicycle as it was war-time. In what was possibly the fastest accident investigation on record, he remarked *"Thank you. This is bad. It is also stupid. You are fined three Reichsmark !"*

And that is the end of the Kornett story!

STATISTICS

SPAN:	8.6 m/28 ft. 3 ins.
LENGTH:	6.67 m/21 ft. 10 ins.
LOADED WEIGHT:	450 kg/990lbs.
TOP SPEED:	205 kph/127 mph.
NEVER EXCEED SPEED:	400 kph/250 mph.
LANDING SPEED:	90 kph/56 mph.
RANGE:	760 kms/460 miles.

CONSTRUCTION

WING: Plywood sheeting over the front "D" box, back to the mainspar. Fabric covering over the rear section.

Flaps inboard of the ailerons. Rotate to 45° for landing.

FUSELAGE: The nose is welded steel tube structure to the rear of the cockpit. This is covereed with metal panels except for fabric covering for the panel above the wing. The rear fuselage is a plywood monococque.

TAIL: Plywood covering for the horizontal stabiliser, otherwise fabric covering.

REFERENCES

1). Die Bücker Flugzeug. Erwin Koenig. NARA-Verlag 1987.

Photos, drawings, descriptions in German and English.

2). The Aeroplane Spotter. 10 February 1944 (my copy !)

Tail end detail. The rudder-to-servo link is via closed loop cable.

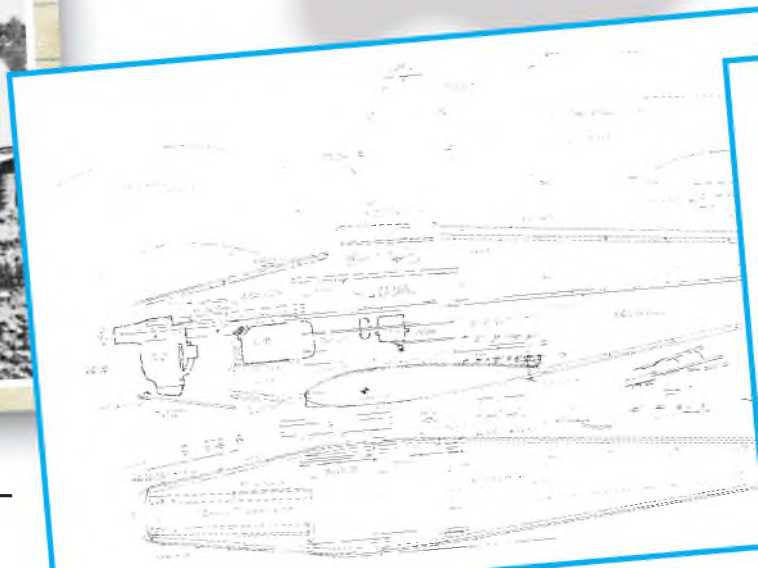
The swastika and registration letters were cut from adhesive vinyl sheet. See the photographs for lettering positions.

Fuel proofer is not available in Thailand, but I use Polyurethane furniture varnish thinned with lacquer thinner and sprayed on with some commercial 'matting agent' added to take off the hard gloss

Flying

Oddly enough, the Centre of Gravity came out just where it ought to be without any ballast necessary.

After all the usual and proper pre-flight checks I



Cockpit canopy easily made from flat acetate sheet.

Only tricky part of the engine cowl is the nose-cap mould from glass fibre. Remaining panels are single curvature.

Detail of the main undercarriage, showing the shape of the spats and fairings.

opened the throttle - and the model tipped onto its nose. Anyone need a 13 1/2 x 6 prop?

I tried again, opening the throttle gently with some up elevator to start with, at which point take off was brisk and straight. The model climbed out and was stable with no trim adjustments needed. On the second flight I tried a roll and a loop but Kuhn Sukasom's photos showed that the wing covering was lifting.

Flap was selected for landing and caused a nose - up trim change. With flap down the landing was slow and short with a high angle of attack using a lot of up elevator. Computer transmitter gurus could dial in a little down elevator with flap.

I have yet to try spins, but with the very large rudder there should be no problem.

I have flown the model at a Club Meeting where, apart from the fact that nobody knew what it was, it created favourable interest. If any of you should decide to build a Kornett, please do not hesitate to contact me at mikeh@samart.co.th if you have any problems and also to let me see a picture or two when all goes well.

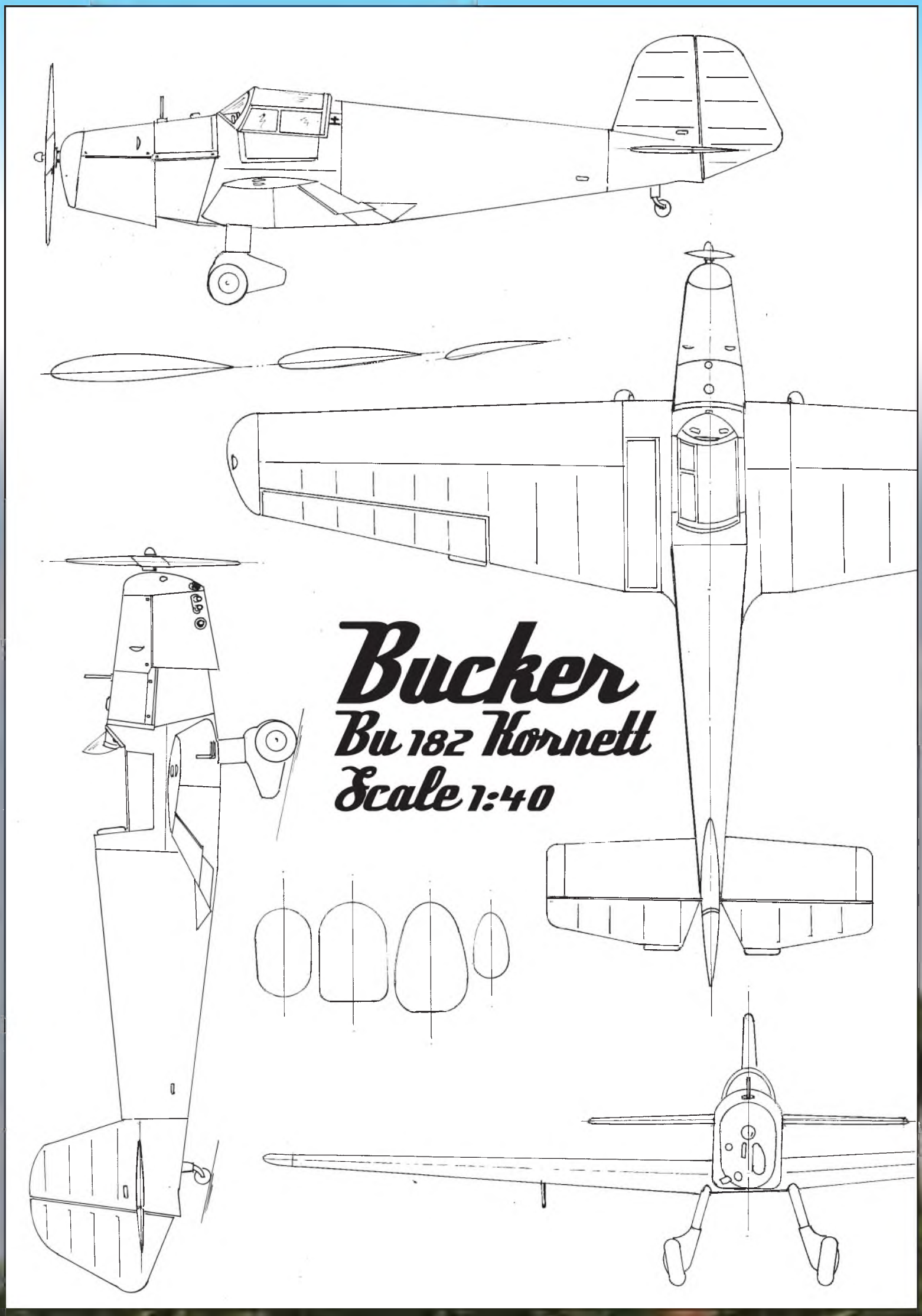
Have fun!

Acknowledgement: *I would like to thank Kuhn Sukasom Hiranpahn, Editor of RC Core magazine for his patience and beautifully clear photographs.*

Nose air intake, slightly enlarged from true scale, is enough to keep the ENYA 90 four stroke engine cool.

Detail of the main undercarriage retention plates under the nose.

Copies of the three-sheet plan for the Bucker Bu182 Kornett are available from FSM Plans Service, Key Publishing Ltd., P.O.Box 100, Stamford, Lincolnshire, PE9 1XQ. Price £22.50 plus p&p; U.K £2.50, overseas £6.50.


Bucker
Bu 182 Kornett
Scale 1:40

Westland Widgeon IIIA

Ever popular with scale modellers, the Widgeon might have been one of the mainstream club/private aircraft of its era, had not the lure of military contracts intervened

Westland Widgeon IIIa G-AAJF was first registered to Miss C.R. Leathart of Cramlington in June 1929, subsequently crashed at Bad Reichenhall, Germany, May 1931.

Photo: The A J J Collection at Brooklands Museum (www.ajjcollection.co.uk)

G-EBRL is another Widgeon IIIA with the revised main undercarriage struts.

In 1924, the UK Air Ministry sponsored a competition for a two seat ultralight aircraft, that had to be powered by an engine of 1,100 cc displacement or less and capable of carrying a load of at least 340 lb (155 kg). The objective was to encourage the development of cheap civil aircraft suitable for use by private owners and flying clubs.

Among the responses, Westland Aircraft produced two designs, the *Woodpigeon* biplane and the *Widgeon* parasol monoplane, and built prototypes for both. Of these, two examples of the Woodpigeon were the first to fly, followed, eight days later by the Widgeon on 22 September 1924. The fuselages of the two types were very similar, with of mixed steel tube and wooden construction, while the Widgeon's wooden parasol wing, tapered in both chord and thickness, folded for easy storage. The Widgeon was powered by a 1,090 cc Blackburn Thrush three-cylinder radial engine, that delivered 35 hp.

The Air Ministry Light Aircraft competition commenced at Lympne aerodrome, Kent on 27 September 1924. Both Westland types entered were badly underpowered using the Thrush engine and the Widgeon crashed during the first day of trials. Despite this setback, it was

G-EBRQ was an early W
early main undercarriag

Photo: The A J J Collection at B

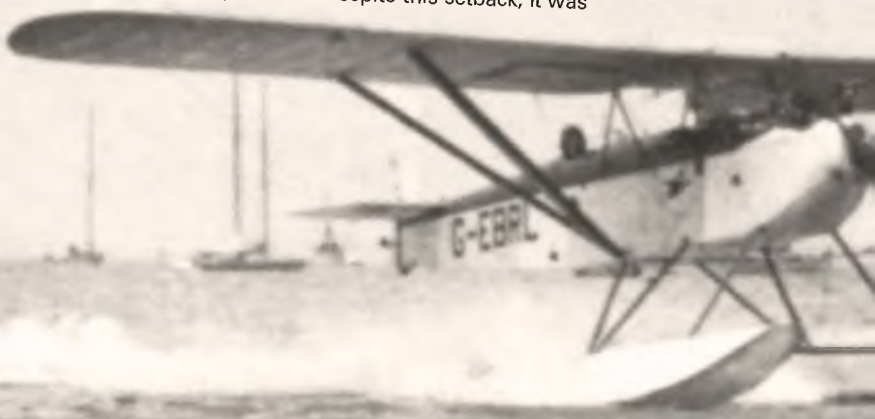
VARIANTS

Widgeon I
Powered by one 35 hp Blackburn Thrush radial engine. One built.

Widgeon II
Rebuild of Widgeon I with 60 hp Armstrong Siddeley Genet radial.

Widgeon III
Redesign for production. Powered by ADC Cirrus II or III inline engine, Genet II radial, ABC Hornet or de Havilland Gipsy. 18 built

Widgeon IIIA
Variant of Widgeon III with metal fuselage and revised undercarriage. Powered by Cirrus or Gipsy engine. Seven built.



Here's a real rarity - a further view of Westland Widgeon III G-EBRL on floats. The background of sailing barges indictates late '20s/early '30s period.

Photo: The A J J Collection at Brooklands Museum (www.ajjcollection.co.uk)

G-AUGI went to Australia as VH-UGI, where it remains today. Not known if it is currently flyable.

clear that the Widgeon had promise and was superior to the Woodpigeon, so the damaged prototype was rebuilt with a more powerful 60 hp Armstrong Siddeley Genet engine as the Widgeon II. Despite its much greater weight, the new engine transformed the Widgeon, the rebuilt aircraft being almost 40 mph faster.

Based on this improved performance, Westland decided to put the Widgeon into production for private owners, but not before redesigning the wing with a simpler, constant chord shape in order to ease production. The resulting Widgeon III was offered with a choice of either a radial engine like the Genet or an inline engine such as the Cirrus and the first Widgeon III flew in March 1927, with production starting later that year. The design was further refined with a duralumin tube fuselage and a new undercarriage to produce the Widgeon IIIA.

The Widgeon proved expensive compared to its competitors and a total of only 26 of all types, including the prototype, were built and sold before production was stopped in 1930 in order to allow Westland to concentrate of the Wapiti general-purpose military aircraft and the Wessex airliner. ■

SPECIFICATIONS (IIIA)

General characteristics
Crew: Two
Length: 23 ft 51/4 in (7.15 m)
Wingspan: 36 ft 41/2 in (11.09 m)
Height: 8 ft 5 in (2.57 m)
Airfoil: RAF 34
Powerplant: 1 x Cirrus Hermes II 4-cylinder air-cooled inline engine, 120 hp (90 kW)

Performance
Maximum speed: 104 mph (90 knots, 167 km/h)
Cruise speed: 86 mph (75 knots, 138 km/h)
Range: 315 miles (507 km)
Service ceiling: 15,000 ft (4,570 m)

Vigeon III, here showing the
ge arrangement.

rooklands Museum (www.ajjcollection.co.uk)

Photo: The A J J Collection at Brooklands Museum (www.ajjcollection.co.uk)

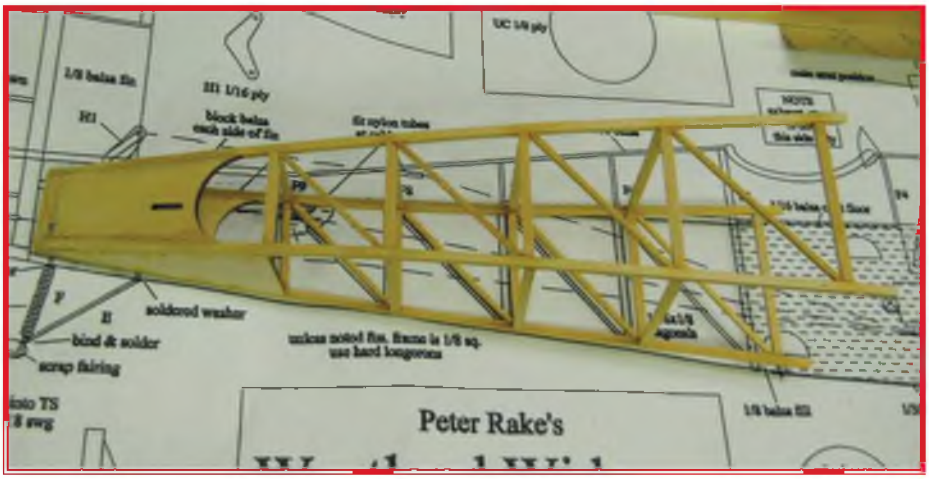
Widgeon G-AADE was originally registered to C.S.Napier in December 1928, but survived only until July 1932 when it was written off after an accident.

FULL-SIZE FREE PLAN FEATURE *by Peter Rake & Martin Crowder*

Westland Widgeon

An electric powered scale model designed by Peter Rake, built and described by Marion Crowder

Just a little flare and this will be another perfect landing. The model is a bit fragile for a trainer, but not t



Typical Rake construction fuselage and here we see the rear basic box.

Front and rear basic assemblies joined. Note where the centre section struts fill be fitted.

The Westland Widgeon started life in 1924 as a two-seat parasol built for the Lympne trials set for that year. Built entirely of wood and fabric covered, with a 35 hp Cherub twin engine, this first version had highly tapered wings that folded flush against the fuselage. During a trial flight the lightly loaded and underpowered aircraft was pushed into the ground by a downdraft and totalled.

The remains were rebuilt into the Widgeon II with a 60 hp Armstrong Siddeley Genet engine. This particular version proved to have a better performance than the Westland Woodpigeon biplane during testing so was selected for production, but before the first production model was built, modifications changed her into the Widgeon III. Constant chord folding wings and plywood fuselage sides were added.

Prototype G-PEBW, powered by a Blackburn Cirrus II engine took to the sky in April of 1927 and was the version that went into production. Construction stopped in 1929 because of contracts for the Wapiti biplane for the Royal Air Force. (A military aircraft contract during that lean between-the-Wars period was something not to be passed up!).

About 30 Widgeons were produced, the last few being the IIIA model with metal fuselages and the divided main undercarriage. In addition to UK, examples went to Australia Canada and Africa. I can only find one example in Australia that is restored and still flying. I like to think of the Widgeon as the grandfather of the Lysander of WWII. The IIIA version is the one we have modelled here.

Construction begins

I always start a model by building the things that I least enjoy doing first. Tails and wings are not my most favourite parts so we will start there. The rudder outline is laminated from three pieces of 1/8"x1/16" strip wood. I make a cardboard outline of the surface using the inside line of the drawing. That way, when you add the laminations around it, the outline will be the proper size. Use a crayon or candle to cover the edge of the cardboard so the glue won't stick.

As much as I love using *Hot Stuff* cyan glue for all my building, I don't on laminated outlines. I wet the strips and let these soak. I then brush on aliphatic glue. I call it yellow white glue. Pretty dumb huh? *(Sounds a fair description to me, works like white glue, but is yellow. PR)* All pieces are coated on one side, then stuck together and wrapped around the form. They are pinned and left to dry. The rudder is the only laminated surface on this model. Once it is dry, clean up the piece with sandpaper and build the rudder.

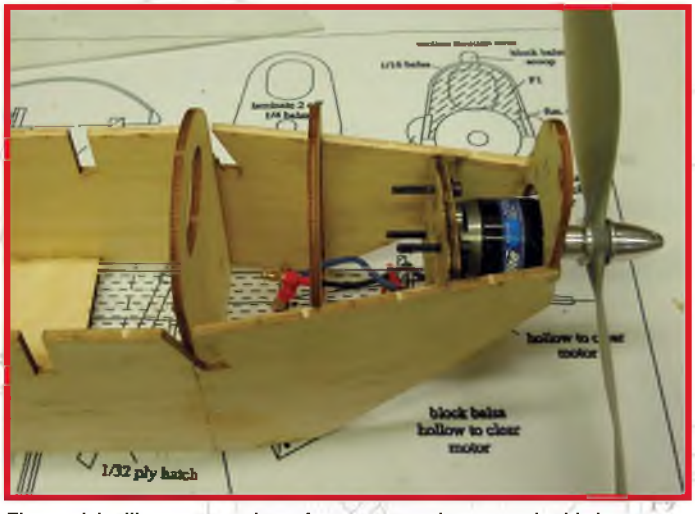
The fin is cut from sheet balsa. Be sure to add the balsa in-fill at the bottom of the rudder. It is the mount for the horn.

The tailplane is straightforward and built from strip wood. Just remember to add the horn mount (as with the rudder) and make the wire joiner before you hinge things, otherwise you will be rigging both elevators separately! Finish-sand both items, then set them aside for now and it's off to the wing.

Wing

The wing is built in three sections. You could make both panels removable from the centre section, or you can build it on one piece as I chose to do. I drive a Pick-Up that can carry models in one piece, so that is how I build them. I am lazy and hate putting models together at the field. Yuck! So the choice is yours.

Nothing is shown to make removable panels, but simple tubes and pins would be suffi-



The model will accept a variety of outrunner style motors, in this instance an E-flite 450.

Rough shaped, and pinned in position, the bits and pieces that make up the nose shape of our little Widgeon.

Front deckings in place and all ready for a bit of sanding smooth.

There
get st
stuff.

cient with the struts being used. These would support the wing to a large degree.

The centre section which, on the full size aircraft housed the fuel tank, is built first. The plywood dihedral brace is glued in behind the spar and sticks out both sides of the centre section when done. It will set the dihedral angle for you. If you go for the three-piece arrangement, you would need to fashion a box for it to plug into on the main panels. *(Or omit the brace altogether and use wire dowels and brass tubes to mount the outer panels. PR).*

The top is sheeted with 1/16" balsa. Note that the 1/8"x1/4" pieces up against the outside ribs on the bottom are there to help support the centre section struts when you attach the centre section to the fuselage.

On the main panels, the ailerons are full length and are built separate from the wing. Strip the proper size 1/8" sheet for the false trailing edge. I like to put the spar down first and then use a couple of ribs to space the leading and trailing edges. Once you have them correctly placed, you can add the ribs where they go.

Note that the two inside ribs of each panel are lower, for the sheeting to be added on top. The pieces numbered 'Z' and the wing tips are 1/8" Liteply. The two tip ribs are just blanks that you add and then shape to obtain a smooth slope, down to the tip. I used light ply for the piece that glues to the inboard edge of R4, which is the thick rib for the struts. I like to use blind nuts and screws to mount the struts. You can use the method shown on the plans or come up with your own way.

Build the aileron as a separate piece, then sand and set aside. Do not forget the piece that the horn mounts in and note that the leading edge is a thicker piece than the wings' trailing edge. *(To allow for shaping. PR)*

Plywood plates for mounting the aileron servos are cut from 132" ply. I like to add pieces and frame the plates so they sit flush with the wing. Then I just tape the servo to the plate and tape the plate into the wing after covering - but I am getting ahead of my self a little.

Add the centre top sheeting and sand the panels and ailerons. The R1 rib is notched wider than the others to allow for the brace to slide in behind the spar. Set the dihedral at 1/2 inch under each wing tip and glue her together. I brought the servo leads out by the centre section struts and ran them down the strut into the fuselage. You can use a 'Y'- lead in the wing or bring them out separately. The choice is yours. *(It is possible to disguise the servo lead/s as fuel pipes, running from the c/s tank into the fuselage. PR).*

Sand everything again and make sure you have shaped your leading edges and tip ribs and set your wing aside until you are ready for covering. If you use the laser cut parts I must say that things just fall together. Everything is the right size and it fits. Takes all the work out of building and makes it fun!

Fuselage

OK! Now we get to the part that I like. When my Dad would build a model, he wouldn't stop until he had the fuselage up on the landing gear. At that point he would consider it an aeroplane. Then he would sit and smoke and look at it. I still remember that from my childhood!

Anyway the fuselage is built in standard 'Rake-fashion'. A plywood box front and a squared-up stick rear fuselage. Build the two rear side frames and square them up. Don't forget the two laser cut pieces F10 and F11. The front is squared up using both sides and F3 and F5. There is a balsa doubler that glues to each side between these two formers. Part UC glues on the bottom between the notches.

Add the rear to the front and make yourself a fuselage. You can now glue in the two 1/16" balsa cockpit floors, as they will help to square things up.

Cut a scribe line on the fuselage at F3 and crack the sides so you can pull them in and add F2 and F1. (The marking and scoring is probably more accurate if done before joining the sides to the formers. It's certainly easier. PR).

Hold off on part M until you figure out what motor you are going to use. I used an *E-flight 450,* which seemed about right. Mount your motor and then install part M with some right and down thrust. You may have to add or subtract a little from the sides of part M depending on the motor used. *(Unless you use a vastly different motor, the mount position shown is suitable for quite a variety of types. PR).*

Add the F4 formers to the top and sheet it. This takes a little work, but stick with it and you will get it. *(Made a lot easier if the centre section struts are fitted after the decking is in place. PR).*

Mark your cockpits and cut them out. F6, F7, F8, and F9 are added to the top of the rear fuselage and sheeted as well. This task was

really is nothing about the tail surfaces to ressed about - all very straightforward

Yes, strip ailerons are scale on this model.

How the tip rib blanks are sanded to follow the curve of the covering. Shape in-situ, so you can see when they look right.

You simply must have at least one naked model to an article, so here it is. Simple structure and nice lines make for a very pretty model.

tough for me but I managed to get the rear deck sheeted in two pieces.

Add the block balsa to the front bottom and the nose block and sand those to shape. There are three air intake blocks to shape, one on each side and one on top. I made these from balsa blocks and then fashioned an exhaust system as well. There are two hatches on the bottom, one in front of the landing gear block and one behind it. These are made from 1/32" ply and sized to fit. Add the centre section struts and cut the sheet to fit around them.

The landing gear is a bit tricky, so study it for awhile before you start wasting wire. Brass straps and screws may be used to hold things, meaning the gear will be removable for covering. Add balsa strips to the gear wire to simulate fairings and shocks, or you can leave them plain if you prefer. It doesn't really detract from the finished model if you decide to just leave things bare. The landing gear was by far the hardest part for me, but it turned out fine - just took a little time.

You need to fashion some sort of tailplane mounts from blocks. Sand the fuselage to your satisfaction and decide what you are going to use for covering.

Covering & finishing

I usually cover my models with *Coverlight*. It is strong and light and simulates a fabric finish. This time I chose to try a lightweight film finish and it turned out OK, but was very difficult for me to use and I won't do it again. I covered my fuselage and rudder in red and the wing and tailplane silver. These came out very pretty and look good in the air. Choose what you will, do a good job and you will be happy in the end.

Once every thing is covered, go ahead and glue the tailplane and fin/rudder onto the fuselage. I use cyano type glue here because I want them to pop off rather than break in a crash. I have never had a tail come off by gluing them this way. I used flex hinges that I purchased from *Sig*. These glue in with cyano type glue.

The elevator and rudder both operate from pull-pull cables and I use an item called *Fire Wire* that is used to make jewellery. *(Tiger Tail is a brand available in the UK. PR)*. Small cuts of aluminium tube are used to crimp the ends. *(I won't use aluminium crimps, I just think they're too soft. Brass tube crimps and a tiny spot of cyano works well for me. PR)*.

For the sake of realism in the air, I installed pilots in both cockpits and made windshields from clear acetate. My wing was permanently glued onto the fuselage. I bolted my wing struts at both ends using brass tabs and 2/56 screws and blind nuts - not the easiest way but one I am used to. Pete's way of cotter pins and loops would work very well I'm sure - I just sort of get stuck in ruts sometimes. *(Whilst Marion's strut mounting are very secure, and vital if you opt for removable wing panels, the linked split-pin system works well when you leave things assembled, especially so on a model like this where the struts are little more than cosmetic. PR)*. I forgot to mention the struts, which are cut and fashioned from 3/16" thick Basswood. Rather than cover them I chose to paint them and the intake blocks as well.

My finished model weighed 22 ounces, which I felt was very light for me - everything I build tends to come out heavy.

A speed control from *Electrifly* at 25 amps is what I used, and I squeezed a 1300 mAh, three-cell pack in behind the firewall. My flight test flights, at half throttle, were easily 15 minutes. So now we have a finished Widgeon and its time to go fly.

Flying & dying

My Widgeon flew right off the board. I added a half-ounce of nose weight because she was just a shade tail heavy. Flight times were easily 15 minutes. She would cruise around very nicely at half throttle and take-off and landings are non-issues. The Widgeon is not a beginners' aeroplane, but I would recommend her as a second model.

Loops, Rolls, Split-s and other manoeuvres are no problem. The Widgeon is a complete joy to fly and looks good putting around and shooting touch and goes.

Now for the sad part. I had put probably ten flights or so on her and was just getting to where I felt comfortable and was enjoying flying my Widgeon. I was just cruising around the sky when this huge Extra 260 something just flew right through me. My poor Widgeon was mortally wounded and she spun in with a folded wing and quite a bit of damage everywhere else. Hitting the ground didn't help any either. The Extra fared better and he made it back, but also had quite a bit of damage to one wing panel. *(Plenty good enough. PR)*. My poor Widgeon is put to one side and will be rebuilt at some point.

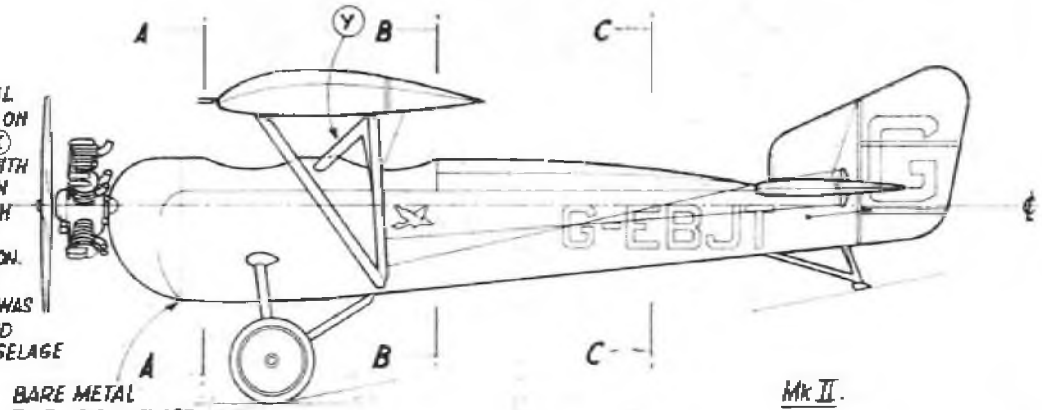
If you want something a little different, I would highly recommend the Widgeon for your flying pleasure. After all she is almost a Lysander and I love Lysanders. Thanks for listening to me ramble-along. ■

Scale 1:50

G-EBJT :- RED FUSELAGE WITH WHITE LETTERING, & (LATER) MOTIF; AND RED STRUTS. WINGS, FIN, RUDDER, TAILPLANE & WHEELS : SILVER. BLACK REGISTRATION.

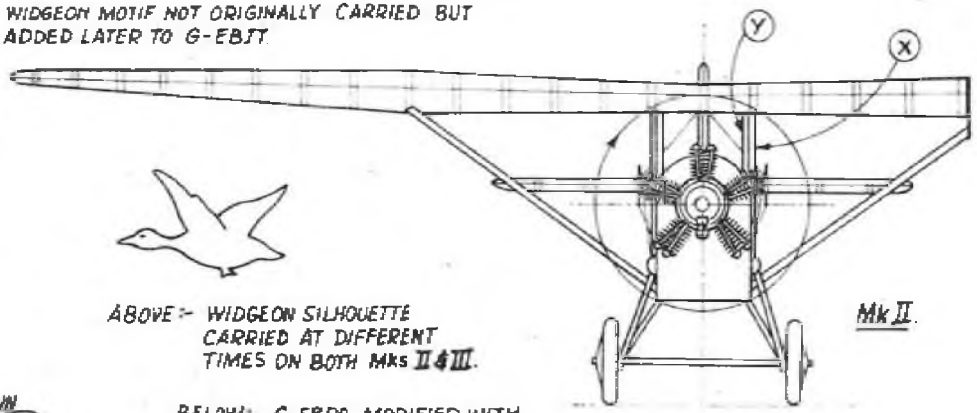
G-EBRO:- AS ABOVE. BUT WITH RED WHEELS, WHITE TRIM & TITLE. AFTER THE SILVER (CABIN) PERIOD DESCRIBED BELOW, IT WAS RESTORED TO NEAR ITS ORIGINAL APPEARANCE BY A PRIVATE OWNER IN 1936, EXCEPT THAT THE RUDDER "G", MOTIF, NAME AND TRIM LINES WERE ABSENT. THE REGISTRATION LETTERS IN ALL THREE LOCATIONS WERE NOW APPLIED IN A ROUNDER FORM. (SEE SCRAP VIEW.)

BELOW:- DETAIL OF C/S STRUTS ON MK II. STRUT (X) RAN IN LINE WITH THE F'W'D MAIN 'V' STRUT, WHICH IT MET AT THE LOWER JUNCTION. FROM THE TOP LONGERON IT WAS SEMI-RECESSED INTO THE FUSELAGE SIDE.



MK II.

N.B WIDGEON MOTIF NOT ORIGINALLY CARRIED BUT ADDED LATER TO G-EBJT.



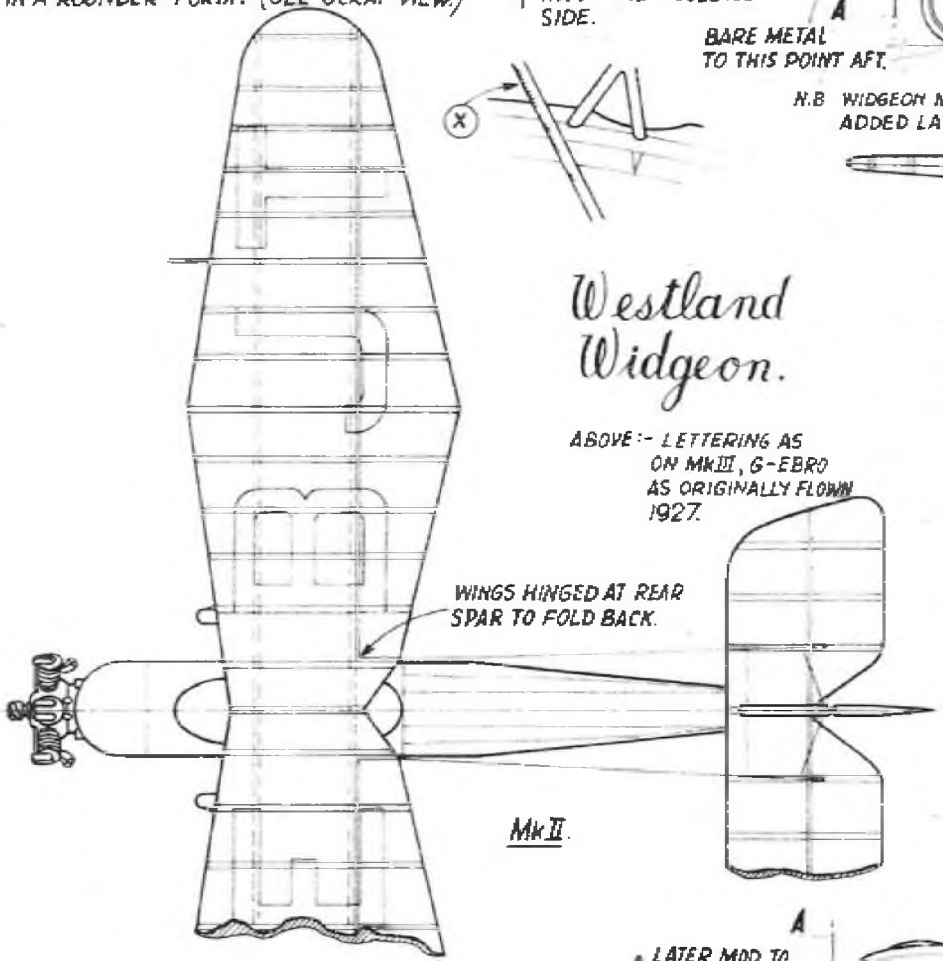
MK II.

Westland Widgeon.

ABOVE :- WIDGEON SILHOUETTE CARRIED AT DIFFERENT TIMES ON BOTH MKS II & III.

ABOVE :- LETTERING AS ON MK III, G-EBRO AS ORIGINALLY FLOWN 1927.

BELOW:- G-EBRO MODIFIED WITH ENCLOSED CABIN. FINISHED SILVER WITH BLACK LETTERING (AS MAIN DRAWING) & MOTIF. WHEELS WITH TWO VALVE ACESS HOLES IN COVER. ORIGINAL U/C.



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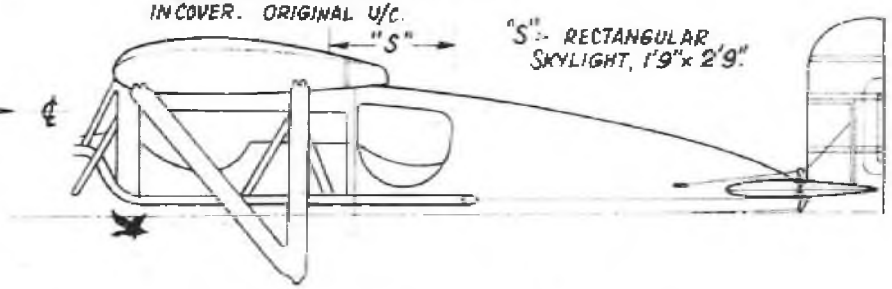
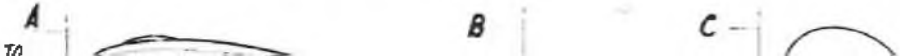


"S" :- RECTANGULAR SKYLIGHT, 1'9" x 2'9"



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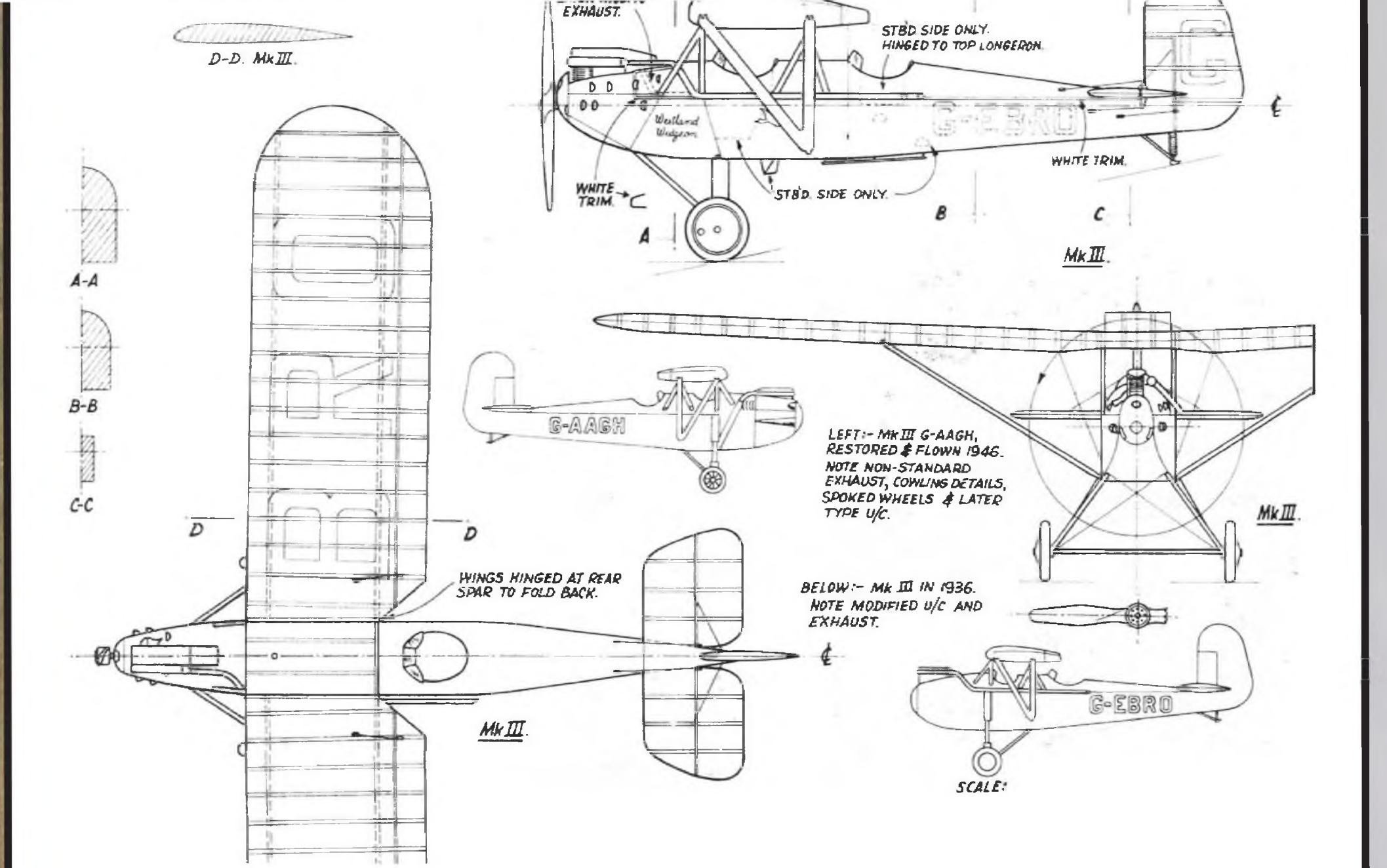

Westland Widgeon Mks II & III

MAIN IMAGE: Phil Kimber as work on the fuselage, much of which is 'new-build', based arround the original cockpit area floor.

A Widgeon reborn

Out at the back-of-beyond (a destination that does not register on SatNav!) at Durley Airstrip near Southampton, the AeroAntiques Group led by Ron and Mike Souch, together with Phil Kimber, Bill Probert and Phil Harris are all involved in the restoration of a Westland Widgeon IIIA, which was brought back from Australia two years ago.

VH-UKS was exported, new, from Westland Aircraft's Yeovil factory in 1928 and registered to the Aeroclub of New South Wales in July 1929.

This example of the Widgeon IIIA last flew in 1946/7, but remained in Australia until AeroAntiques acquired it from Nick Challenor of Brisbane.

When it arrived at AeroAntiques, the disassembled airframe proved to be absolutely complete, including the ADC Cirrus engine. Nothing was missing and the airframe was re-registered for the UK as G-EUKS, thus preserving the three last letters of the original Australian registration.

Although, at the moment, the airframe is very much a collection of sub assemblies tucked into various crannies of the AerAntiques workshops among several other current restoration projects, progress is well advanced toward an anticipated post-restoration first-flight in Spring 2013, most likely with Ron Souch at the controls.

Meanwhile, the restoration effort is currently concentrated on the fuselage, for which Phil Kimber is responsible. The whole structure is very much that of an outsize model aircraft.

G-EUKS is one of only three Widgeons known to survive and when finished, may well be the sole flyable example of the type worldwide.

Great stuff! ■

1: Another view of the fuselage, laid on its side, viewed from the front. 2: The original cockpit instrument panel, sans instruments, together with replacement panel. 3: Close up of the restored tailplane, much of it restored original.


4


5


6


7


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12


13


14

4: Original wing panel, tucked away pending completion of other work.

5: Fin and rudder assembly; original, after restoration.

6: The complete, fully restored tailplane unit, ready for covering

7: Tailplane and elevators are all the originals, on which restoration is complete.

8: Awaiting restortion, the wing centre section, showing the ribs that cradle the gravity-feed fuel tank.

9: Westland works construction number on one of the spars.

10: One of the fully restored full-span ailerons.

11 & 12: Work-in-progress on one of the wing struts.

13: Original cockpit instrument panel.

14: Straight from the delivery container - the basic fuselage, as delivered from Australia.

15: Inside one of the two cockpits.

16: Main undercarraige wheel and legs.

17: Bare bones of the rear cockpit position, showing some of the basic metal fuselange construction.

PLANS and PARTS

BE READY TO START BUILDING AS SOON AS YOU UNFOLD THE PLANS WITH THESE LASER-CUT PARTS SETS

ELECTRIC CANBERRA B(I)8

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 'Interdictor' 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.

FELIXSTOWE F2A

Plan price £19.50 Plan No.276
Component Pack £110.00

An amazing 1/6th 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.

CORBEN SUPER ACE

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.

HEINKEL HE 51

PLAN PRICE £17.50 PLAN NO.80
COMPONENT PACK £125.00

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. four-stroke motors. Can be built without recourse to glass fibre mouldings for items like engine cowl and wheel spats.
Two sheet plan.

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.

De HAVILLAND DH 82a TIGER MOTH

PLAN PRICE £26.50 PLAN NO.051.
COMPONENT PACK £115.00

An 80 inch (2032mm.) wingspan, 1:4.33 scale model for 1.20 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
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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.

RUMPLER C.IV TAUBE

PLAN PRICE: £19.50
PLAN NO. 269
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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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1/4 PLAN NO.241, 1/5 PLAN NO.242
PLAN PRICE (EITHER SCALE) £26.50
COMPONENT PACK 1/4 £125.00
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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!

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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.

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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.

546/11

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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TIPSY B

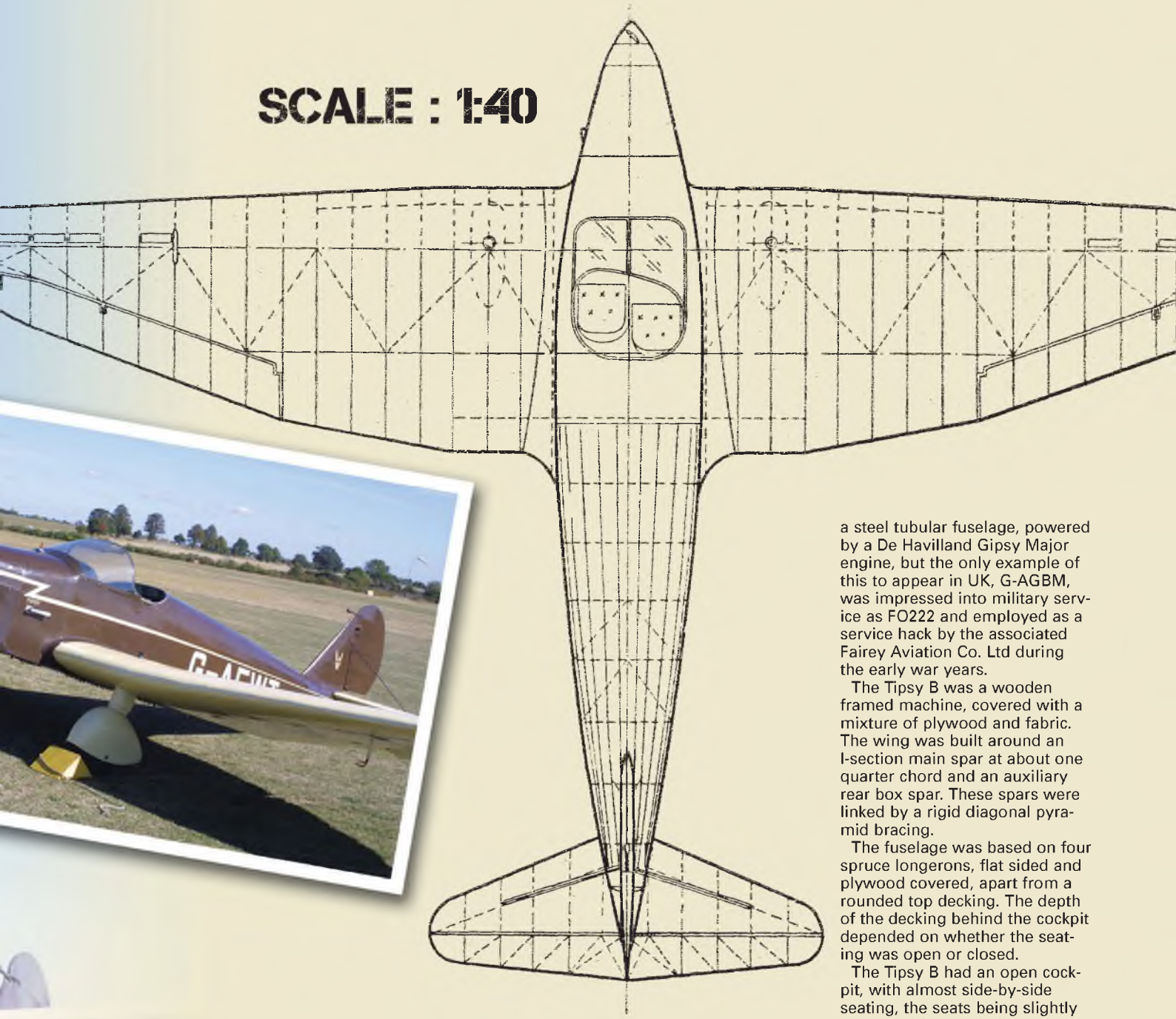
As with cars of the period, light aircraft shapes of the 1930 displayed a fine variety of individuality and elegance that make for excellent scale modelling subjects. Try this one for a change!

In 1935, Mr. E.O.Tips of the Societe Anonyme Avions Fairey, in Belgium, designed and built a diminutive single-seat low wing monoplane. A year later, the first example of the Tipsy S.2 as it was called, was brought into Britain. Registered OO-TIP, it was fitted with a 750cc Douglas engine and, in the hands of C.S.Staniland, soon became a familiar sight at the airfields situated around the London Area.

Arrangements were then made for the S.2 to be manufactured in UK under licence by the Tipsy Light Aircraft Co. of Hayes, Middlesex.

Following success with the S.2, a side-by-side two-seat trainer aircraft was laid down and in 1937, OO-DOS was flown over from Belgium, re-registered as G-AFCM and was used as a demonstrator aircraft for the new type, flown at many places around the country in the hands of famous aviatrix Amy Johnson.

Demonstrations raised sufficient interest that, by 1938, production of the Model B was well under way at the Hanworth Park works of the Tipsy Aircraft Co.Ltd. and from then, until the outbreak of WW2, 15



examples fitted with the Czech-designed 62 hp. Walter Micron engine, has been produced, including examples registered as G-AFGF, G-AFGF, G-AFJR to T, G-AFRT to V and G-AFVN-P inclusive.

But for the onset of WW2, work would have proceeded on a two-seat tandem cockpit version with a steel tubular fuselage, powered by a De Havilland Gipsy Major engine, but the only example of this to appear in UK, G-AGBM, was impressed into military service as FO222 and employed as a service hack by the associated Fairey Aviation Co. Ltd during the early war years.

The Tipsy B was a wooden framed machine, covered with a mixture of plywood and fabric. The wing was built around an I-section main spar at about one quarter chord and an auxiliary rear box spar. These spars were linked by a rigid diagonal pyramid bracing.

The fuselage was based on four spruce longerons, flat sided and plywood covered, apart from a rounded top decking. The depth of the decking behind the cockpit depended on whether the seating was open or closed.

The Tipsy B had an open cockpit, with almost side-by-side seating, the seats being slightly staggered fore and aft to minimise fuselage width, with the left hand seat 8 in (200 mm) further forward. The Tipsy Bc had the same seat arrangement, but enclosed under a Rhodoid (cellulose acetate) canopy, faired into the fuselage rearwards by a much deeper decking.

Some Tipsy Bs had an asymmetric windscreen formed out of a single Rhodoid sheet, with its free edge further forward on the left to match the displaced seating, but symmetric screens became common. Both seats were equipped with controls. The control column was on the mid-line between the seats, with a horizontal extension that could be rotated between either position.

At the rear, the fin was almost triangular, and built as an integral part of the fuselage. The fab-

G-AFGF was the first British-built Tipsy B. Colour appears to be silver overall, with black or maybe red stripe and lettering. Destroyed by fire in 1952.

Photo: The A J J Collection at Brooklands Museum (www.ajjcollection.co.uk)

G-AFWT in its early format, with enclosed cockpit.

Photo: The A J J Collection at Brooklands Museum (www.ajjcollection.co.uk)

G-AESU Featured a revised nose profile enclosing a horizontally opposed engine and revised cockpit windshield.

Photo: The A J J Collection at Brooklands Museum (www.ajjcollection.co.uk)

ric covered rudder was rounded, and moved between the separate elevators, which with the tail plane formed an elliptical shape As a result, the elevator hinges, like those of the ailerons were strongly forward swept. The tailplane was supported from the fin near the rudder post with a pair of external struts.

There was a long tailskid and the main undercarriage had two cantilever forks with rubber-in-compression springing, its legs faired and the wheels spatted

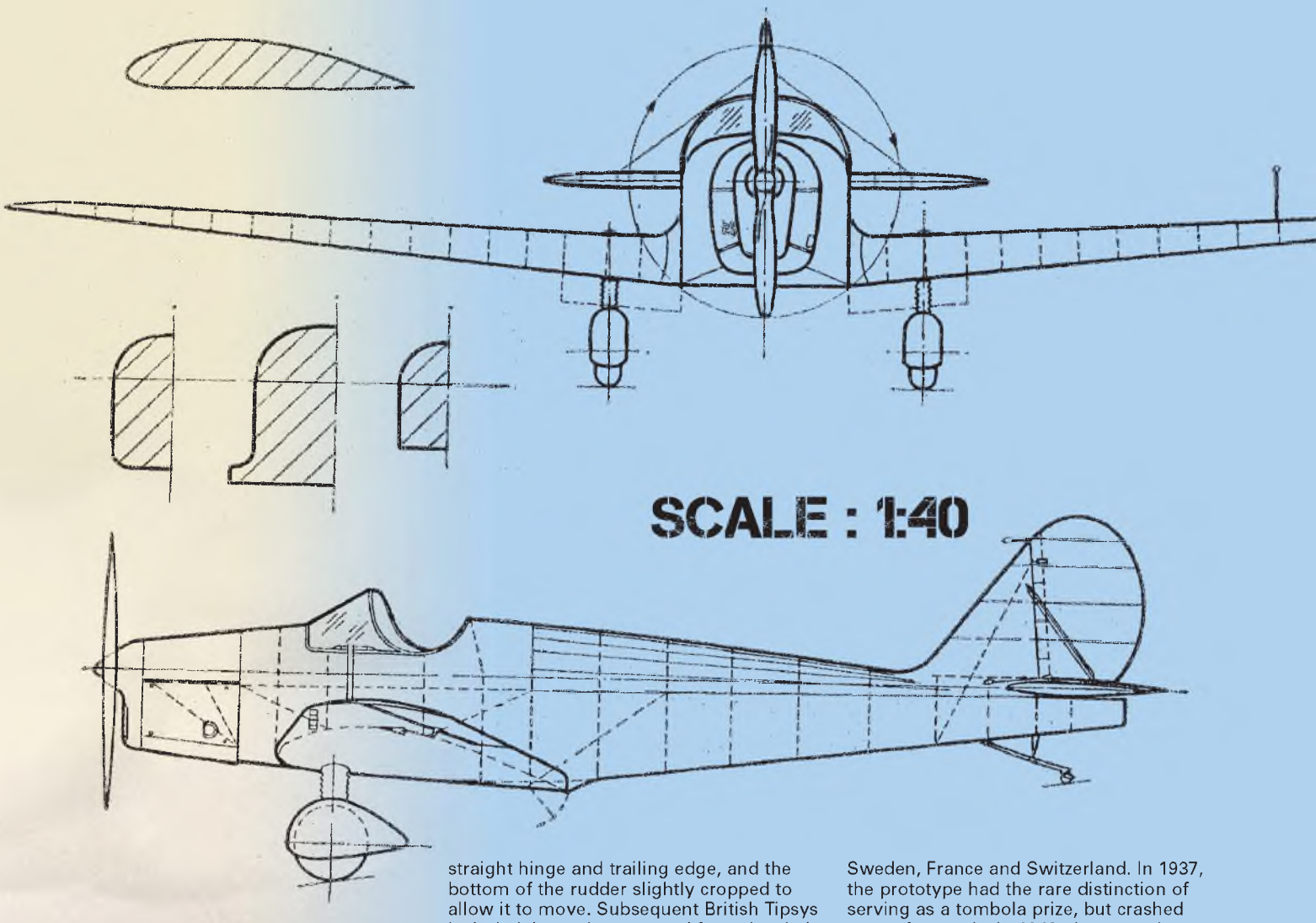
The Tipsy seems to have been mostly nice to fly but, as with other aircraft with pointed wing tips, its low speed behaviour could be unforgiving, dropping a wing at the stall without much warning. During the British production run, some of these issues were addressed

The fourth British aircraft was the first to be modified. To improve the stalling behaviour, it had a strengthened wing with washout at the tips, so that this part of the wing should not stall first, and camber-changing flaps were added to the straight centre section to delay the stall. To meet British airworthiness concerns about control surface flutter, all were mass-balanced. The rudder balance was external, projecting from its leading edge just above the tip of the fin. The elevator was also revised to a single unit with a

G-AFWT as seen at the Shuttleworth Museum airfield Old Warden in its current livery of brown and cream.

G-AFRV was another British-built Tipsy B. Basic colour scheme is/was pale blue fuselage and silver wings. Registration lettering was in black, with wite outline.

Photo: The A J J Collection at Brooklands Museum (www.ajjcollection.co.uk)



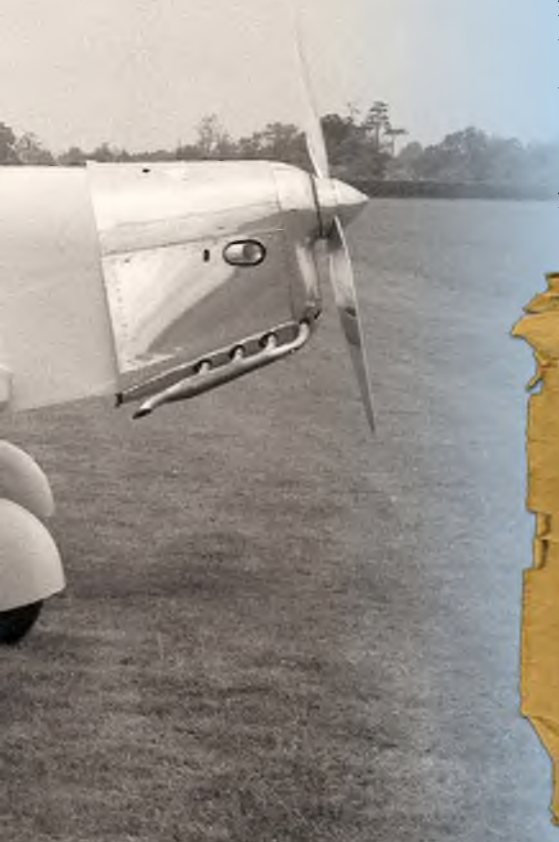
straight hinge and trailing edge, and the bottom of the rudder slightly cropped to allow it to move. Subsequent British Tipsys included these changes, and from the sixth aircraft onwards also featured fixed letter-box slots.

In August 1938, during the Certificate of Airworthiness tests at Martlesham Heath, there were concerns about rudder authority, so Tipsy Light Aircraft added 18% to the rudder area, leading to successful certification. At that point, the name of the aircraft changed from Tipsy B to Tipsy Trainer.

Operational history

Avions Fairey-built aircraft flew with private owners and club in Belgium, the UK, Sweden, France and Switzerland. In 1937, the prototype had the rare distinction of serving as a tombola prize, but crashed soon afterwards. In 1940, the second machine escaped to England, served with the RAF in the war, and then became the Tipsy Belfair prototype.

A number were destroyed during WW2, but at least six flew afterwards. The pattern of ownership of the British-built aircraft was similar; one went to India, and later served the RAF there. Twelve of the UK pre-war machines survived the war, although two did not fly again. One post-war machine went to Finland, another to Belgium. ■



SPECIFICATION

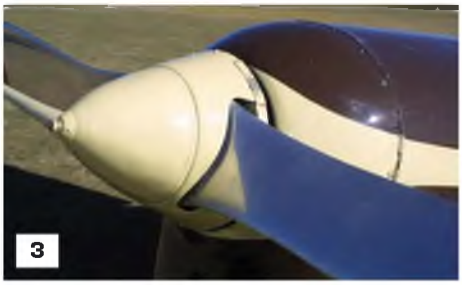
CREW:	Two
LENGTH:	6.6 m (21 ft 8 in)
WINGSPAN:	9.5 m (31 ft 2 in)
HEIGHT:	2.1 m (6 ft 11 in)
POWERPLANT:	1 x Walter Mikron four-cylinder inverted in-line, air-cooled, 45 kW (60 hp)

PERFORMANCE

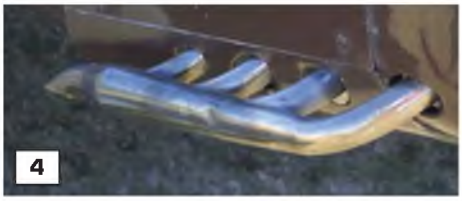
MAXIMUM SPEED:	195 km/h (121 mph)
RANGE:	800 km (497 miles)
SERVICE CEILING:	6,000 m (19,685 ft)

TIPSY B

ZOOM IN ON THE DETAIL



1: Nose section showing air intakes. 2: Vacuum generator for cockpit instruments, fuselage right side. 3: Prop and spinner. 4: Stainlss steel exhaust stack. 5: Panel line detail on the engine cowl, also showing the carburettor intake scoop and positioning of the exhaust stack.



6: Wing tread-patch and wing-to-fuselage fairing.
7: Rudder control cable.
8: Complete tailcone showing the tailplane-to-fin strut brace.
9 &10: Two views of one undercarriage leg, with nicely shaped wheel spat.

12 & 13: Two views of the cockpit windscreen. There is no double curvature requiring a mould plug. 13: Cockpit instrument panel - nothing complicated here. 14: View of the cockpit rim. 15-17: The substantial coil sprung tail skid. 18: Detail of fin-to-rudder hinge. 19: Mass ballance applied to fin. 20: Close-up of the rudder control horn and control cable. 21: Wing underside showingcontrl link to wing flap. 22: Removable access dimple on the win centre section underside.

23: Wing tip detail showing aileron hinge-line 24: The ailerons on the Tipsy B are of quite narrow chord. 25: Aileron drive link and control horn on the underside of the wing/aileron. 26: Close-up of thetailplane strut. 27: Tailplane strut anchor point. 28: The centrally located elevetor control horn.

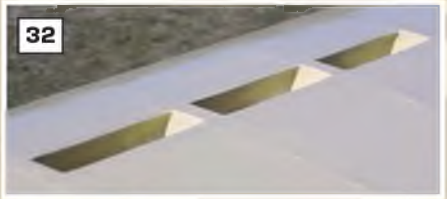
29: Further view of the rudder control horn, together with elevator access disk.

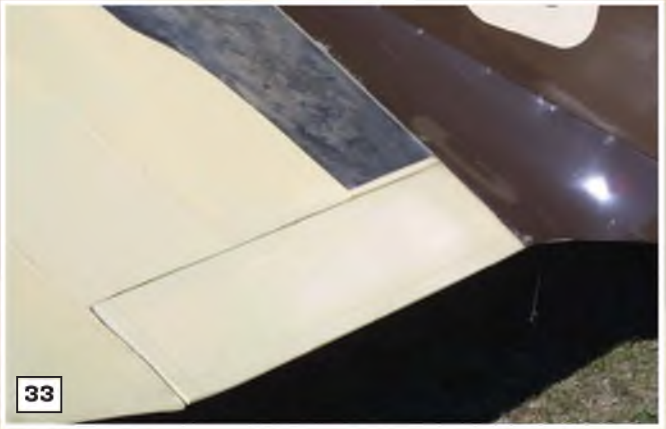
30 & 31: Fuel tank cap on the wing top surface

32: Wing leading edge slots.

33: The wing flaps on the Tipsy B are quite small.

34: Wing root fairing at the wing leading edge.





WARBIRD ACTION *by Alex Whittaker*

Alex Goes To Sleap

Whittaker takes his camera to the NW Warbirds meeting in Shropshire

The NW Warbirds Group is growing rapidly in both members and ambition, so they are finding ever more venues. In fact, I had never been to Sleap before, and I needed to use my GPS to find it. Once you get there it is still a long way from the main road across this ex-WWII airfield, but well worth the trek. Sleap airfield is currently shared between full-size and model aircraft, so you have to have your wits about you as you navigate the peri-track.

Turnout

As mentioned, NW Warbirds are doing well. Their safe, but laid-back attitude to warbird flying is clearly paying dividends. I counted more than fifty pilots, and there were 1,000 Hour scale masterpieces flying alongside ARTFs, and tiny scale / elecric foamies.

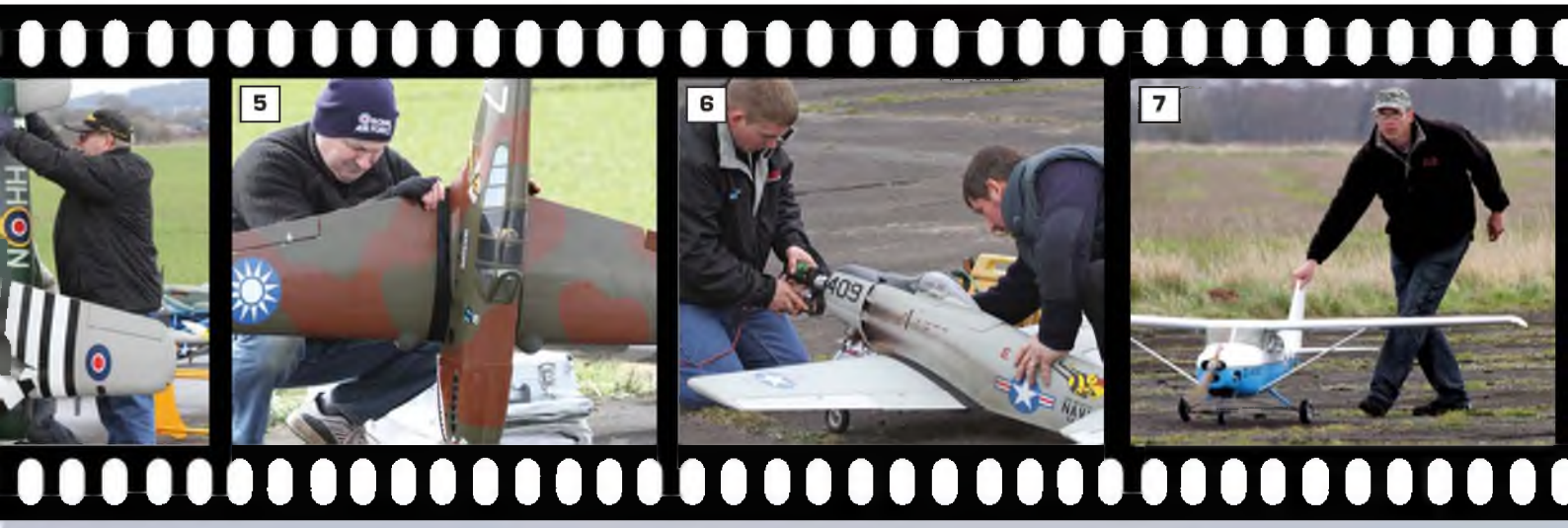
Typhoon

The first model I spotted in the pits was Chris Peers' stunning scratch-built Hawker Typhoon 1B. This is a lovely model which spans 96" and weighs 35 lbs. It is powered by a ZDZ 60 petrol engine with a Menz 24x8 prop. Chris is fine builder, and an excellent pilot. The Tiffie looked utterly stunning coming in steep and straight on full-flap landing approaches.

Taylor Spitfire

If you are thinking of building a pukka Spit this winter, look no further than Maestro Brian Taylor's Spitfire IX design. Brian Brassey and grandson Dominic, form a formidable partnership on the NW Scale Scene, with Brian often doing the building, and Dominic often much of the flying. So, Brian's BT Spitfire Mk IX is exactly what a bench-built scale model ought to be: accurate, exquisitely finished, and convincing in the air. Dominic always flies well, and it

Over fifty pilots turned out for this NW Warbirds meeting.



The Brassey Spitfire IX on a low pass.

was a tonic to see this smashing model being put through its paces.

Grasshopper

Jeff Pearson is a well known warbirder in these 'ere parts. He was flying a number of scale models. Like your scribe, he has a penchant for light aircraft that have been pressed into military service. Jeff's fine Piper L-4 Grasshopper spans a mighty 105", weighs 17 lbs. and is powered by a Quadra 35. Quadra was once the petrol engine of choice for many scale modellers, but competition has entered the market. Now, many other brands co-exist. I noted that the petrol power was delivered via a *Just Engines* 20"x8" prop, which was new to me.

Modellers of a mature vintage such as myself will note the exact span of this model, and wonder if this L-4 was built from the famed *Precedent* kit, of blessed memory. The answer is yes: a classic scale kit has delivered another lovely scale model aircraft.

Cessna T-51a

Continuing the same theme, NW Warbirds Co-Organiser Ray 'Ozyray' Peters' Cessna T-51a was a

1: Brian Brassey and grandson Dominic fettle Spitfire. Model is built to Brian taylor plan and has foam wings. 2: Mark Finneran (left) helps John Jackson to crank up his Thunderbolt. 3: NW Warbirds events are always conducted in good spirits - informal, safe, and fun. 4: Chris Peers sorting out his Typhoon 1B: 96" span, weighs 35 lbs, ZDZ petrol power on a 24x8 prop. 5: Puzzling out minor retracts problems with this ARTF Warhawk. 6: Stuart (left) and Martin Chitty fettle their YT International ARTF Skyraider. 7: Co-organiser Ozyray Peters walking out his Cessna Warbird. 8: Watch that gust! John Lee's DH 82a Tiger Moth from the Premier kit. 1/5th scale, Laser 100 power, Master 15x6 prop, weighs 7 lbs.

Very fine YT International ARTF Hellcat flown by Martin Chitty.

9: The Brassey Spitfire IX is 83" in span, and weighs 20 lbs. Zenoah 38 power, with Eurokits retracts.
10: Sometimes called the "French Spitfire", this is a Dewoitine D 520 (a Seagull ARTF).
11: YT Pantera: 66" span, weighs 18 lbs, and this example is Jetcat P80 powered.
12: Dennis Richardson brought his fine 72" span, 11lbs weight, Laser 120 powered Grumman Avenger (UK: "Tarpon").
13: Chris Peers lovely 122" span, CRRC 50 powered Miles Messenger rumbling in. Weighs 38 lbs. Exquisite scratch build.
14: Jeff Pearson's Cub L-4 Grasshopper from the Precedent kit. 105" span, weighs 17 lbs, with Quadra 35 power delivered via a Just Engines 20x8 prop.
15: Ozyray Peter's Cessna T-51a in US Air Force livery. Sort of an aggressive 152?

sheep in wolf's clothing. I thought this repackaged Cessna 152 looked great in her US Air Force livery. Semi-tough, but economical. A great flyer, by the way.

Panther-ish

ARTFs now extend to jet Warbirds, and in my opinion, *YT International* make some of the better, most affordable scale ARTFs on the market. So, a new YT jet warbird was always on the cards. At first glance the YT Pantera does indeed look very like a Grumman Panther, but you soon notice that she is a good bit sleeker.

The Pantera spans 66" and weighs 18 lbs. This example is Jetcat P80 powered. In Stuart Chitty's hands, she flew very smoothly indeed. If you are investigating the sports-scale jet market, this ARTF is worth a closer look.

Camo Tiggie

John Lee's fine DH 82a Tiger Moth definitely qualified as a warbird. It is built to 1/5th scale, delivering a practical size for the warbirding clubman. John has fitted Laser 100 power, driving a Master 15"x6" prop. The Tiger Moth weighs a lean 7 lbs. Is it from the famed *Premier* kit? Correct!

French Spitfire

There was a colourful Dewoitine D.520 in the pits. In some quarters this gallic warbird is known as the 'French Spitfire'. In fact, this version is a *Seagull* ARTF. It has a wingspan of 70.9 ins and is designed for a .91 two-Stroke, or 120 four-Stroke, with a designated flying weight in the range of 10 -11 lbs. Vive la differance!

Tarpon

Dennis Richardson brought his fine 72" span, 11 lbs weight, Laser 120 powered Grumman TBF Avenger. Like all his models this was built on the kitchen table. It flew very well. However, before we move on let's remark upon a bit of scale trivia. The Royal Navy variant of the the WW2 torpedo bomber was dubbed the 'Tarpon' this side of the pond. Not lot of people know that.

YAK ARTF

There aren't that many Iron Curtain era warbirds on the market. However, *Black Horse Models* have introduved an ARTF YAK 11. The example flown by Dave Gent spans 72", weighs 12 lbs. and is powered by a CRRC 26cc power, driving a 17x8 prop. To be truthful, I liked the model a lot, but thought the factory ARTF finish was a bit garish. The two clone pilots were a bit odd too. A good flyer that is a prime candidate for a winter strip down and scale makeover.

The verdict

It is gratifying to see the NW Warbirds formula of a 'no-fuss / all-day-flying experience' is gaining ground. The flying was indeed continuous, and in the pits there was a brisk exchange of technical data and practical help all day. I cannot finish without mentioning Sandra Todd's superb baking skills. (Sandra is married to my auld mate and fellow pho-

North West Warbirds Website: Check this site for forthcoming dates: http://northwestwarbirds.webs.com/

Big Jug over the threshold! Jeff Pearson's Hangar 9 Thunderbolt P-47. 82" span, weighs 21 lbs, with Zenoah 38cc power and a 20 x8 prop.

Tarheel Jack P-47 Top Flite ARTF flown by my (young) old mate Allan Griffiths, of Mintor Cestrian Engines fame.

Thunder Tiger ARTF Grumman Bearcat flown by Ian Bottell. Spans 63", Os .120 FS power on a 16x8 Master prop, weighs 5.7 kgs.

Black Horse ARTF Yak 11 flown by Dave Gent. 72" span, weighs 12 lbs, CRRC 26cc power, driving a 17x8 prop.

Ozyray's World Models Zero skittering to an eventual halt ...

Undercarriage problems! I believe this is Martin Chitty's 50cc powered YT INternational F4U Corsair.

tographer Lyndsay Todd, who also happens to co-organise NWWB). Anyhow, we were treated to a truly fabulous array of home-baked cakes at lunchtime. Sandra is officially a star: she recently won the Jane Asher Home Baker Competition on TV. As Ozyray says: "No wonder husband Linds looks so well-nourished ..." ■

Dave Gent's Blackhorse Trojan getting away smartly. Spans 80", weighs 15 lbs, powered by a CRRC 26cc petrol engine, driving a 3 blade CRRC 16x8 prop.

ON SILENT WINGS by Chris Williams

SCALE SOARING

Wing mainspar integrity is everything in a long-winged scale sailplane. Here are some useful tips

Spar a thought for gravity

It is inevitable that when a group of long-time aeromodellers get together, the conversation will sooner or later turn to matters of model construction. One day, whilst seeking shelter in someone's handy van, the conversational focus fell on the weighty business of making wing spars. Now, you can buy Spruce or Cyparis in industrial lengths, but it comes with a certain amount of wallet damage, and most make do with the more common four-foot lengths, (or to keep firmly up with the times, 1.2192 meters!).

A glider gets its efficiency courtesy of those long wings, so, given the larger scales that are popular these days, this means that those 1.2192-meter lengths of wood are going to have to be joined somehow.

"Yes", muttered one sage, *"...and the proper, full-size way to do it is to make the scarf joint at an angle of 15:1..."*

We fell silent, thinking, no doubt, of the task that this would involve. None was more silent than I, as this job has been a bugbear for many a year. The problem is this: the final spar must be nice and straight, but the longer the length of the joint, the harder this is to achieve. The best I can usually manage is a ratio of around 7:1, and this I achieve by clamping the two lengths of wood accurately together and introducing them to the spinning wheel of a disc sander.

Every conversational group has it's doomsayer and now we heard this: *"...you simply cannot use epoxy for important joints 'cos after a month or two it turns to jelly..."* Once again, silence fell. I envisioned going home and finding my garage full of dismembered gliders with, here and there, the glint of the aforementioned jelly reflecting the light in an accusatory fashion.

"And..." continued the doomsayer, *"...I read somewhere that Cyano rots yer brain, makes yer 'air fall out and has about the same strength as balsa cement..."*. I staggered out of that van, reeling and rubbing my bald spot. *"Egad"*, I muttered, and resolved to fly on my own in future.

It's an interesting thought, though... how do we actually know what the structural strength of our designs is, without building a sample first and testing it to destruction? In an ideal world we would know the exact properties of the materials we were using, and be mentally equipped with all the calculus required to pare the materials down so that they were just strong enough to withstand the expected loads and no more, thus making the resultant model as light as possible.

But wait, how do we calculate the expected loads? To do that, we would

The original Scheibe-Loravia Topaze, pictured here at White Sheet Hill (Pic Steve Fraquet).

have to know exactly what the airframe is going to be put through, and that is sometimes in the hands of the capricious Gods of Aeronautics. For example, you can calculate, maybe, the forces you are going to apply in a loop, but what of the forces applied when you start to fly the wrong model, and your own descends in a self-destructive dive for home? Unlikely, you might think? Well, read my T-shirt, which will tell you of the occasion when there were only two Minimoas in the sky and I started flying the wrong one! (The irony being that both were mine, the other being flown by my old pal Smallpiece).

And how about testing almost to destruction? Take a look at the wings on my prototype Skylark 4. Picking it up by one wing tip induced a heroic bend in the spars, reminiscent of those old videos of the Boeing 777 wings being tested beyond their limits. (I notice that on the latest 787 'Dreamliner' tests they stop before it breaks). This induced a strong feeling of complacency in yours truly, that was dissipated when on only its second flight, the wings broke at the bottom of a loop.

So, the truth is, given the foregoing, that most model design proceeds on a Darwinian process; things are tried, and if they work they are used again, and if they don't, well History's dustbin awaits.

Thus it is that I have never had a spar joint failure (The Skylark perished due to the poor quality of the Ramin spars), the Minimoa in question being subjected to some serious loads with full-up elevator a few feet from the ground. The epoxy joints in my oldest machines still seem to be holding firm, although my bald patch does seem to be growing. Here's a little of what I have learned over the years.

Spruce is of superior strength to Ramin. Epoxy joints in critical areas are superior to non-hardened adhesives, especially CA. Spar joints of 7:1 ratio, with ply webbing either side, are strong enough, with the spar dimensions I use, to take loads that would test the soiling-resistance of the toughest underpants.

My airframes must be over-specified to a considerable extent, which is why my machines are no lightweights. But, let's explore that for a few moments. Take two, otherwise identical airframes; one over-engineered by me, and the other a more sophisticated construct, put together by someone considerably cleverer. Most of my fairly large sailplanes fly at a wing loading of 19-20 ozs per sq ft.

Clever engineering might get that down to 17-18 ozs per sq ft. Here's what the difference would be: in light winds and smooth air, the lighter model would fly more slowly, and therefore more realistically.

Looks good, but appearances can deceive.

The spar itself, not a joint, failed on the prototype Skylark 4 wing.

In stronger and more robust conditions, the lighter model would bob and weave with the gusts more and be less able to penetrate forward into the wind, thus knocking a big hole in realism's creditability. On the fifty or so occasions that I have flown this year, the wind has been blowing a hoolie for about forty-five of them, Draw your own conclusions...

Looking back on what I have just written, I can't believe I actually put in writing the words *"... I have never had a spar joint failure..."*

I'm off to buy a tin hat.

Topaze revisited...

Mention of the Darwinian process was timely, as there were one or two things about the design of my 1:3.5 scale *Topaze* a few models back that were somewhat unsatisfactory. One was the lack of resistance to twisting loads in the fuselage; loads such as those imposed by a ground loop after a hurried downwind landing on the slope, when the wind had suddenly decided to beetle off. The consequence of this was that the fabric would tear just behind the wing trailing edge - a matter of some puzzlement to me before I twigged.

The *Topaze* was one of the first gliders that I had designed purely on the computer, via a variety of CAD programmes and thus it was that, when I had made the necessary modifications, I was forced to wonder whether they would be valid in the real world. There was nothing for it; a little scroll saw therapy was in order.

So, the modified formers were cut out and the wing mounting plates slotted in to check for fit, which (to my surprise) they did. Then I got to wondering if it would be possible to use half the number of firmer supports on the jig, and whether a simple wooden base might make it easier for others to repeat the process.

Well, you can see where this going: one thing led to another, and before you could say 'Cyano Kicker' I had built a complete airframe. In common with many gliders of the period, the space between the wings is filled in with a fairing and this has always been a difficult thing with which to achieve a nice fit. The procedure in the past has always been to lay a plate of 0.75mm ply over the wing roots and assemble the rest of the fairing over the top of it. The problem is that, despite your most earnest intentions, you always end up with a gap somewhere along the wing root from which you have to continually avert your eyes.

The solution to this problem came with the construction of my most recent project the *Spalinger S25a*. The answer was to set the fairing in between the wing roots, using a copy of the upper half of the root rib to form a frame onto which the ply plate can be glued. The plate now sits entirely flush with the wings, and when the remaining curvy block balsa bits have been added, the result is an entirely pleasing one. This is not a simple process, but, taken one step at a time, does work out very well.

Whilst talking of things fitting, I suppose I might as well 'fess up to something. In order to get a really good final fit between the canopy and the fairing, and the canopy and the front of the fuselage, where the angles are quite acute, I use car body filler. This is applied with a plastic spreader, the canopy, obviously, taped off to protect it, and the joints opened up with a Stanley knife when the filler is in a half-cured state.

With the previous version I had taken some steps to keep the weight down, the main one being the decision to cover the flying surface in *Profilm* rather then 'Tex. This time, to heck with it, it's back to and a translucent finish; it will be interesting to see what the scales reveal this time... ■

c_williams30@sky.com

The Minimoa lands after its spar-testing experience.

The basic frame of the modified Topaze fuselage. Note how the wing mount plates now extend past the wing trailing edge position.

Removing the fairing framework after assembling it in place.

The fairing now sanded to shape and glassed.

Using car body filler to finalise the fit of the canopy to the fairing and the fuselage.

Easing out the joints before the filler gas completely set.

Final fit between fairing and wings.

THE QUIET ZONE

Yes, you lucky people, it's time for more ramblings about electric flight models. Well, since I have quite a bit to fit in, and not that much space, I'll keep waffle to a minimum and plunge straight in ...

More foamies

Since it's 'indoor season' and Christmas is rapidly approaching, I thought I'd be extra generous this month and include the drawings for two more little foamie models. Not only are there two of them, but I'm making a bit of a break from my usual fare. Just for those who prefer more modern types, these are post 1940s types.

As you'll see, these two designs are intended for direct drive 6 mm motors and don't include marked positions for the radio gear. This means you can use whatever you like, and even make them three channel if the mood takes you. Probably the best set-up would be to use two actuators mounted in the wing roots to control rudder and elevator - after the fashion of the *Plantraco* Micro Racers.

As usual, with these offerings, if you'd prefer the actual pdf files, just contact me direct and I'll e-mail the files to you. These models are so simple to assemble that I'm sure you won't need construction drawings to go with them. Maybe, if you can't figure out how they go together, you're not quite ready for this type of modelling - or any modelling at all come to that. Perhaps stamp collecting would be more what you're looking for.

Back to where I left off

Okay, having totally alienated any philatelists reading this, I'll just take a few minutes to check where I left those of you desperate for me to finish the item about how I design models. Back in a short while.....

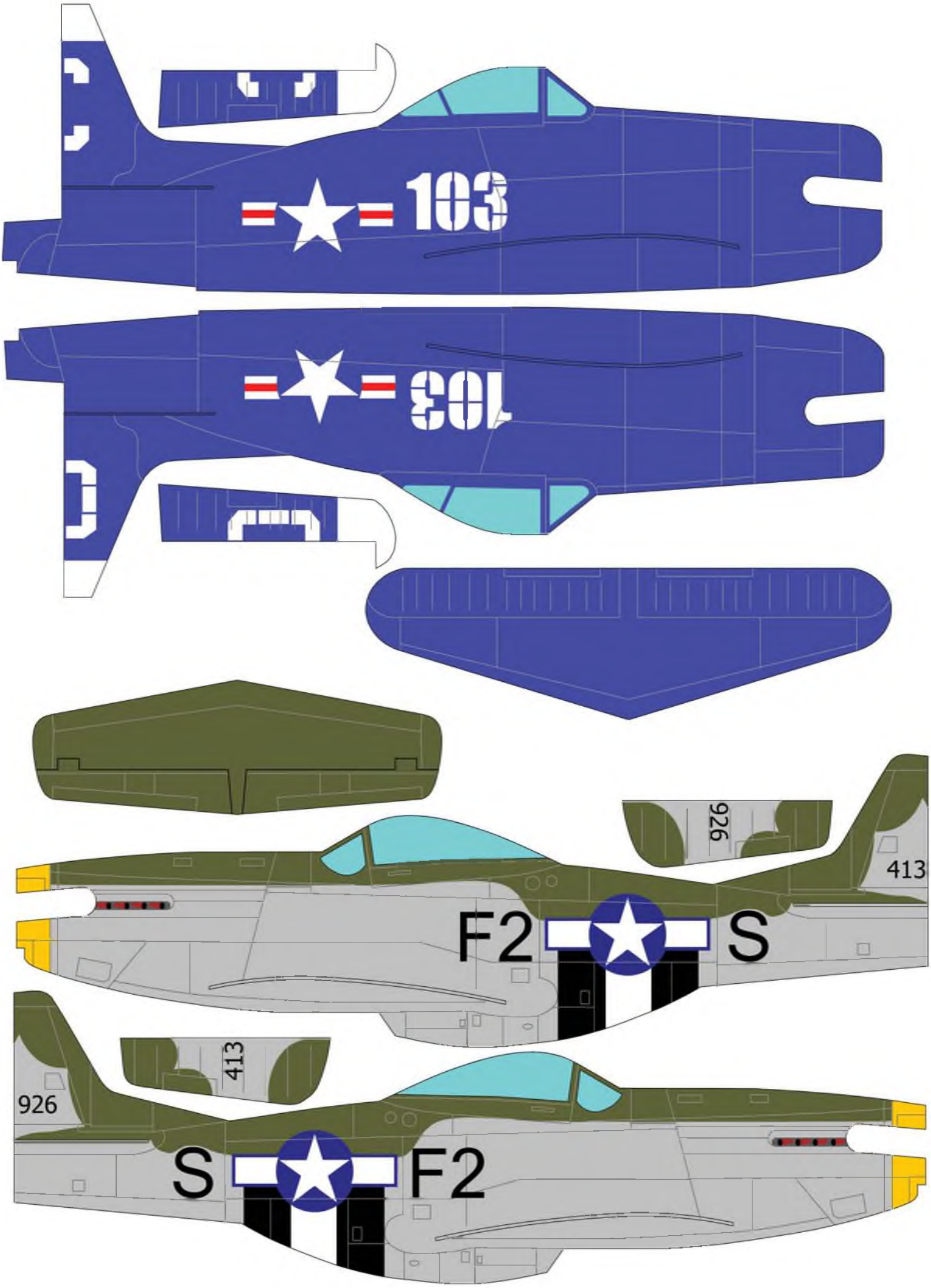
Right, okay, now I know where we were up to, about to embark on some waffling about my design philosophy.

When I sit down to design a model, I know from the outset that it isn't intended to be a 100% accurate scale model of the given prototype. Outlines and rib positions will be as accurate as I can make them, but the structure is likely to be far less scale-like. It will result in a model that looks right from the outside, but one that will prove relatively easy to build.

We all have our likes and dislikes when it comes to model building and designing the model yourself allows you to include all the things you like, while eliminating as many as possible of the things you dislike. A case in question is those clam-shell style fuselages I've adopted of late. The round fuselages on types like the Bristol Monoplane, Albatros 'D' types and the Waco YMF.

Many people find it an absolute pain to have to build a balsa strip box structure, and then build it out to a rounded section. Firstly there's no guarantee the

Just the sort of detailing that draws the eye of the observer and imparts an impression of more detail than there really is.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Definitely smoke and mirrors. Its' shape alone prevents anyone noticing that this Culver Dart is an inch longer than it should be. Plans will appear soon.

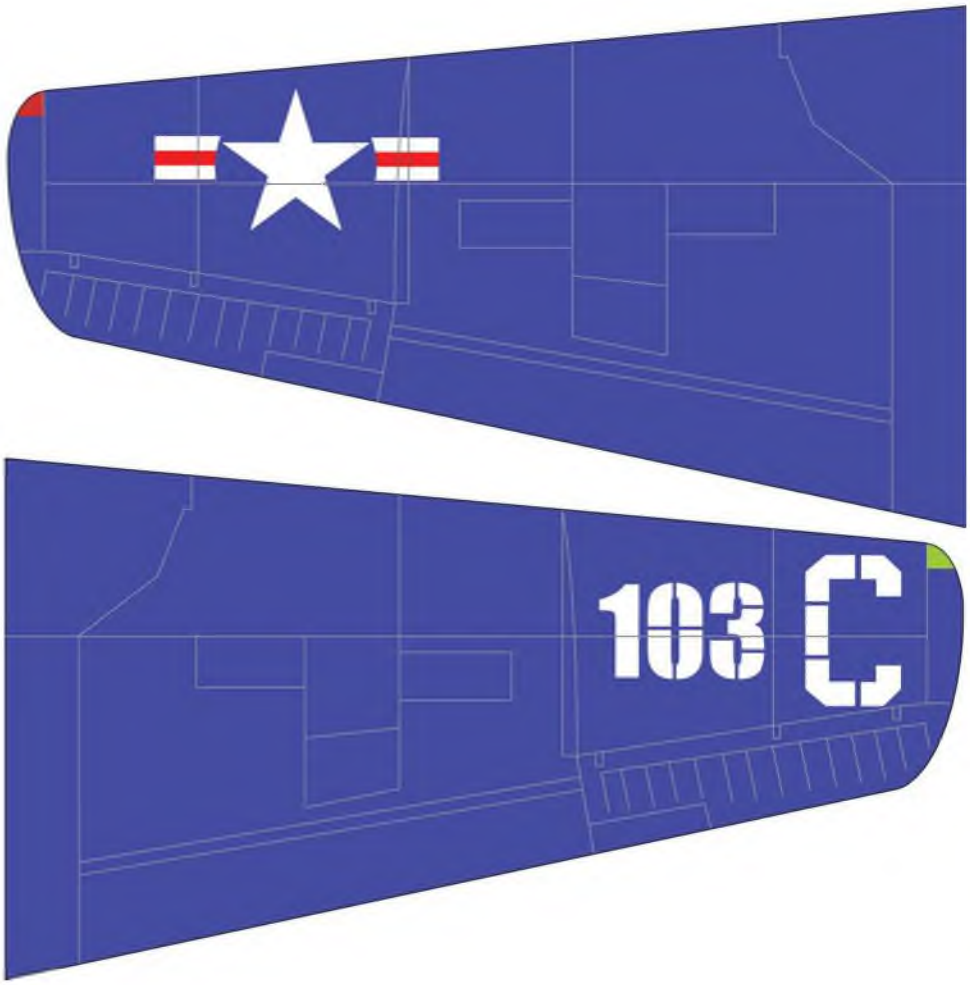
Given basic shells like these, keeping them attached to the board during sheeting helps maintain a straight, true fuselage.

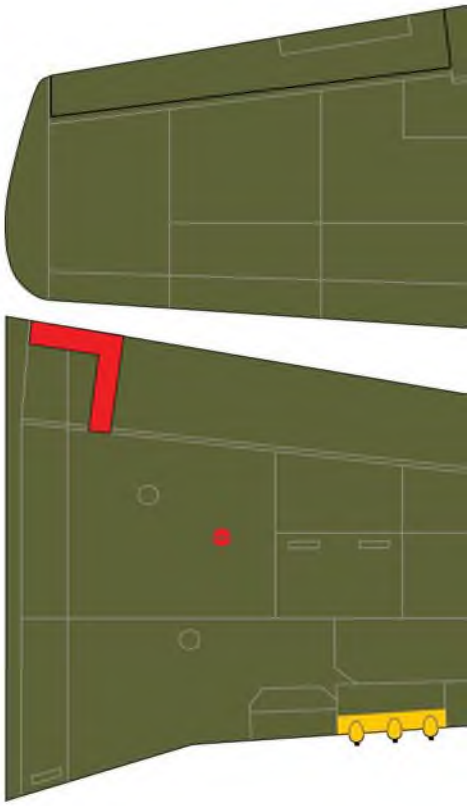
basic box will end up straight and, even if it does, there's always the risk that adding the rounding will warp or twist something.

A request for an alternative fuselage style, while designing my Morane Saulnier A1 model, set me thinking. For more years than I like to remember, companies such as *Guillow* and *Kiel Kraft* have been using a vertical crutch system in their fuselage assemblies - even when it wasn't the best way to go. However, it is still all to easy to build a bent fuselage, and it's not that easy to arrange strut and undercarriage (u/c) mounts. A bit of thought, and several discarded ideas later and I had decided that a horizontal crutch, or to be more accurate TWO horizontal crutches, would allow both fuselage shells to be almost completed while still pinned firmly to the board. Stringers and much of the sheeting could be fitted, along with strut or u/c mounts (each contained entirely within the relevant half structure) without the risk of distorting the shells (because they're still attached to a perfectly flat building board).

Now, rather than running the risk that the sheet and stringers might distort the assemblies, they actually help prevent that from happening. Through the wonder that is CAD, I could draw a half fuselage top view, complete with keel parts and former/mount positions and use the snap and mirror image tools to create a perfectly straight, symmetrical fuselage drawing, followed by copy and paste for the second shell. Now both shells are as identical as they need to be and can be joined to create a perfectly straight fuselage that is free of twists for absolutely minimal effort during the building stage.

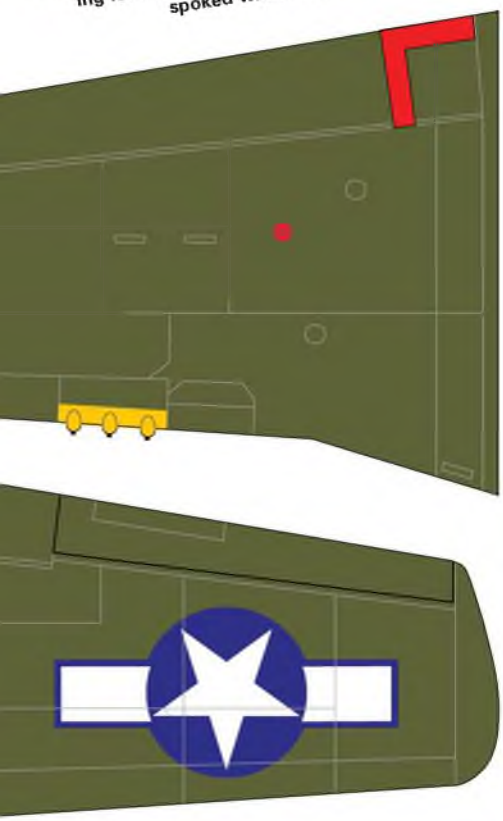
What I'm saying is that, as long as





Even very simple models are improved no end by a little detailing where it counts.

A dead simple model, with minimal detail is enhanced by an under-camber wing and wing warping for lateral control. Rib tapes, pilot figure and spoked wheels add to the impression.



it looks right externally, you can use whatever construction technique you like to actually create the model. This brings us nicely back to what I was talking about, before being tempted to wander a bit. Since it isn't practical, on what I like to think of as 'character scale' to include every little detail (unless your name is Darrin Covington), I like to spend a while seeing what it is that makes this aircraft different from any other. In other words, what it is that gives it 'character'.

This is the point at which things all become a bit 'smoke and mirrors'. You use these points, adding details to emphasise them, to lead the eye away from the less detailed areas. Even a small amount of extra detail in these areas will, because they are where the viewer is going to be looking anyway, will lend a more detailed than it is impression to the entire model. If you get the areas that give the aircraft its' unique character right, the rest of the model will look right too. In other words, I cheat!!!

I like to design a model that is as accurate in outline as I can make it, even if the underlying structure is far from scale. If the rib count is as per original, very few people notice a much simplified wing section. If you curve the tips to give the impression of under-camber, the flat bottomed wing barely shows at all (and is much easier to build).

You see what I'm getting at? Emphasise what is absolutely right on the model and more general areas can be much simpler - without anyone noticing. If it looks like a SPAD, with all the louvers and panels, radiator grille and machine guns, together with almost 100 wing ribs, and flies like a SPAD should fly, it IS a SPAD to anyone but the most pedantic viewer.

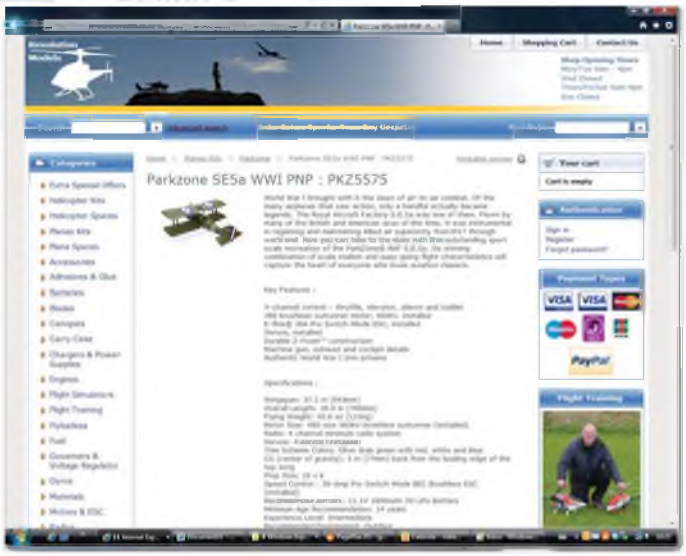
So, with the design philosophy dealt with, and me rapidly running out of space, AGAIN, I'll leave it there for this month. I solemnly swear that next month will actually see a plan taking shape.

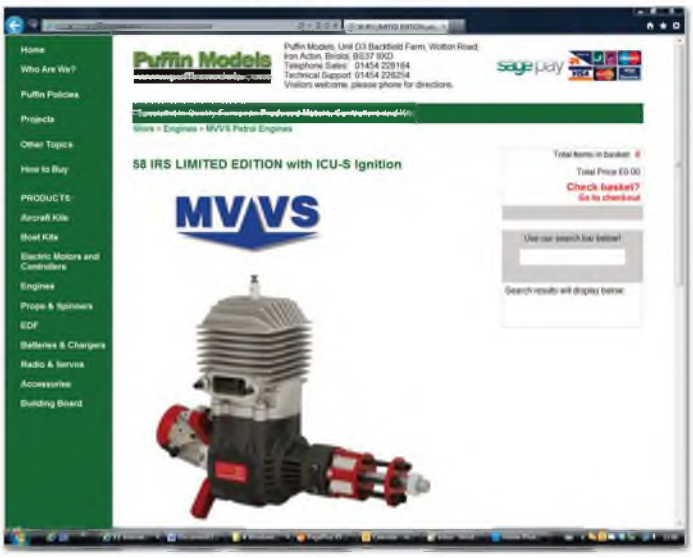
If you'd like those pdf files, or want to contact me for any other reason, you'll find me at PETERRAKE@aol.com ■

An intricate colour scheme is another way to draw the eye where you want it.

Techno Scale

Mike Evatt takes to hyperspace for more TechnoScale Topics





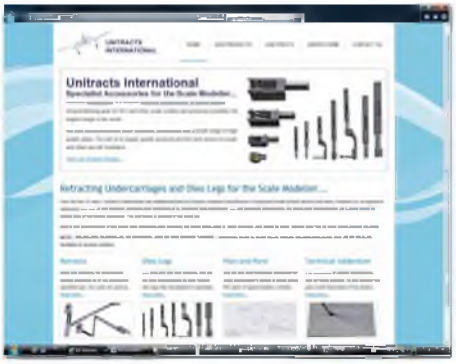
ABOVE LEFT: 'Revolution Models' sell more than just helicopters!
ABOVE RIGHT: Puffin Models now sell the MVVS petrol engine range.

Revolution Models are known as the UK's premier supplier of Model Radio Remote Control Helicopter Parts, Components, Spares and Accessories. However, a glance at their website at http://www.revolutionmodels.co.uk will indicate that they sell fixed wing aircraft as well with a good selection of scale replicas such as the delightful ParkZone(r) RAF S.E.5a. World War I brought with it the dawn of air-to-air combat. Of the many airplanes that saw action, only a handful actually became legends. The Royal Aircraft Factory's S.E.5a was one of them. Flown by many of the British and American aces of the time, it was instrumental in regaining and maintaining Allied air superiority from 1917 through war's end.

Puffin Models, with a web presence at http://www.puffinmodels.com was formed by John and Sandra Emms in 2002 to promote successful electric flight. Puffin was the first full time, 100% electric flight company in UK, and has since branched out into other areas of expertise. As MVVS, under the new ownership of Rudolf Dvorak, sought a UK dealer to take them through the next decade and beyond, Puffin was their first choice. They were involved in the development of the exciting and highly efficient MVVS electric motor range, and had no hesitation when asked to also take on the MVVS petrol engine range, which they believe, is the best petrol engine range produced in the world in terms of power, easy starting, longevity, and after sales support.

Horizon aspires to be a high performance distributor of good quality hobby products. They believe their customers are their highest priority and strive to meet their needs. Their website at http://www.horizonhobby.co.uk shows this commitment with many quality items listed such as the magnificent EVOE7260 Seven Cylinder 260cc 4-Stroke Radial Petrol Engine. Originally designed in Germany specif-

ABOVE LEFT: The magnificent EVOE7260 Seven Cylinder 260cc 4-Stroke Radial Petrol Engine. ABOVE CENTRE: Chris Willis is producing a range of plans, kits and spares for WWII Warbirds. ABOVE RIGHT: The JP Tiger Moth 30 in 1/7th scale from Aeroshack features all balsa construction.



TOP LEFT: Unitracts International also sell Sepp Uiberlacher's range of super scale R/C plans.
TOP RIGHT: Filla-Glu.com for innovative modelling adhesives on-line.
ABOVE LEFT: Bickley Model Flying Club has now been in existence now for nearly 40 years.
ABOVE RIGHT: This 1:5 scale F-9F Cougar is superbly detailed.

ically for use in scale R/C models, these engines are particularly suited to models with radial cowls such as the F4U Corsair and Sea Fury or firewall mounted on vintage aircraft with no cowling such as the Stearman PT17.

Chris Willis has been a modeller of RC aircraft since 1986 and has been very successful in bringing to life replica scale models from WWII. Chris now wants to share those achievements with fellow modellers by producing a range of plans, kits and spares. On his website at **http://www.williswarbirds.co.uk** you will find warbirds aimed at the modeller keen to continue the tradition of building models from basic kits or from scratch via a detailed plan.

On a similar theme! **Aeroshack,** who maintain a website at http://www.aeroshack.co.uk have a section devoted to 'All Balsa Aircraft'. What took my fancy here was the JP Tiger Moth 30 in 1/7th scale. This traditionally crafted balsa construction model is professionally factory-built and finished in high quality film with registration marks and scale detail all applied at the factory! The carefully chosen aerofoil captures the looks of the full size wing section, and just like the original allows pilots to develop their flying skills as they explore the aerobatic and scale flight envelope.

Over the last 25 years, **Unitracts International** at http://unitracts.co.uk has established itself as Europe's foremost manufacturer of specialist model aircraft retracts and oleos. However, as they approach retirement they are rationalising their range and concentrating on a small range of retract sets to suit British plans/kits. They are are the sole European distributor for Sepp Uiberlacher's range of super scale R/C plans of approximately 2m span. Currently available are the Hawker Tempest, Hawker Typhoon and Supermarine Spitfire Mk 16e. The Spitfire has the option of building with clipped wings as was done on some versions to give an 8" reduced span.

Filla-Glu.com was founded by leading adhesives industry professionals with over 30 years involvement within the adhesive market, aiming to give experienced / professional adhesive know-how. They offer a wide range of high performance, high technology speciality adhesives for the hobby / model enthusiasts which are both innovative and market leading. They continue to develop their range bringing exciting products to the modeller. Not available at a shop near you? Not a problem! They have an on-line shop at http://www.filla-glu.com

Bickley Model Flying Club has now been in existence now for nearly 40 years. Its current 150 members fly all types of radio-controlled aircraft and helicopters from electric gliders to jets and their members have been successful in both national and international competition. Many are also heavily involved in the show circuit. Bickley has one of the best facilities in the South East which enables it to hold a series of invitation events throughout the year. It is worth logging on to http://www.bickleymodelflyingclub.co.uk to view the superb scale photo galleries if nothing else.

The **Skymaster ARF** Plus 1:5 scale F-9F Cougar was designed by experienced R/C pilot Anton Lin who started out building and flying ducted fan jets in the 80's.This is just one of their range, all of which are tested for static and dynamic loads and flight testing are done on each model before release to customer. Their website at http://www.skymasterjet.com gives much information about these excellent models the detail is superb.

I always enjoy browsing the web pages of **YT International** at http://www.ytinternational.co.uk as their range of models is forever expanding. Their warbird range is well known but they also sell a large number of civilian aircraft. There are over twenty from which to choose, from the Dakota DC3 to the Gee Bee R4 shown in the screen shot. As with their warbird range, the construction is a mixture of composite and traditional built-up structures. The fuselage is a sandwich of Airex foam, glass cloth and epoxy resin, bonded together in a vacuum to ensure a light, strong structure. The wing and tailplane are CNC cut and jig built for precision.

And finally! A true blast from the past now flies again! The 'Balsa USA' Morane Saulnier A-1 model, shown in the screen-shot, was originally introduced in 1979 and re-released in 2006. This beauty is 1/3rd scale, has a wing span of 104in and weighs in at around 25-30lbs. Suitable engines are 40-60cc Petrol or 2.4 to 3.6 cu.in. Glow. Check it out at http://www.balsausa.com

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

ABOVE LEFT: The Gee Bee R4from YT International.
ABOVE RIGHT: The 'Balsa USA' Morane Saulnier A-1.

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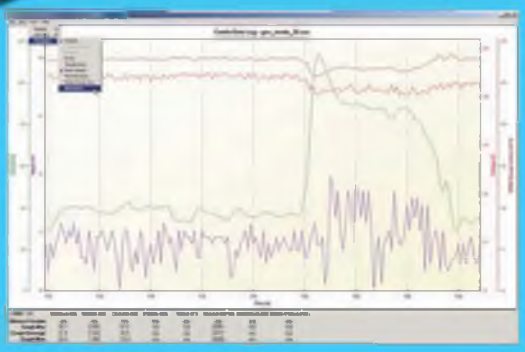

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