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Scale Weekend report



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# AERO MODELLER



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**Cover:**  
Deserved winner of Best Free Flight Scale subject at our recent Scale Weekend was Mike Hetherington's splendid Supermarine Spitfire prototype. Twice-size Earl Stahl design flew majestically time and time again, stopping all other action on the field. Our Old Warden report begins on p.480

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## ARGUS PRESS GROUP

P.O. Box 35, Wolsey House, Wolsey Road,  
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ISSN 0001-9232

# HANGAR DOORS

## Daedalus deal

What a splendid reaction to our first-ever colour feature on the stupendous Daedalus HPA achievement. Glad you enjoyed it - but no, we can't provide blow-up centrespread prints for the workshop wall...

Just one thing. Lack of checking at our typesetters meant that Pat Lloyd's Daedalus drawing was reproduced less than distinctly. To give you the full benefit of his efforts, and to enhance scrutiny of this aeromodelling-based full-size craft, we reproduce it again on the facing page. Scale, as before, is 1/144. Copies of the 1/62 scale original are available at £1.25 plus 50 pence postage from ASP Plans Service, 9 Hall Road, Maylands Wood Estate Industrial Estate, Hemel Hempstead, HP2 7BH.

## Nats raffle

Dave Greaves tells us that the six winners of the F/F Nationals Raffle, sponsored so heartily by Finlux UK, are as follows:

- |                               |                  |
|-------------------------------|------------------|
| 1 S. Kenyon, Hertford MAC:    | Finlux TV        |
| 2 Doug Bartle, York MAC:      | Vacuum Cleaner   |
| 3 Gerry Pink, Bristol & West: | Radio/Tape       |
| 4 L & S Fruit Supplies, Crew: | Two-speed drill  |
| 5 F.R. Hargrave, Croydon:     | Finlux tracksuit |
| 6 V. Schofield, Crew:         | Finlux umbrella  |

Well done, all of you. Anyone who says that Doug Bartle will clean up for the rest of the season will be ignored.

## Vintage Weekend sans frontiers

As many of you will be reading this issue at our Old Warden

**Above: A change of title to reflect differing emphasis. For SMAE now read BMFA. Zappy logo will become familiar! Below: Terry Rose's view. You are coming to Vintage Weekend, aren't you?**



*'I honestly don't think this is how to win the Chobham Trophy at Old Warden....'*

Vintage Weekend on 20-21st August, we thought we'd ask you to keep an eye open for our many overseas visitors and make 'em really welcome. Especially as we've just heard from Michel Pierrard that he and several other French Vintage fans will be making the trip. Don't speak the lingo? - don't worry. Aeromodelling crosses all international boundaries, including language. Here's our contribution, anyway: *Bienvenu à Vintage Weekend!*

## And the next Nationals....

RAF Barkston Heath and RAF Cranwell are the venues for the biggest ever British R/C, C/L and Scale Nationals during Late Summer Holiday Weekend. Cranwell will be the location of



R/C Gliding activity. Lots to see and do. Notably, Ken Morrissey will be doing his stuff in the C/L speed circle as he aims to repeat his recent 215 mph flight under 'official' conditions to wrest the 10cc record from the Russians.



**Above: 'College of Aero' - enrol here! Actually, Peter Kirby snapped this Hurricane outside the College of Aeronautics hangar - doors half open - at Cranfield during the PFA Rally. Opposite page: Good and sharp - Pat Lloyd's splendid Daedalus drawing bears accurate printing this time. See first item.**

Flying is from 9am to 6pm; entrance costs £3.00 per adult. Under 16s and over 65s pay only £1.00. A three day pass for BMFA members is just £6.00. Car parking is free.

Not been there before? Barkston Heath is on the B6403, about three miles NE of Grantham and Cranwell is on the B1429, three miles NW of Sleaford. See you there!

## Lost and found department

Round-up time at Old Warden! Brian Welch reports that the following models await reclamation. One APS Tomboy, PAW 80 powered, apparently lost during 1987; one Mercury Mentor, lost in the course of the last SVAS Silent Day; and a very waterlogged Keil Kraft Halo, found just a few weeks ago.

Could they be yours? If so, send further evidence of identification to us here at *Aeromodeller* and we'll reunite you with your model. Of course, you could have put name and address on the model in the first place.....

## Classy chassis

Amazingly, some aeromodellers find time enough for other sports and pastimes. Browsing through the latest issues of a well-known classic car magazine, who did we find praising the virtues of his much-travelled (and rebuilt) AC Ace but Vintage enthusiast David Beales. Quite a period account, actually, covering sprints, hill climbs and Historic racing as well as everyday use. How about fitting a model box carrier, David?

This set us thinking about other aeromodelling historic car enthusiasts. How many are there? We recall that Phil Siddall has a taste for Bugattis, for example...

One last thing on the subject

of taste. When you next meet David, just say two words. 'Anchovy toast'. He'll explain...

## Out on a Lympe

Our Golden Era Day at Old Warden on 10th July was treated to the most unremittingly awful model flying conditions we can ever remember there. All credit to the efforts of a handful of stalwarts who battled in flight until it became too wet to continue. It was plain that the Pterodactyl cup for unorthodox designs and our Lympe-Scale event would both have to be postponed. Rearrangement of the latter is already in hand. Thanks to help from the Shuttleworth Vintage Aircraft Society's model group, we advise that the new Lympe-Scale date is 11th September; venue Old Warden, as part of that group's Silent Day there. No excuse now for not finishing that model!

Revised details of the Pterodactyl Cup event will be announced shortly.

Hangar Doors is continued on page 522.

**Ian McIntosh sends details of the Club Aeromodelismo Mallorca's Open C/L International on 1-2nd October. We can forward...**

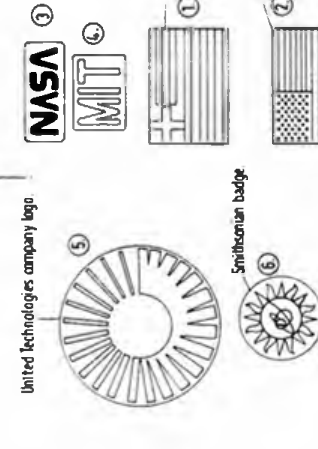
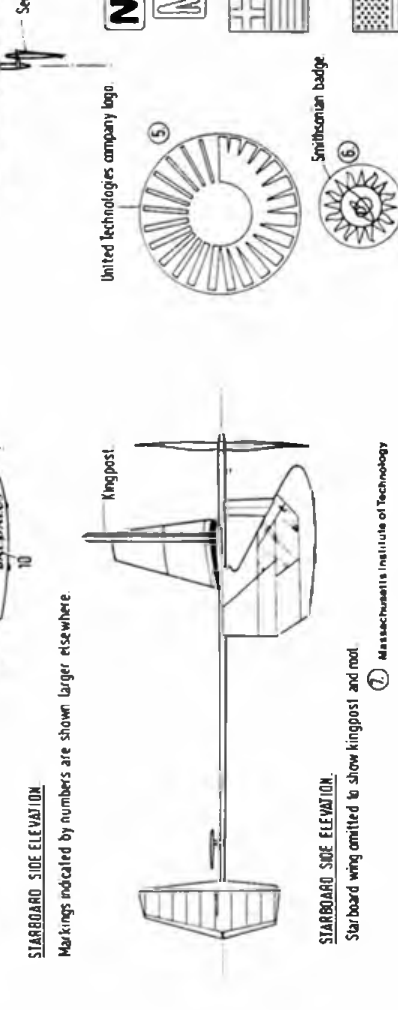
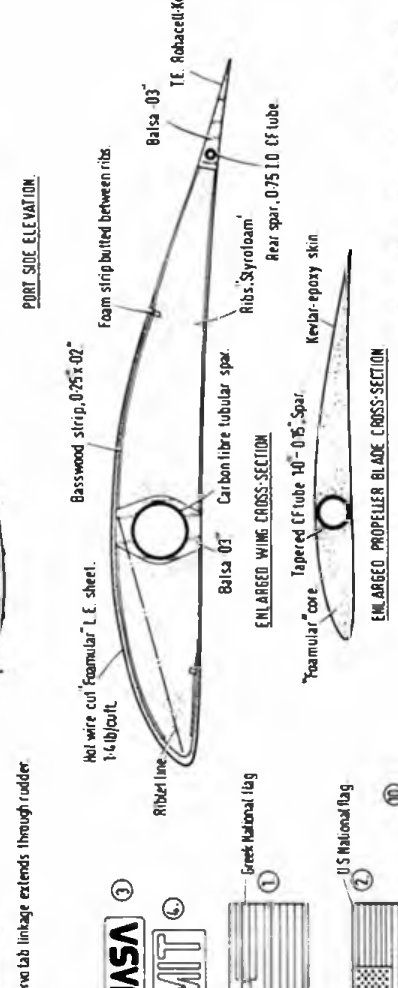
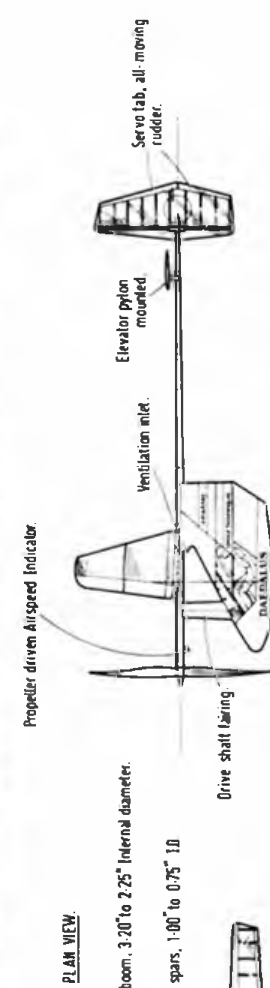
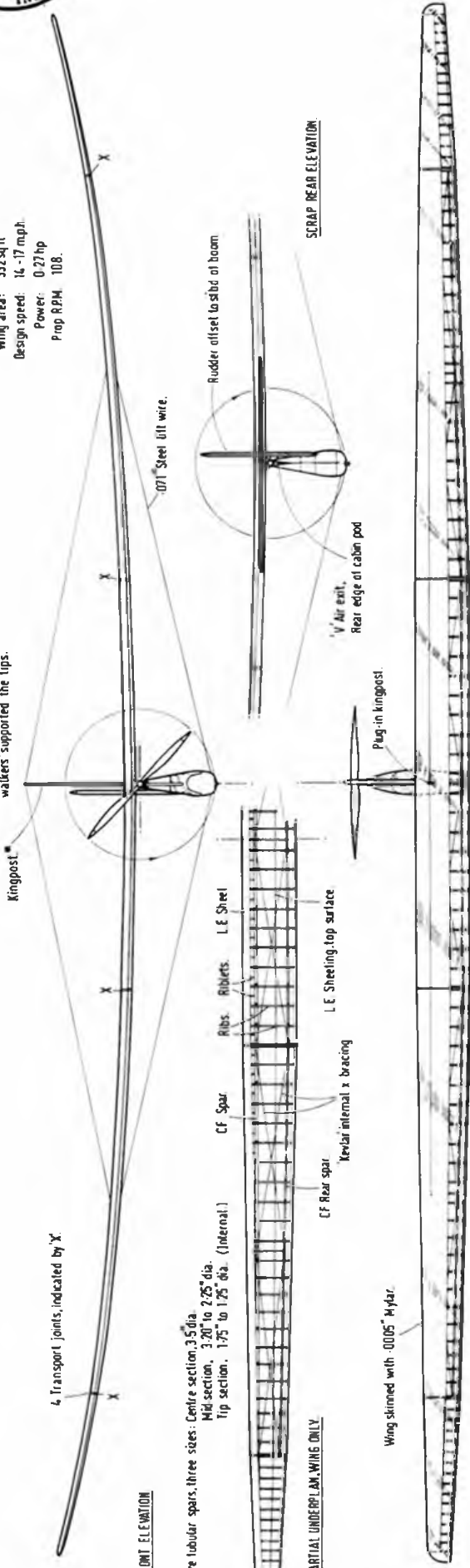




Empty weight: 70 lbs.  
 All up weight: 229 lbs.  
 Span: 112 ft  
 Length: 28 ft 9 in  
 Prop diam: 11.3 ft  
 Wing area: 332 sq ft  
 Design speed: 14-17 mph  
 Power: 0.27 hp  
 Prop RPM: 108.

\* All flights prior to April 23rd were made with the kingpost and bracing wires in position to protect the wingtips from damage, on the day of the attempt the post was removed and wing walkers supported the tips.

This drawing depicts 'DAEDALUS', Massachusetts Institute of Technology's Man-powered distance record holder at the time of its 73 mile flight from Heraklion, Crete, to the island of Santorini, on April 23rd 1988. Grateful thanks and acknowledgements to Mark Orelia of MIT, John McInyre and Andrew Cranfield for sketches, photographs, drawings and enthusiasm!



DAEDALUS

ENLARGED MARKINGS: See starboard side elevation for positions

Drawn by: A.A.P. LLOYD

United Technologies

HUMAN-POWERED DISTANCE RECORD BREAKING AIRCRAFT

DAEDALUS

**Combat challengers —this is for you! Frank Smart's dual-purpose wing may be flown in Diesel A or full FAI competition so get building. A full combat programme is expected in 1989...**

See you  
 on  
 Cloud



*Frank has experimented with various elevator shapes and materials to find what suits him best. So should you!*

Nine!

**T**HERE HAS been a good deal of discussion recently on the subject of Combat. Some concern has been voiced about the relative lack of new blood on the FAI Combat or F2D scene - a state of affairs which would quickly improve with greater recruitment into 1/2A and A Combat, where flying skills may be sharpened before F2D is attempted.

Cloud Nine is a dual-purpose model aimed at bridging the gap between the classes by the adoption of high performance diesel power, prop changes only being necessary to allow it to be flown in Class A or F2D. The trailblazing motor is without doubt the new Nelson F1D described by Ian Horne elsewhere in this issue. Building time is halved - and minimal ground equipment is needed....

And just think - mixed engines, diesel and glow, could once again do battle in the combat circle!

**Background of a battler**

The thinking behind this project started at the '88 Nationals, where I learned of the Dutch 'Old Tyme' A Combat event to be flown

in June. As soon as I returned home from the Nats I sorted out several models and plans from the 1970s, and set about adapting my early experiments using sheet polystyrene as construction material. One of the most notable was the successful 33in. design Laser Blade, which weighed in at 8oz complete with its Webra Record 1.5cc diesel and 8 x 4 propeller...

Although hot-wire cut foam wings may be quickly reproduced, opportunities to build-in strength are limited unless complicated jigs are used (in which case extreme accuracy is needed, further increasing building time). I am confident that Cloud Nine will open a whole new field of Combat building, combining hot-wire cut parts, sheet foam, balsa, plywood, spruce and plastic. A variety of modern covering materials may be used

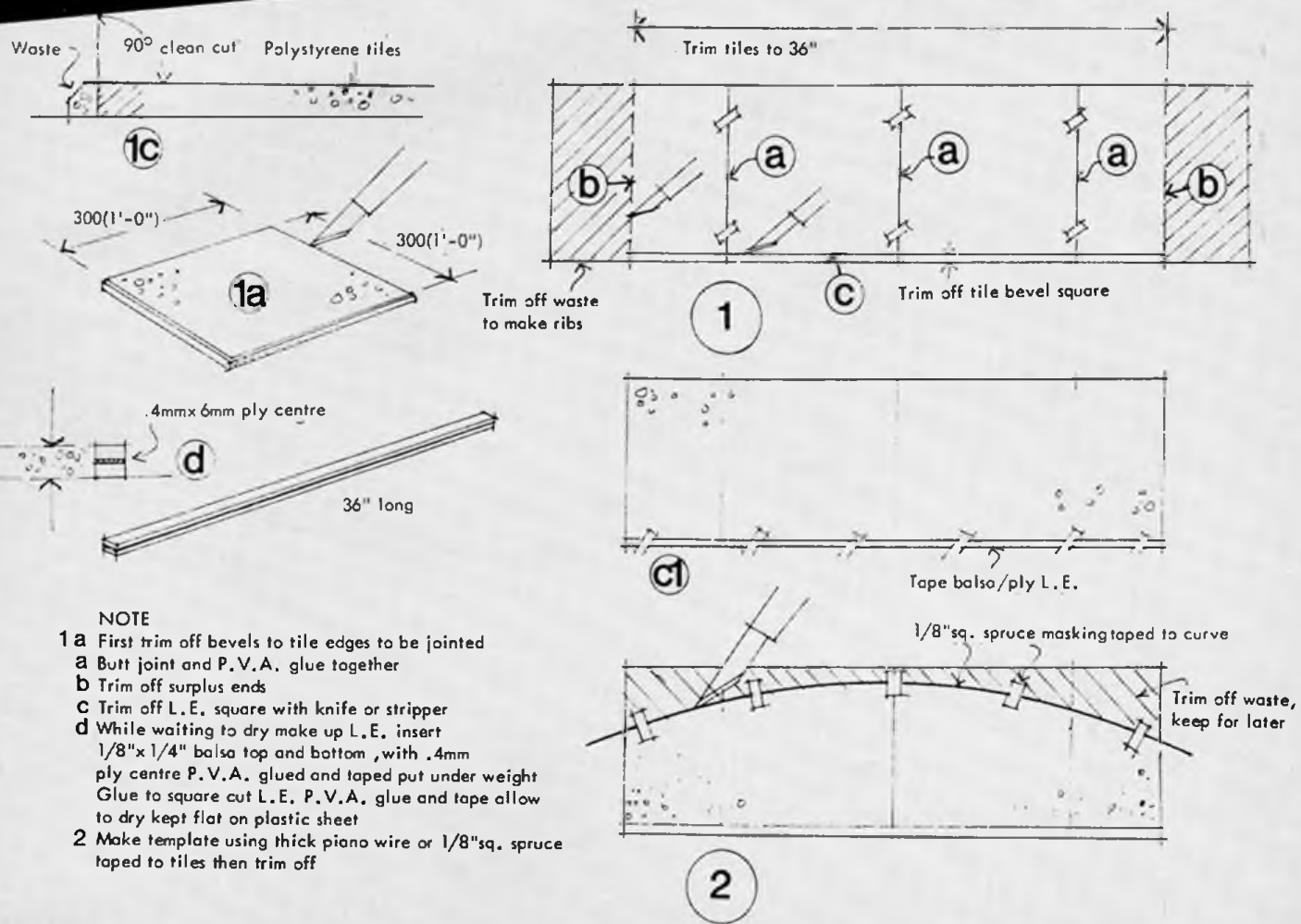
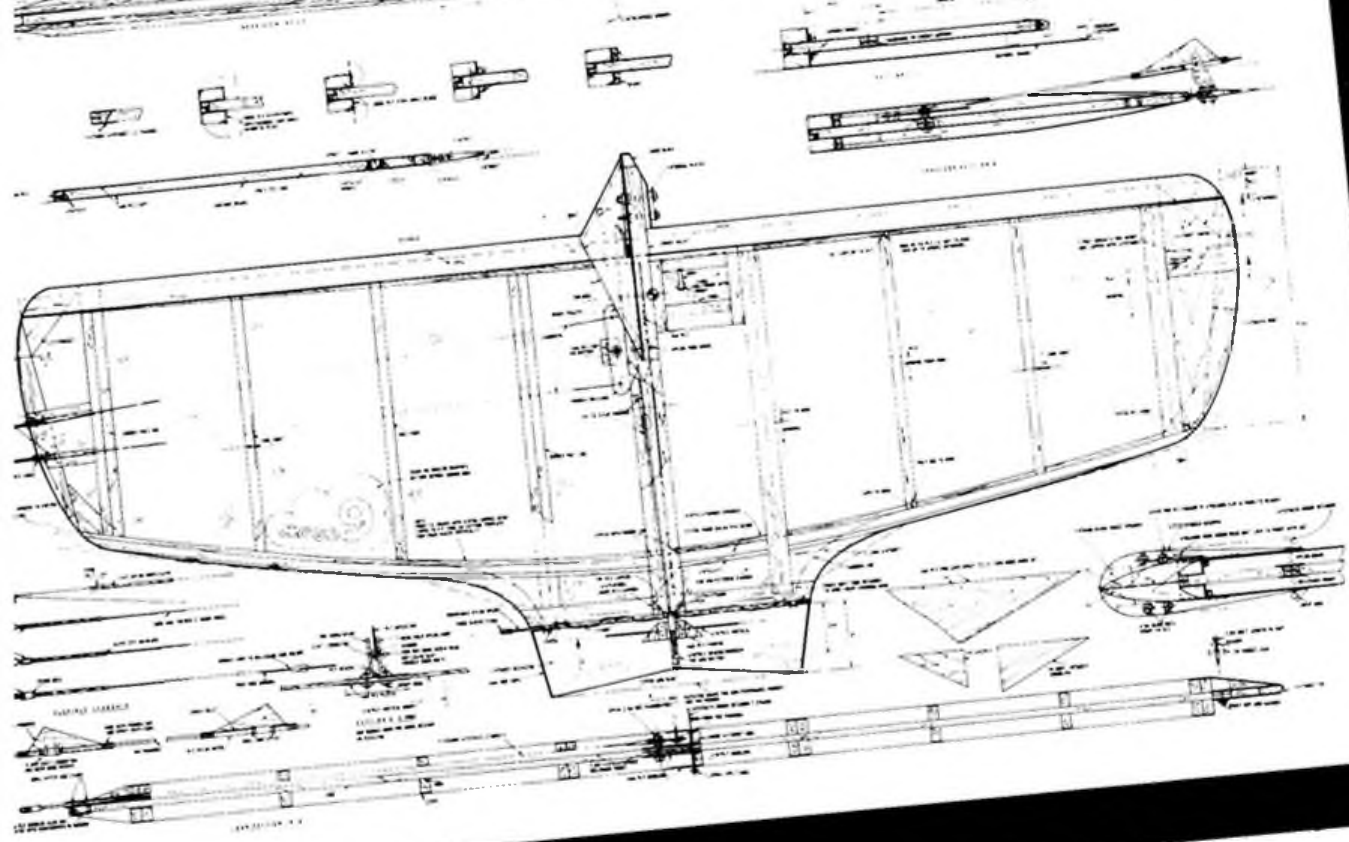
on this warp-free structure which is adapted from my early APS designs T-Bird and Hornet. The centre core is conveniently flat. Balance fore-and-aft is achieved by easily removable elevators of varying weights. Other note worthy features are the improved, R/C cable leadouts, a double elevator horn/keeper and horn deflector, and a lot of strength, including an extra robust engine mount - a decided asset for diesel-powered craft!

The result is a reasonable (and repeatable) 15 ounces weight - and a model with a more than sporting chance of keeping airborne for four minutes!

**Get on with it!**

Before rushing into construction study the plan carefully, noting in particular the

Full-size plans for Cloud Nine are available from ASP Plans Service, 9 Hall Road, Maylands Wood Industrial Estate, Hemel Hempstead, Herts HP2 7BH. Price £2.75 plus 55p postage. Quote plan ref. AM 1580



- NOTE**
- 1a** First trim off bevels to tile edges to be jointed
  - a** Butt joint and P.V.A. glue together
  - b** Trim off surplus ends
  - c** Trim off L.E. square with knife or stripper
  - d** While waiting to dry make up L.E. insert 1/8"x 1/4" balsa top and bottom, with .4mm ply centre P.V.A. glued and taped put under weight. Glue to square cut L.E. P.V.A. glue and tape allow to dry kept flat on plastic sheet
  - 2** Make template using thick piano wire or 1/8"sq. spruce taped to tiles then trim off

materials required and the various stages of assembly. Gather together all you will need before starting. That way the model will take shape remarkably quickly. A few notes on material selection will avoid disappointment....

Leading edge balsa must be cut from light 3/8 x 3 x 36in sheet using a Stanley knife and straight edge. Balance the sheet spanwise and mark the heavier edge: ensure that this goes outboard. The same procedure applies to the leading edge insert which is made from two lengths of 1/8 x 1/4in. strip, cut from sheet with a balsa stripper; and spars for trailing edge spars and leading edge (spruce) should also be balanced. This may seem an extreme process but I rarely have to add tip weight (although there is provision for it if test flying proves it necessary). Check all spars for flaws and discard ruthlessly if present. Investment in a balsa stripper is highly recommended. Not only does it result in accurate balsa and ply strips but superb polystyrene tile joints and spot-on leading edge trimming can be made. Ribs may be manufactured in seconds, each tailored to the correct depth and ready to fix, absolutely vertically, to the centre core.

The main plywood components are all from 0.4mm sheet. On no account omit, or thicken them. Again check for flaws. The elevator hinge and line lead-out guides are from Japanese R/C control cables. The hard, white plastic outer sleeve and tough, flexible nylon 'inner' - the type with a fine central hole - provides a really smooth control set-up when used with seven strand Laystrate leadouts and 16g. stainless steel pushrod (14g. if a high performance engine is fitted). Linkage to the nylon elevator horn is by

means of a double-loading grub screw electrical connector, which allows the elevator to be removed or replaced without losing the fine setting. Specified polystyrene tiles are 300 x 300mm with a thickness slightly over 6mm. Choose tiles smooth-surfaced on both sides. '600' grade tiles are too thick.

Paxolin bellcranks are not strong enough for Combat. I make my own from Formica (with grain running along the major axis) or 1mm nylon. Micro Mold control horns are fine but should be boiled in water for about 15 mins to render them less brittle. Nylon props should be given the same treatment. To speed up construction, double-sided adhesive tape can be used at the following locations only:

Initial joints between tiles; laminated leading edge centre front spar to polystyrene centre core; polystyrene half ribs to centre core; 1/32in capping strips to ribs and tip gussets.

All other joints must be glued with a rapid Unibond PVA (which is waterproof) and Super Epoxy where specified for maximum, flexible strength. Drops of Loctite superglue will hold the hinges tubes in place prior to stitching, epoxy gluing and covering.

### More tricks of the trade

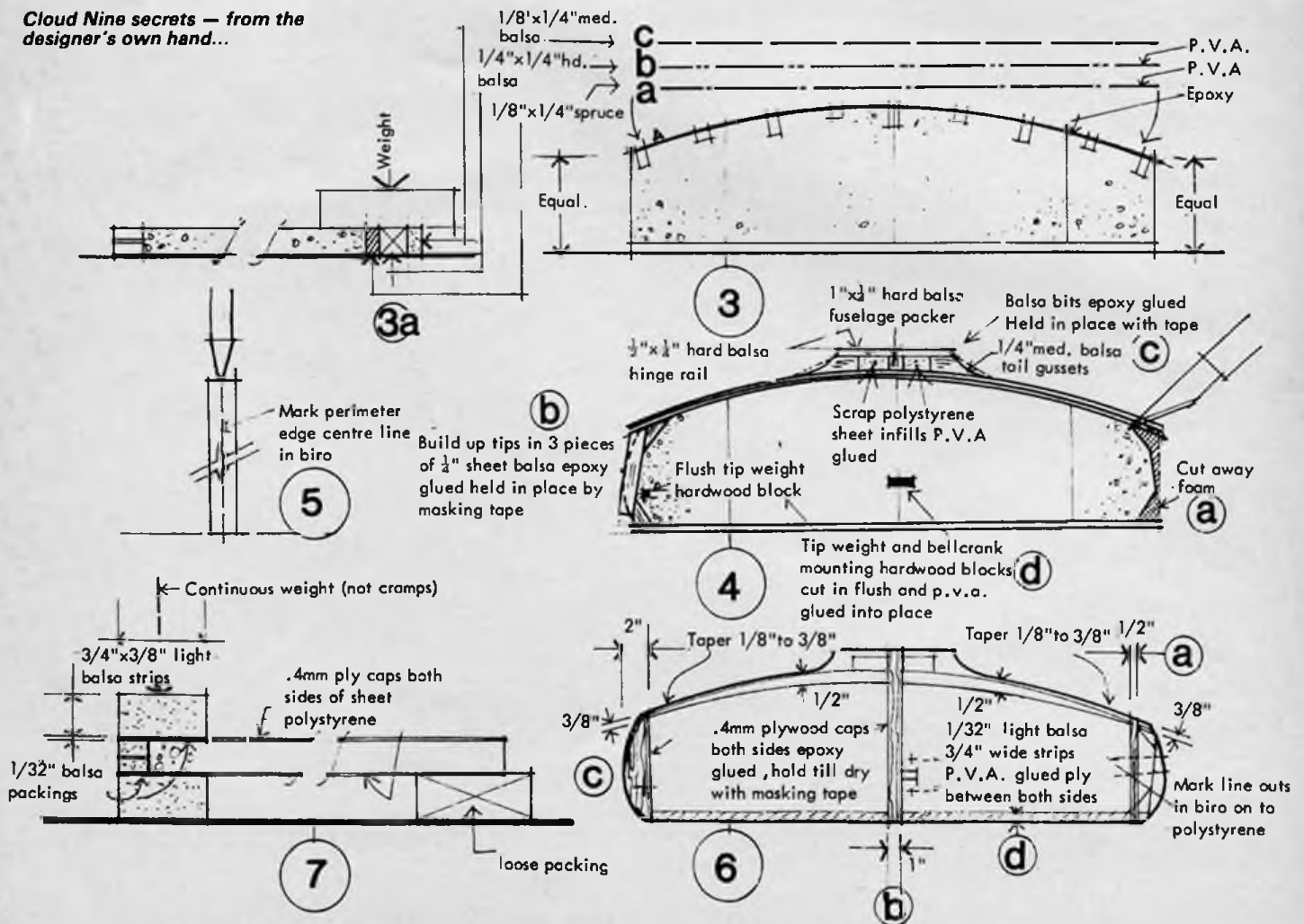
The fuel tank is a full-size Colman's mustard tin. It will need filling only once before the one-minute warm-up and will allow practice sessions of around seven minutes.

Make the streamer clip from 16g. cycle spokes. The threaded ends are bound with

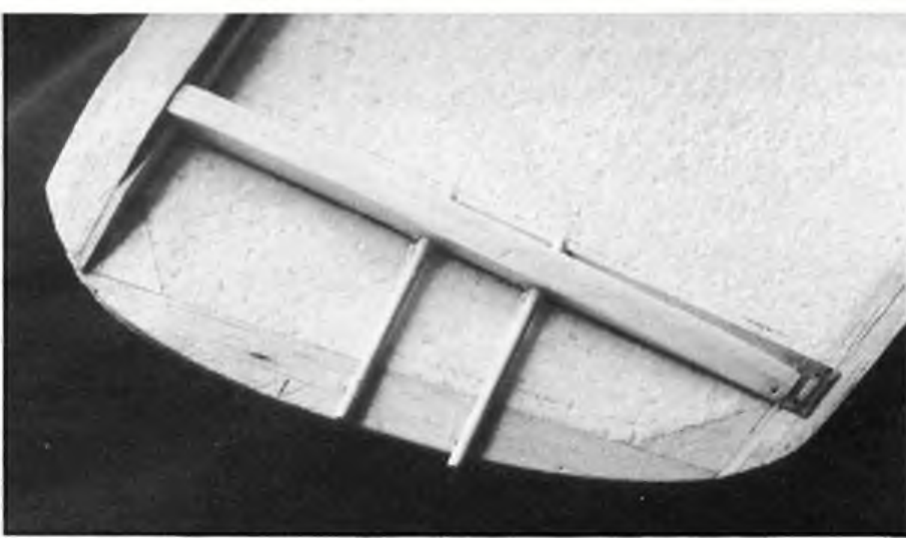


Above: head down, Frank prepares for the Gank meeting in June. (Ian Horne photo). Full report next month! Right: Wing tip and trailing edge details.

### Cloud Nine secrets - from the designer's own hand...

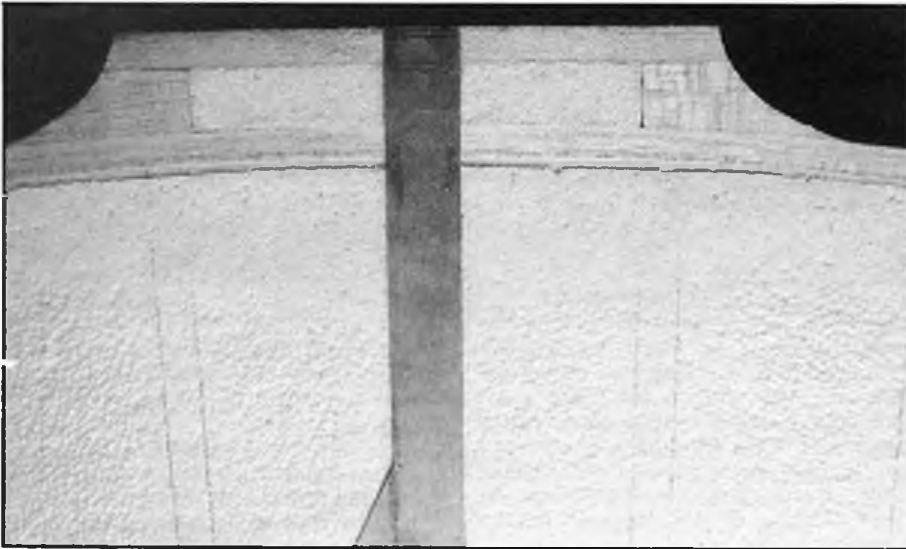






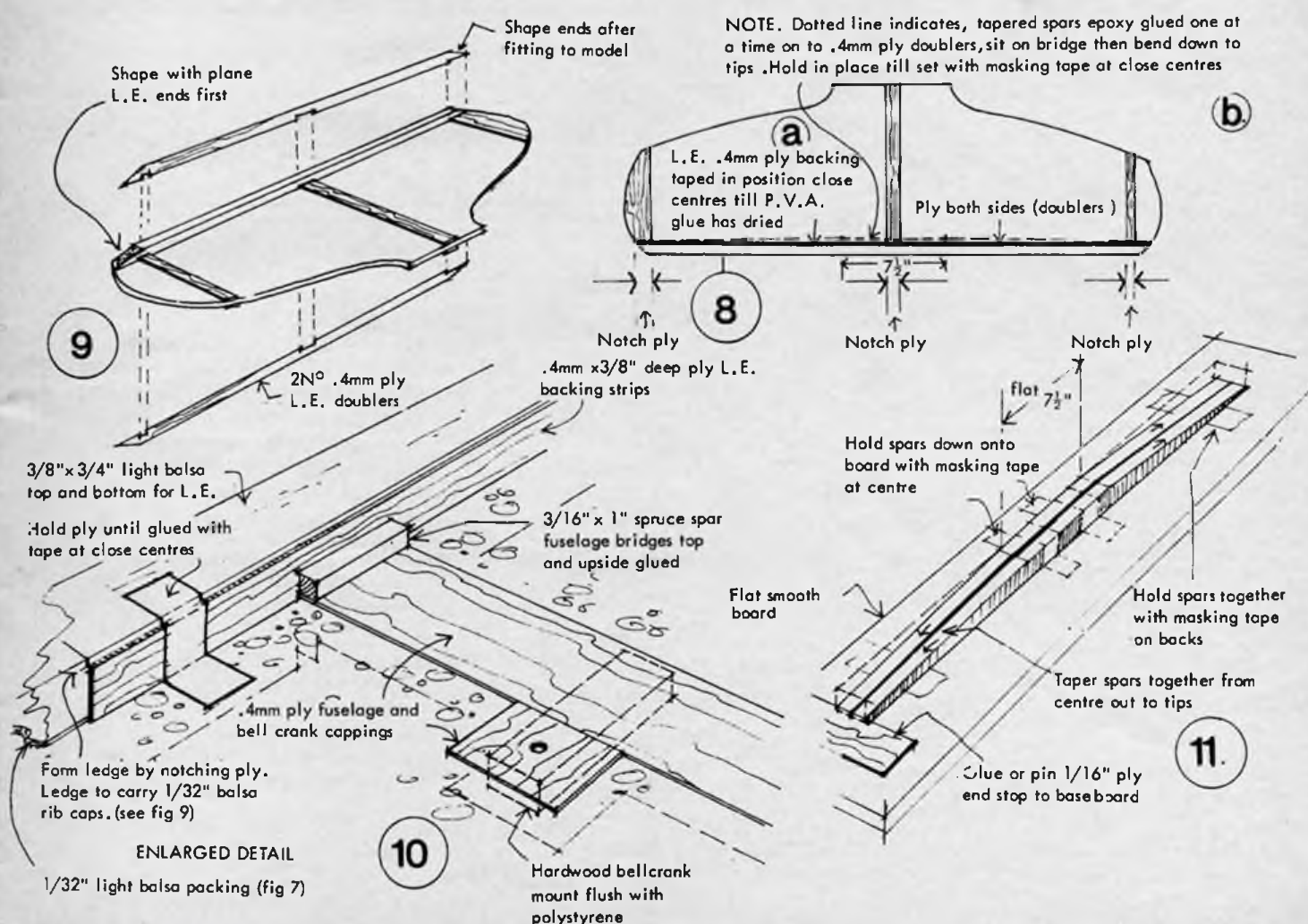
fine fuse wire and soldered. A nylon nut attaches the clip to a front engine bolt as shown: the rear bolt prevents it from rotating. A clip of these dimensions is essential for F2D streamers. Setting it below the engine bearers afford protection. If made correctly the streamer clip can double as a fuel line shut off, eliminating the traditional bulldog clip when glow engines are used. Note the 7-strand Laystrate linkage from engine to bellcrank.

At various stress points materials are drilled after assembly, stitched with 0.15mm nylon fishing line, with cyano then applied to the holes. This gives extra strength with minimum weight, but keep superglue away from polystyrene - it melts it FAST!



### Order of play

The design is based on the well-known, tried and tested Anticipator wing in use from 1971 to 1974 but substantial modifications have adapted it to suit unconventional construction. There is some building to do, as opposed to assembling. Original Anticipators were flown mainly with MkIII Oliver Tigers, Copeman tuned. The Mk IV Tiger now in production is a much stronger and heavier engine. Waiting time for this quality, hand-made British classic is a painful two years! Prototype moment arm was increased by two inches to suit this engine - the conventional, balsa trailing edge was replaced by a curved, laminated one. This automatically increased wing area. Tapered leading edge spars were retained, but were brought together at the tips for added strength. Wing section is now of constant thickness flat at the front (as original) but with aerofoil section to the rear. This gives



smooth, rounded aerobatics but a 'groovy' level and inverted flight.

### Step One

Make up leading edge insert from three laminations of 1/4 x 1/8in. medium balsa sandwiching 1/4 x 0.4mm ply. PVA adhesives must be used. Tape laminations together and allow to dry under weight applied evenly along its length (Fig. 1). The ply adds strength and prevents opponents' lines from sawing into your wing.

### Step Two

Join four No.300 x 7mm polystyrene ceiling tiles with five minute epoxy wiped on. Hold together with masking tape on both sides. Lay that on plastic film covered building board, cover with a further layer of plastic film and weigh down (Fig 1a).

### Step Three

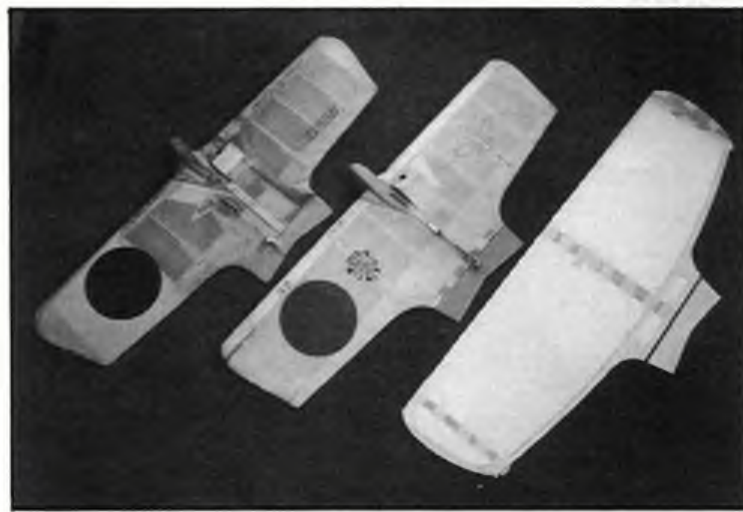
Trim off leading edge using straight edge and single-sided razor blade or balsa stripper (Fig 1c). Glue pre-made leading insert in place with PVA. Hold weighted with tape until dry (Fig 1d).

### Step Four

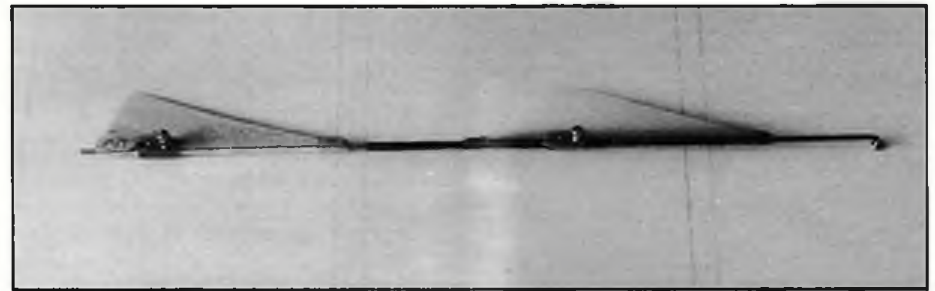
Measure tips and maximum radius point of spruce spar. Mark with ball point pen. Bend a square spruce strip to this curve and fix in place with masking tape as template (Fig 2). Cut with razor blade, leaving taped sections until last. Remove scrap and keep model box tail packing.

### Step Five

Now fit spars A, B and C. It is not necessary



Left: Basic structure at rear shows Anticipator ancestry. Below: Cycle spoke pushrod and 'line-beater' deflector. Corrugated art-board wing core is another experiment.

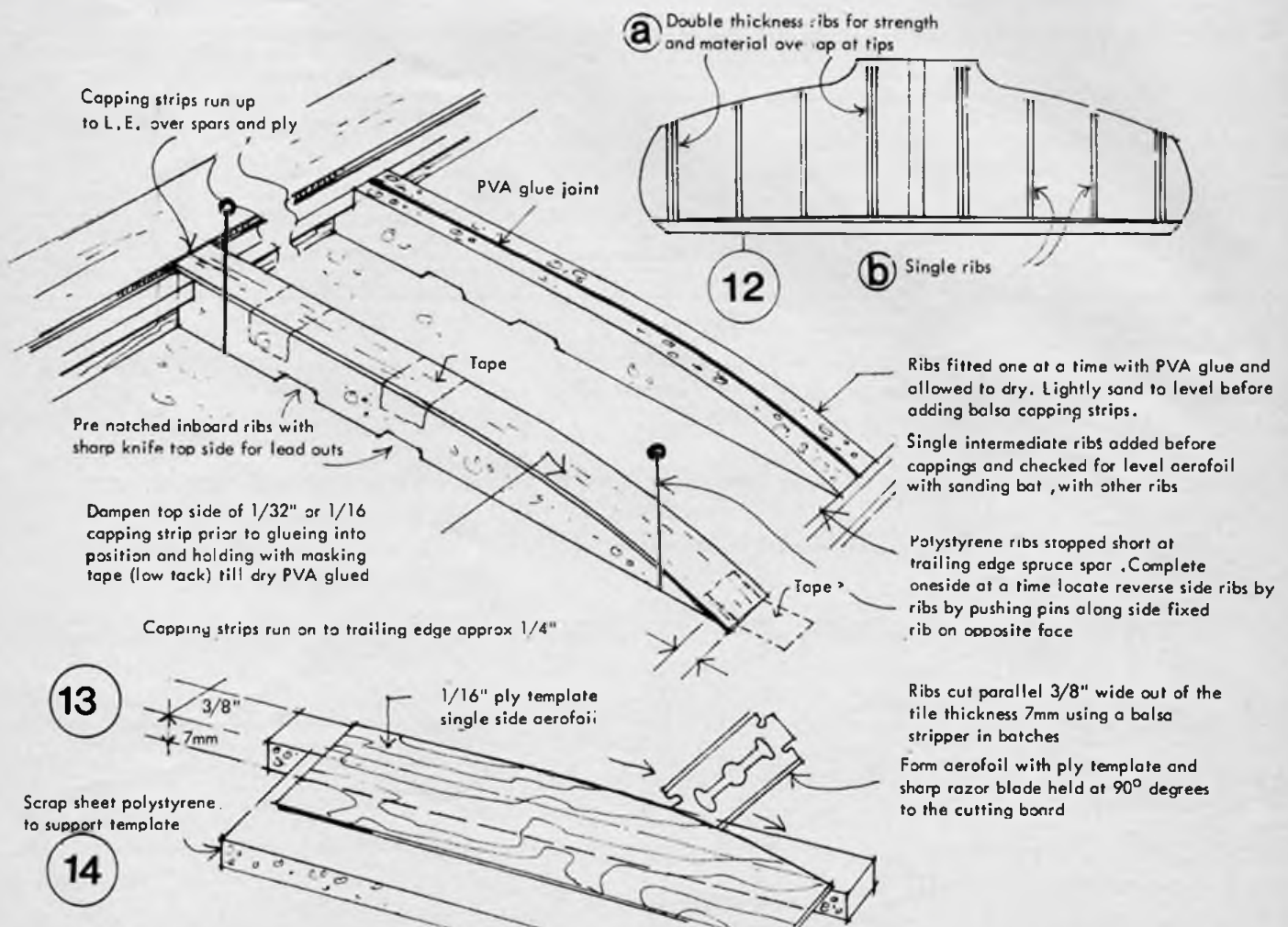


to wet the spruce and balsa for they will bend supported by the vertically-held polystyrene, but have ready plenty of five minute epoxy and short pieces of masking tape. Start at the centre of the flat length 'A' and work quickly out to the tips. Lay flat and weighted. When dry repeat procedure with 1/4in. sq. hard balsa spar 'B' and 1/8 x 1/4in medium

balsa spar C. Rapid PVA is the adhesive. Dry under weights (Figs. 3 and 3A).

### Step Six

Cut slightly oversize tip pieces from 1/4in. medium balsa. These will be shaped in situ (Fig 4b). Make up the 1/2 x 1/4in. hard balsa hinge rail (Fig. 4c) and trailing edge gussets,



plus the 1 x 1/4in. fuselage packer - all epoxy glued. Gussets shown dotted are made from two laminations of 1/8in. sheets. Now add tips and trailing edge extension, infilling each side of fuselage block with scrap polystyrene sheet. Let in mounting blocks for bellcrank and tip weight (Fig 4d).

### Step Seven

Shape entire model to plan outline. Mark centre line of centre core depth for final shaping later (Fig 5). Sand flat both faces of wing and mark fuselage and rib positions. Make up tip sections and epoxy in place, holding with masking tape (Fig 6). Build up leading edge with 3/4in strips of 1/32in. balsa and ply (Fig 6d).

### Step Eight

Mark bellcrank and leadout positions with ballpoint pen. Add leading edge itself. Tape parts together and pack tail 3/8in. (Fig 7). Add leading edge vertical doublers, prenotched to fit. Plane down tips and glue in place (Figs. 8,9,10). Epoxy in place the 3/16in. sq. fuselage bridges. Make up the tapered 3/16in. sq. spruce leading edge main spars. Tape at centre and back-to-back at tips; plane to edge (Fig 11). Remove surplus ply at tips by scoring and snapping off. Add tapered spars with five minute epoxy (Fig 8b). Trim when dry and add bellcrank mount. Total assembly so far should weigh no more than four ounces. Now is the time to apply graphics as desired.

### Step Nine

Cut ribs in 3/8in. strips from sheet polystyrene. Use a ply rib template to trim rear portions to aerofoil curve (Fig 14). Fix

all underside ribs within PVA, leaving doubler and fuselage ribs until later. Repeat for top surface, notching inboard ribs for leadouts as shown on plan. Add foam doubler ribs, holding together with low-tack masking tape. Sand evenly when dry. Cap ribs with 1/32in. sheet, dampened on top surface to allow curvature to be followed (Fig 13).

### Step Ten

Fit the 1/4in. hard balsa fuselage ribs and 1mm ply inside doublers. A full length foam rib is fitted on the underside with a 'half' rib on top to allow for the bellcrank and pushrod assembly which may now be installed with elevator and leadout guides. Now fit engine mount blocks and all gussets, followed by the 0.4mm ply fuselage capping strips. Epoxy in place but don't forget to make the slot for the pushrod.

### Step Eleven

Shape elevator but leave the hinged edge square. Thread lengths of plastic tube onto nylon spine and tape where necessary. Spot glue with cyano (Fig 15), remove assembly and cover elevator, wrapping over tubes. Offer up to model tape remaining tubes and cyano in place. Note that the soft plastic spine retainer is epoxied to the model to prevent its loss in grass when changing elevators on the field.

### Step Twelve

Dry fit the tank, cutting away centre core foam to allow a tight fit. Shape wing leading edge with razor plane and sanding 'bat'. Fuselage is left square at leading size to take the 9/16in. wide engine mount which is built

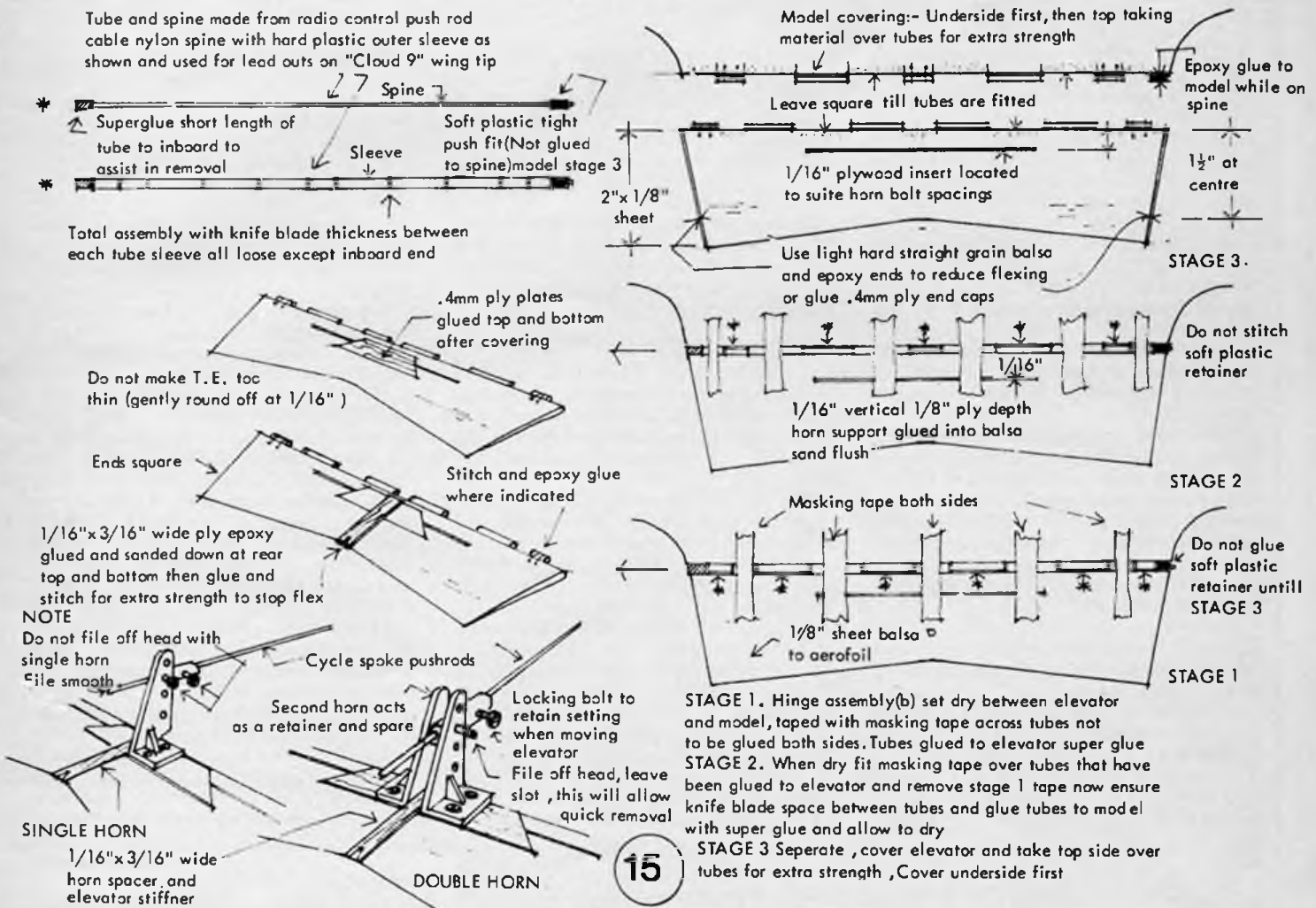
on after covering. Fit 6 BA nut and washer to underside of tip; this will enable any necessary tip weight to be bolted in place later. Leadout tubes are stitched and epoxied to ply braces; and the tank is fitted, followed by final sheeting with 1/32in. balsa. This will allow you to cover the model with anything; even nylon!

### Covering your combat craft

The prototype was covered in semi-transparent (blue) Micafilm. The model structure must first be treated with Balsarite. Although slightly more difficult to apply than Solarfilm, Micafilm is much stronger, being glass cloth based, and it will ultimately give a cleaner model. As it is more immune to heat, leading-edge exhaust protector plates will not be needed. Note: Tip ribs are exactly 32.1/2in. apart, allowing two models to be covered from one roll. The waste will cover the tips separately with 1/2in. overlap. Don't cover the outboard tip until the model is complete and balanced, for tip weight may be necessary. Apply two coats of fuelproofer to the engine bay and over all lapped covering seams.

All-up weight with a Mk IV Oliver Tiger should be no more than 15oz. The prototype flew 'off the board' with no modifications necessary. Cloud Nine is not only highly competitive - it's a dream to fly level 'eyes off' - inverted or not! But trim on a calm day...

I will be happy to answer individual queries by letter. SAE please to: Frank Smart, Rosebank, High Street, Upton St. Leonards, Gloucester GL4 8DJ. See you on Cloud Nine!





*This picture: Keith Ridley launches his twin-rubber Mosquito for an extended test hop. Centre: Patrick Roberts' Miles Sparrowhawk is a control line conversion of Dennis Bryant's R/C plan. Right: Unusual C/L choice - Wal Cordwell's Granger Archaeopteryx. Stable; but linkage problems cut short trials. Below right: Bernard Sexton restrains his C/L Comper Swift: John Roberts casts a critical eye over the Merco 61.*



**Super weather at Old**

**Warden Airfield on**

**18-19th June...**

# SUNSHINE

**WHO** HAVE you sold your soul to this time?

Such a question, repeated - if slightly ungrammatically - at intervals during our Scale Weekend, was proof positive that we had again achieved our annual tryst with the weather gods. The sun shone, the breeze blew away from the infamous, model-clutching copse and everyone simply had a great time. Our revised airfield layout, taking account of more space to allow greater separation between radio control, free flight and control line activity was universally enjoyed and has set the pattern for the future. Segregation of car parking allowed enthusiasts closer access to their own particular interests - at least until the overflow car park was bought into operation!

Of course, aeromodellers enjoy every chance to fly at this splendid site - and not all are scale enthusiasts. Sport and vintage designs abounded, particularly on the breezier Saturday - but thanks to largely sensible behaviour there was no conflict. Indeed, at times the atmosphere was of an early post-war rally with activity wherever one cared to look.

We were even treated to a flypast by the Lancaster, Hurricane and Spitfire of the Battle of Britain Flight, and later a Vulcan, on Saturday afternoon.

Of course, the sad news of the death of Vic Dubery, that most enthusiastic of scale modellers, came as a shock to all. It had been Vic's intention to run the SAM 35 Masefield Trophy event for Vintage Rubber Scale models as usual, but knowing that impending

hospitalisation would mean his absence from the field, he had left arrangements with Alan Wiggs and Ron Knight. It is to the credit of these two that the competition took place in its usual, friendly spirit, just as Vic would have wished. But more of that, and other Vintage-orientated happenings, in Alex Imrie's report later...

Impossible to detail everything of note. How could we even see it all? But on such a glorious weekend, individual achievements stand out. Here are our impressions, to augment this photo report.

## Radio control masterpieces

It is stunning to evaluate the scope of R/C scale these days. Every year we see new delights that would have been impossible to tackle only a few years ago. Such is the reliability of modern radio equipment - and the competence of fliers....

Our new airfield layout permitted large scale craft again this year. Most notable was Arthur Searl's beautiful Desoutter, a replica of the Old Warden machine and a worthy winner of the Shuttleworth Trophy. We'll even forgive that underwing reverse 'Z' - the result of an early-morning finishing session!

Creating models for Old Warden is often not a totally serious business - not quite the close-focus business of a Nationals entry or Team Trials, we mean. John Wright's Optica sums this up exactly. Just twelve months on, here was the result of a post-last-year's event bet. Could it be done? had been the homeward question twelve months ago. And impressive was the word. After an early attempt, the

twin-boom ducted-prop flew as if on rails.

Say 'Hanriot' and you think of Peter Neate. Here was his latest - a fine Swiss-liveried biplane with just the right atmosphere about it. Then there was Chris Hodgson's Chipmunk; prolific Brian Peckham's HK1 (can anyone confirm that it was light blue? We've spent hours trying to analyse black and white photos). And for sheer bravado - how could anyone compete with Peter Antram's quadruple-electric C-130 Hercules, awarded the Mole Trophy for best electric-powered subject. But with two full days of R/C scale activity we'll have to ask you to refer to our companion journals RCM & E and Radio Modeller for more details.

## Control line circuitry

A series of well-known favourites reinforced the view that C/L scale is alive, well and happy. Even if there were fewer new models than hoped for, quality and interest made up for lack of numbers. Three Kings stalwarts Wal Cordwell and Bernard Sexton indulged themselves with a Granger Archaeopteryx and Comper Swift respectively (the latter in Bernard's favourite black and gold. The Archaeopteryx is a challenge at any level, but to attempt this short-coupled, eleven-controlled subject in the C/L circle is just plain brave! Controls became detached before we could see the swept wing ultra-light at its happiest, but Wal consoled himself with trouble-free flying from his now well-known, and charming, DH 90 Dragonfly. Geoff Burkett's rather roty, non-scale sounding SE5 impressed as ever, as did John Roberts'



# AND SCALE

*at Shuttleworth*

Chipmunk; and we applaud Patrick-of-that-ilk's Miles Sparrowhawk, converted from Dennis Bryant's R/C plan. A fine effort (but are those tapered wing registration letters quite right?).

## Free Flight fun

Following the trend of the past couple of years there were many power models to be seen. Many were present after encouragement via the Longbon Trophy event for Aeromodeller Plans Service designs. How rewarding to see at least two each of the Luton Minor (Mike Holloway's flat-wing, 'as per' example with pendulum ailerons is awaiting flight trials); Druine Turbulent; Jodel Bebe; Focke-Wulf Stosser; Tiger Moth (Ted Horne's producing probably the finest flight of the entire meeting), Morane Parasol and Fokker Eindexer. Ted Horne's PZL 11c in 'Duck Squadron' colours is basically a one-and-a-times enlargement of the APS plan. Its PAW 149 toured it around most realistically at fairly low level. A similar enlargement of the recent *Aeromodeller* free plan of the Sopwith Swallow by Dave Bainbridge was powered by the new Irvine Mills .75. The model rocked a bit during turns thanks to scale, zero dihedral but it was perfectly stable. Richard Hawke's Sopwith Snipe, identically powered, seemed to need a touch more dihedral for safe flight...

It is always pleasant to see freshly-crafted models, particularly when minimal information is to the designer's hand. Gary Mayes had painstakingly built his Compte Gentleman from dimensions and



September 1988



Above: Ray Johnson weeds  
fanatically on his way to winning the  
Mass Launch with Paper Family  
Cruiser. Above right: All the fun of  
the Jetex Mass Launch fair - a hectic  
business! This photo: Derek  
Bainbridge's stable Sopwith Swallow  
- an enlarged Automodelle's free plan.



Top left: Red and white F/F Compte Gentleman by Gary Mayes flew splendidly. Left: Ted Horne built this enlarged APS PZL fighter for PAW 149 power. Most realistic performer despite minimal dihedral.



Old Warden Scale Weekend	
Free Flight Best models	
1 Mike Hetherington	Twice-size Earl Stahl Spitfire
2 Ted Horne	Enlarged APS PZL 11
3 Gary Mayes	Own-designed Compte Gentleman
4 Keith Ridley	Rubber-powered Mosquito
Notable mentions:	Dave Bainbridge Sopwith Swallow
	Paul Briggs Hurricane
	Derek Hughes Pterodactyl V
<b>Junior award</b>	
Chigwell School - accepted by Alex Brown	
<b>Longbon Trophy</b>	
Mike Holloway Cessna	
<b>P.E. Norman Trophy</b>	
Not awarded	
<b>Jetex Mass Launch</b>	
George Milner Smith F15 profile	
<b>KK/VeronKit Mass Launch</b>	
Ray Johnson KK Piper Family Cruiser	
<b>Chart-Micromold CO<sub>2</sub> Competition</b>	
1 T. Rushby	KK Silveira
2 A. Balding	Curtiss Robin
3 R. Pilgrim	KK Auster Arrow
<b>Masefield Trophy</b>	
1 Lindsay Smith	Comet Navy Racer
2 Ron Brownson	Hoatplane
3 Simon White	Stahl Magister
	Stahl Rearwin
	Speedster
<b>Carter Memorial Trophy</b>	
W. Cordwell DH Dragonfly	
<b>Control-line</b>	
1 John Roberts	DH Chipmunk
2 Bernard Sexton	Comper Swift
3 Chris Bradford	Douglas Dakota
4 Geoff Burkett	SES
<b>Radio Control</b>	
1 Martin Fardell	RE8
2 John Wright	Edgeley Optica
3 Tim Royle	Gladiator & Sopwith Triplane
4 Vic Knight	Consolidated PT3
<b>Special Award</b>	
Terry Bridle Chance Vought Corsair F411	
<b>Mole Trophy</b>	
Peter Antram Lockheed C130	
<b>Shuttleworth Trophy</b>	
Arthur Searl Desoutter	

# SUNSHINE AND SCALE

*at Shuttleworth*

Left: Alan Jupp displays the famous P.E. Norman Mew Gull. Many Norman and Longbon models on display - an interesting talking point! Below: Don't see many of these.... Westland Pterodactyl IV by Derek Hughes was aired for the first time.



photographs. The high-wing Swiss classic - such a captivating subject - flew most happily and was rewarded in our prize lists (and how we enjoyed the first ever F/F prizegiving on the field...).

## P.E. Norman and Fred Longbon Trophies

The Norman Trophy was not awarded this year, not for lack of interesting subjects, but rather because few would have appealed to P.E.'s own sense of innovation and bravado. Alan Campbell's Mig 15 came close, but this Fox 15 powered ducted fan needs more trimming. Derek Hughes had brought along a brand new Westland Pterodactyl IV which repaid earlier CO<sub>2</sub> experiments by promising test flights; but this too needs fully sorting. Next year, perhaps?

After much thought, Mike Holloway's Cessna, a Fred Longbon original restored from an absolute heap of bits, was reckoned the likeliest candidate for the Longbon Trophy. But it was close! We forecast even more participation in next year's event. Think of all those APS designs to be built during the winter...

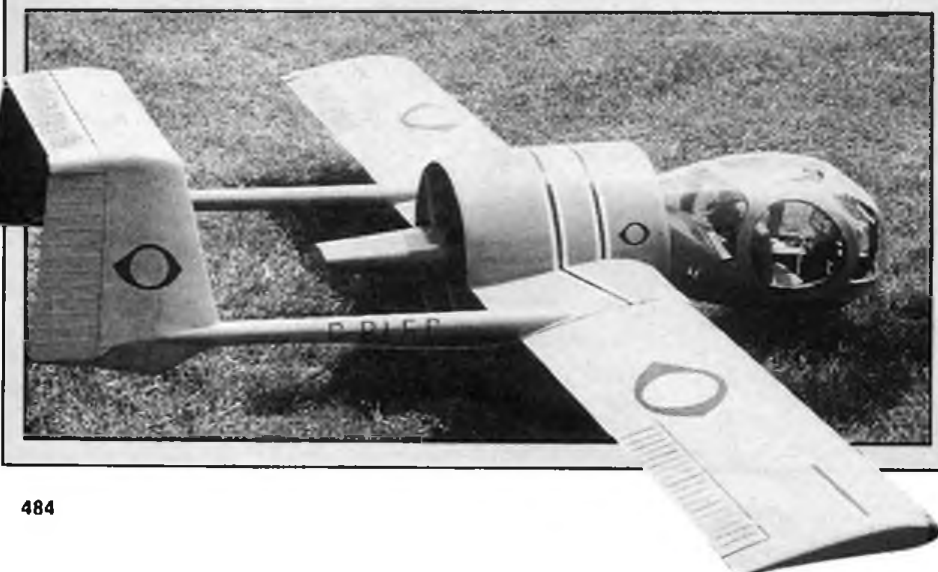
## Mass launch magic

What is it about Mass Launch events that brings out the masochistic, voyeuristic, and sadistic? Perhaps it's simply that there's so much fun about! Take the Jetex spectacle, for example. Charlie Newman organised this to almost Masonic ritual. First there was the ceremonial 'trimming of the wicks' circles to uniform length, followed by a countdown with ignition at 'T minus seven seconds'! No flight was perfect - but the build up was wonderful, as over 100 spectators would

# SUNSHINE AND SCALE *at Shuttleworth*



*Impressive R/C trio are, top: Chris Hodgson's Chipmunk (John Roberts' C/L version of the same Shuttleworth subject won our C/L prize); centre: Arthur Searl's superb Desoutter, winner of the Shuttleworth Trophy this year; and John Wright's ambitious Edgley Optica. Fine fliers all!*



testify... Well done to George Milner Smith with his impressive, profile F-15. The KK/Veron kit Mass Launch, arranged because of on-the-field demand, was a victory for purple-faced Ray Johnson and his KK Piper Family Cruiser. The penalty of flying a potential winner in this musical chairs event is that retrieval and rewinding in time is stamina-sapping, to say the least...

### CO<sub>2</sub> affairs

Once again, Chart-Micromold hosted an informal CO<sub>2</sub> contest. Victory went to T. Rushby with a converted Keil Kraft Luscombe Silvaire. Other contestants were close, many proving renewed life available from 1950s flying scale rubber kits if thoughtfully adapted for Telco power. There seemed little problem with CO<sub>2</sub> operation during the weekend and high temperatures gave many a model a useful boost.

### Applause, applause...

Consumer reaction at once indicated the most impressive F/F model. Despite strong competition from Keith Ridley's twin rubber DH Mosquito and Paul Briggs' large Hurricane, it was Mike Hetherington's splendid twice-size Earl Stahl Spitfire that turned most heads with its stately progress. Those privileged to witness early Sunday-morning flights, when this was the only model airborne on the entire airfield will admit to the magic of the Rubber Scale model. But there were others too, in all sizes, to impress...

### Come again

We'll welcome you again, Chigwell School Juniors. Rob Pressnell and his 'Fun Scale' Found Centennial (soon to be an *Aeromodeller* plan). Mike Farrell and his flying circus - even if all were not scale; Derek Damant and the Perman Parasol, Barry Clay's stupendous Cleveland Sikorsky Clipper; Peter Ball's Pfalz DIII and all the rest of you - here's your advance invitation to 1989 at Old Warden!





Bob Walden, Masefield Trophy winner last year, entered this Astral Beaufighter this time but had to resort to a three-year-old Stahl Magister after damage. Placed 11th.

of the whole meeting. Watching this thirteen-inch model, encumbered by the drag of massive floats and biplane wings, sailing effortlessly around without apparently the least intention of coming down was unbelievable, yet, there it was, the utterly perfect example of model aerodynamics. Its configuration gave it a high bonus to put it into a well deserved winning position. Where there are winners there must be losers; but here lower place men merit specific mention. Pride of place must go to the three contestants who aimed to gain twin-engined bonuses; Mike Hetherington (Blenheim IV), Bob Walden (Beaufighter) and Keith Ridley (Mosquito). The models they were flying were well known to me over the years but I had not previously seen them in the 'flesh', so it might interest the reader to hear a little of their background.

**Astral Multis**

The Atlanta Aero Model Company of Leeds introduced a series of kits for single-engined fighters of around 28in. wingspan early in 1940. These were designed by two of our foremost flying scale exponents, Harold J Towner and Howard Boys, and were later known as the Ace series. Some twelve months after the introduction of these models the twin-engined Bristol Blenheim IV heralded the appearance of the Bomber series. A Handley Page Hampden soon followed. By mid-1941 they were joined by the Lockheed Hudson. In the meantime the company had changed its name to Astral. Next came the Beaufighter at the end of the year. All these models, designed by H J Towner, were of 28 inches wingspan. Plans were available at 2/- each before the kits, selling at 12/6 each,

# AND VINTAGE

**Alex Imrie was at Scale Weekend to focus on the Masefield Trophy**

# SCALE

**F**LIGHT DURATIONS in the three rounds for the 22 entries, and the adjustment of bonus points for their various configurations of size, number of wings and number of engines were well catered for by the efforts of organiser Alan Wiggs, who had a busy time. The cold statistics on the results sheet can in no way describe the absolute beauty of the top performers' flights against the vault of blue Old Warden sky. Ron Brownson's Magister clocked up a 60 sec. max in the first round, followed by two flights that were within a few seconds of that elusive minute. Boosted by the low wing bonus this put him in second place. Simon White's Rearwin Speedster, operating on a lesser bonus because of its high wing, returned three maxes that gave him third place. Sixteen-year-old Simon, who has been modelling for three years, was the only competitor to record a full flight score, some of his flights actually being over two minutes! Both the above-mentioned models were from the Earl Stahl stable. There were another five Stahl designs in the competition. The high, circling flights of the diminutive Comet Navy Racer seaplane of Lindsey Smith had been seen before since this model is now five years old and is thus well and truly 'run-in', but its pure magic never ceases to hold one's attention, and its flying seems to improve with age. I agree with our Editor, who stated at the Free Flight prize giving that the Navy Racer's flights were a highlight

THE AERO-MODELLER May, 1941

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Atlanta Kits are Quality Kits

The Ace and Cadet series, marketed as Atlanta kits in pre-Astral days, from the pages of the May 1941 Aeromodeller.

went into production. The four-engined Short Stirling now entered the scene. Plans for this 38 inch giant cost 3/6 while the kit was £1/1-. In mid-1943 it was joined by the Handley Page Halifax, of the same size, as a plan only. Both were designs by H J Towner. Astral, like most other kits manufacturers at the time were concentrating on solid scale models; although there were additions to the Ace series of single-engined types by H J Towner, I have been unable to confirm that the Halifax was actually kitted. The initial kits for the Blenheim, Hampden, Hudson and Beaufighter obviously appeared in balsa, but the bulk of the production was in rock hard obeche, a material which defied every attempt to make any impression on it with the old single sided razor blade, then the standard aeromodeller's tool. Two years ago I had the opportunity to examine some of these kits. I found the contents, of substitute materials, were agricultural to say the least! Late in 1946 another pair of multi-engined models joined the Astral range, the 38 inch Boeing B-17 Fortress by H J Towner and a 31 inch Vickers Viking, whose designer was given as Saunders. These two models appear to have been advertised only twice. It seems that plans were not sold separately. Thus the Fortress and Viking might be the most rare of the Astral multi-engined models. The Viking kit cost 12/6 while the Fortress, initially selling at £2/2/- was, the following month (February 1947) reduced to £1/2/6. It would be one for the book if examples of all eight of these Astral multi-engined models should turn up at next year's Masfield Trophy. If support was sufficient there might be cause enough to run the Astral Cup!

### Trim and fly

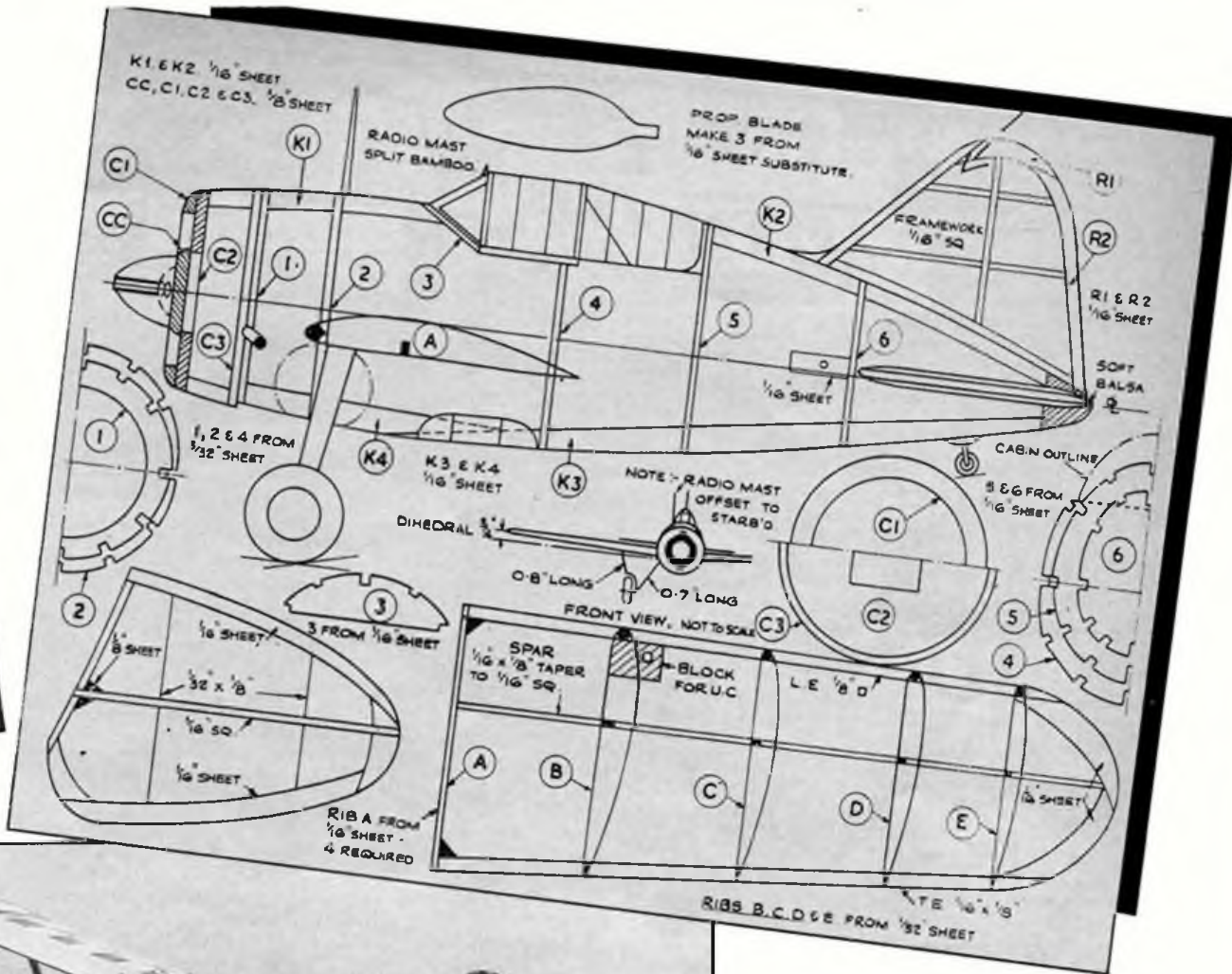
I was fortunate to be present at a trimming session of Mike Hetherington's Blenheim (finished in the all-black night fighter scheme) in the tranquil conditions that obtained on Saturday evening. The difficulties of adjusting this type of model were well demonstrated. Since the fin does not benefit from the propeller slipstreams, normal trimming adjustments do not appear to work. Adjustment is so critical that flights were made with the dorsal turret removed, since the turbulent airflow in the lee of this fitting complicated what was already a touchy situation. Another feature of this design is the restricted distance between the engine cowlings and the fuselage sides which severely limits the diameter of the propellers. Mike uses built-up paper three-bladers of generous area with square tips driven by long single loops of 1/8in. rubber. Talk about building light... this model weighs only 45 grams, that is, about 1.5/8 ounces ready to fly. By dint of careful adjustment Mike got the Blenheim to abandon its bad habits. He felt that it would eventually deliver regular ten-second flights. In the event he only completed two rounds of 25 and 14 seconds respectively in the Masfield Trophy. The other Astral entry fared even worse. Bob Walden's nicely made Beaufighter was unfortunately damaged with a broken rear fuselage before any rounds could be flown. Simon Rogers, whose Astral Short Stirling we saw last year, confirms the trimming difficulties that Mike was experiencing, but was rejoicing at the twenty-second flights that he had recently obtained. However, at the same trimming session, he succeeded in stalling the Stirling for no apparent reason. Its vertical arrival pushed the nose in, preventing further immediate flying, and



*Above: This Cleveland China Clipper - a Bob Hawkins design - was built to 3/8in. scale by Barry Clay. 48.1/2in. span gives ample wing area; but short motors. Original model was twice this size! Left: Mike Whittard's attractive 18in. Comet Percival Gull makes a change from R/C...*



*Mike Allen with his still-inflown 37in. Fairchild Argus from the Eddie Riding Aeromodeller plan of October 1947 (ref: FSR 272; price £4.10 including postage).*



meant that the model was not able to compete in the Masfield Trophy. I expect that now modellers have a taste for the old Astral models, we will see more examples at our meetings, and for the experts at this type of modelling using modern know-how, quality materials and adhesives, complete success can be only just round the corner.

### Super Scale Kits Mosquito

Keith Ridley entered a 3/4 inch to 1 foot scale Mosquito of 40. 1/2in. span, a craft designed by Howard Boys as a follow-up to his famous Lysander which was kitted by the same concern. Keith related how he obtained his plan from an antique shop in Hull where a built-up model finished in PRU Blue was also for sale. Only the plans were purchased, so the model might still be there! Howard Boys had access to a full-size Mossie at Upper Heyford during his research and designing of this model, the prototype of which was built by A J Cockle, a fellow member of the Northampton Club who took it along to Eaton Bray on completion where it was test flown and photographed. An account of the proceedings and the model (incorrectly stated to be 1 inch to 1 foot scale) and some realistic action pictures appeared in the November 1947 of *Aeromodeller*, and, of course, it was Cockle's model that was used to illustrate the Super Scale Kits advertisement which offered the invasion striped beauty for 41/6, a large sum of money in those days. Cockle's original model was stated to have '...a monocoque fuselage and considerable sheet covering on the wings'. It was also fitted with landing gear in the extended position. Keith's machine was flown without the undercarriage, thereby saving some weight; and I noticed that the fuselage of his model was a stringered tissue covered structure. However, the plans for

Top: J. F. Hall's Brewster Buffalo from the June 1944 *Aeromodeller* shown here at 2/3 size. Centre: P. E. Norman's Gloster Gamecock. Above: Quadruple rubber drive powers Simon Rogers' Astral Short Stirling.



'series production' might very well have included these variations. An impressive model, very well made, and although its flight times in the competition averaged only 8 seconds, it was a delight to see in the air. Unfortunately the model was damaged on landing when it suffered a broken outer port wing when a youngster ran into the model's path...

### More oldies

The oldest British-designed model in the Masfield Trophy was the Frog Wellesley entered by Ron Brownson, and although this model had clocked 14 seconds on a trimming flight, its average in the three rounds of the competition was just over nine seconds. The Wellesley would appear a good choice of model, with small frontal area and high-aspect-ratio wings. The Wellesley, of course, came to the public's attention following the breaking of the World's Long-Distance Record in November 1938 when it flew from Egypt to Australia non-stop, and within a few months Frog had added the type to their flying scale Constructor series, in which it cost 2/6. Ron's example was the first the writer has seen, and it should be mentioned that Frog also produced a ready-to-fly Wellesley with which this balsa and tissue version should not be confused.

A Percival Gull fielded by Mike Whittard was older than the Wellesley, but this British type was American designed! Comet Model Airplane and Supply Company was a large American kit manufacturer that produced some fine kits, having been at the business since 1929. Their agents in UK were Sweetens of Blackpool who, realising that

British modellers wanted to build British types, asked Comet in the mid-1930s to produce some of the better-known British aircraft as kits. Detailed drawings were obtained from the full-size aircraft manufacturers or from reliable accounts in the aeronautical press for the Comet designers. The kits developed under this scheme could be produced more cheaply, even after export to UK, than the smaller British kit manufacturing industry could do themselves. This activity gave rise to the rumour that Comet had been bought out by a British firm! One of the most popular of these kits was the attractive Percival Gull. Mike made his from a Comet plan, especially for Scale Weekend. He claimed that the 18in. model's propeller had cost him over £100! The explanation is that he had recently purchased a super-dupa bandsaw and the Gull's little propeller blank was the first task that he undertook on it!

### Enthusiasm

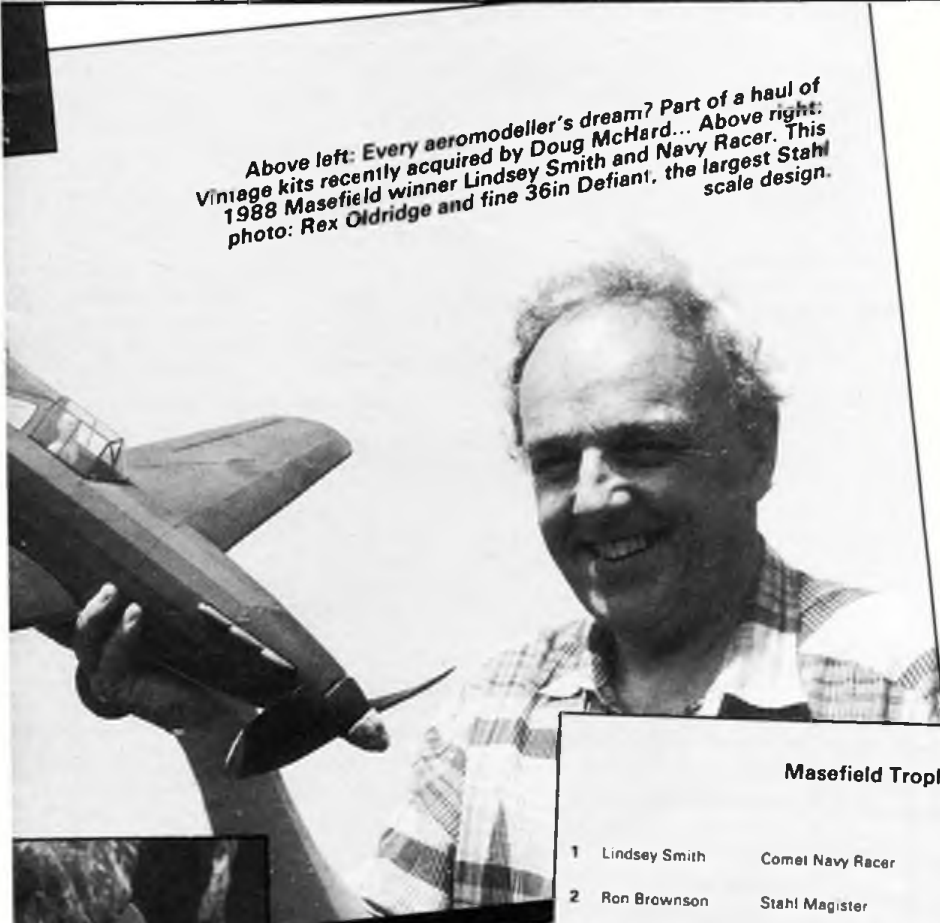
Dick Skerrett's Martin B-26 Marauder was really unfinished, but on the Saturday evening the conditions were so ideal that he was trying it anyway. Because of the long nose on this model (his own design - but he has a Vintage claim since the outline was taken from the 1/72nd three-view in *Aircraft of the Fighting Powers*, Volume III!) Dick stated that this was the first model that he had ever known to need plasticine added to the tail. As well as the Marauder Dick had a nice Ercoupe and Waco Cabin that he entered in the Masfield Trophy. He also flew a 13in. Brewster Buffalo designed by J A F Halls and described in the June 1944



# AND VINTAGE SCALE...



Above left: Every aeromodeller's dream? Part of a haul of vintage kits recently acquired by Doug McHard... Above right: 1988 Masfield winner Lindsey Smith and Navy Racer. This photo: Rex Oldridge and fine 36in Defiant, the largest Stahl scale design.



Left: Mike Hetherington's Astral Blenheim proved tricky to trim but turned in the best twin-engined flight of the Masfield event - 25 seconds!

*Aeromodeller*, the first that I had seen. Eight hours out on the field without sustenance (for Dick was so engrossed in his flying that he forgot his lunch!) is enough to cause the stoutest adherent to wilt, yet several times during the day when I traversed the bottom of the field Dick was always there. He came in only reluctantly when dampness and failing light curtailed his activities. Such is the enthusiasm that afflicts true Vintage aeromodellers...

## Random look

Many other vintage models warrant mention. Doubtless some will be seen again at later meetings. Of particular interest to me was Rex Oldridge's Stahl Defiant, which was the largest of this outstanding model designer's published scale rubber models at 36in. It was described in the July 1942 issue of *Air Trails*. Although presented at 12in. span in the article (some peanut fans build them that size!) enlarging the drawing must have been some chore; doubtless many modellers bought the 15 cents full-size plan from the *Air Trails* office. This model is in fact a semi-scale design. There are several departures from scale in order to improve the flying performance. Rex told me that his average durations were 45 seconds, but the original was said to have been capable of around 90 seconds.

Doug McHard always brings some show-stoppers, and his red and green Fokker D VII made from an early Megow plan is typical of the early balsa and tissue flying scale model. The short nose makes the D VII naturally tail-heavy and Doug had moved the rear rubber anchorage one bay forward to compensate. Doug is currently building Rupert Moore's Short Scion. He had the fuselage skeleton with him to demonstrate the Moore Drive whose central motors in the fuselage drive the twin engines. The dummy Pobjoys were temporarily fitted with three-bladed Frog Spitfire propellers.

Barry Clay has built a 3/8in. scale model of the Martin China Clipper (the original, in 3/4 inch scale, measured 97 inches span!) from the Cleveland plan. Readers will recall that this model was designed and the prototype built for Cleveland by Bob Hawkins who after a spell in this country during the war with the US 8th Air Force, came back to live here in retirement and was a regular attendee at all our meets until he passed on in November 1985.

## Masfield Trophy Top Ten (22 entered, 60 sec max)

		Type bonus	Factor	1	2	3	Flights Total	Score	
1	Lindsey Smith	Cornel Navy Racer	80	1.8	41	41	43	131	236
2	Ron Brownson	Stahl Magister	30	1.3	60	55	58	173	225
3	Simon White	Stahl Rearwin Speedster	20	1.2	60	60	60	180	216
4	Ray Johnson	Stahl Curtiss Scout	30	1.3	60	48	38	146	190
5	Tony Hall-Willis	Veron Comper Swift	40	1.4	37	32	35	104	146
6	Gordon Seymour	Stahl Howard DG8	20	1.2	42	55	22	119	143
7	Mike hetherington	Stahl Curtis Scout	30	1.3	42	33	34	109	142
	Ken Fordham	Stahl N.A. Mustang	30	1.3	34	38	37	109	142
9	Peter Robinson	KK Piper Family Cruiser	20	1.2	53	26	31	110	132
10	Trevor Simpson	Air Trails Bleriot Spad 510	60	1.6	23	26	24	73	117

# MOTOR MART SPECIAL

This month we concentrate on a new range from

## Nelson Competition Engines. Ian Horne reports

A FEW years have passed since the introduction of a new 2.5cc. capacity engine but a new front induction, side exhaust type is now available from Nelson Competition Engines. This is the fourth in the range of Nelson 15s which started with the now famous rear induction, rear exhaust team race diesel. This was later followed by front induction, rear exhaust diesel and glows, and then by a diesel and glow rear induction, side exhaust motor.

The new engine continues the Nelson tradition of being available in several versions to suit virtually any branch of 2.5cc powered aeromodelling. F1C, F2A, F2D, Diesel Combat, Goodyear T/R, Quarter Midget Pylon Racing and C/L Scale Racing are all catered for. Piston/liner sets are currently available with three different port timings; namely low, medium and high, with two types of metallurgy: AAC (aluminium piston, aluminium liner, chromed) and ABC (aluminium piston, brass liner, chromed). The AAC set-up is lighter than ABC by about 12 grams but it is more expensive. Diesel versions are available with all three timings but the glow is available only with the 'high' exhaust.

### Nelson 15 FI.SE

Bore:	14.60mm. (0.575 in.)
Stroke:	14.73mm. (0.580 in.)
Swept volume:	2.46cc. (0.151 cu.in)
Weight without optional parts:	
FI.SE.D.AAC:	149 gm.
FI.SE.D.ABC:	161 gm.
FI.SE.G.AAC:	145 gm.
FI.SE.G.ABC:	157 gm.

### Constructional features

The latest 15FI.SE engine, whilst sharing certain components with the earlier 15FI.RE version, is a different product with superior performance. The principal difference is the reduced crankcase volume made possible by the use of a special rear bearing. The crankcase is a high quality investment casting in heat treated aluminium alloy. Careful attention to metal thickness around the transfer ports and the reduced volume has resulted in a lighter component than that used on the 15FI.RE with no loss of strength.

The high tensile steel crankshaft runs in a 12mm ID x 21mm OD x 5mm rear bearing which is an interference fit both in the shaft and in the crankcase. Removal and replacement require special tools and should not be attempted by the unskilled. The crankpin, a pressed fit, hardened pin of 3.96mm diameter, is counterbalanced by milled pockets within the crankweb. The traditional sealing rim around the crankweb has been omitted in favour of making the latter a close fit in the crankcase. This appears to have had negligible effect on performance. The front bearing is the well proven R4 type (1/4in.ID x 5/8in.OD x 5mm) with integral shield. It is further protected from dirt ingress by a shrouded propeller drive hub which can easily be removed without special tools. Three sizes of spinner assembly

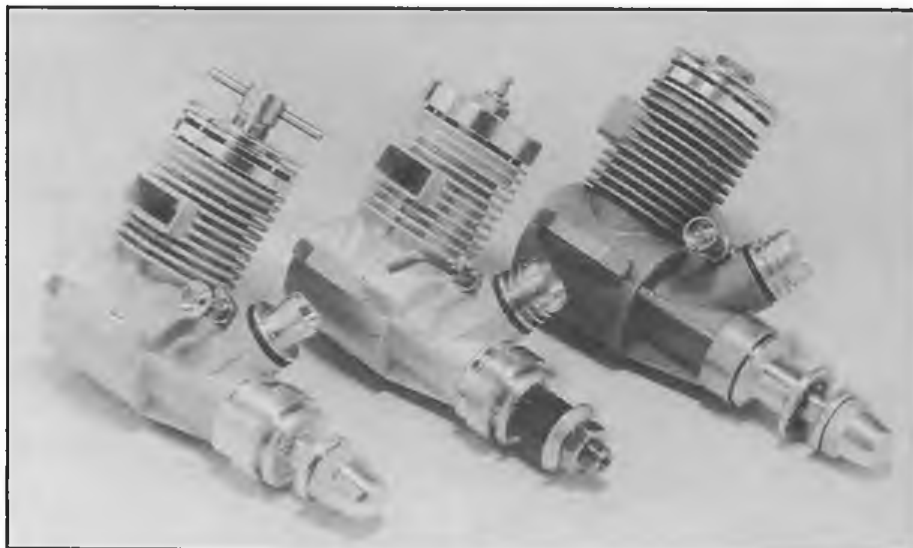
(1.1/8in. 1/1/2in. and 2in. diameter) of similar construction to Super Tigre and Rossi units are available as an optional extra to replace the standard drive hub. The end of the crankshaft is provided with a 1/4in. 28UNF thread, steel hexagon nut and aluminium alloy washer as standard. For quick change propeller applications, like Diesel Combat, an optional Oliver style sleeve nut is available.

The connecting rod is machined from high tensile aluminium alloy bar and is pushed at both ends with copper-beryllium alloy. The gudgeon pin is a solid hardened pin of 3.96mm. diameter retained in the piston by two circlips of 0.4mm. wire. The piston is machined from a billet of high silicon aluminium alloy chosen for its expansion characteristics and is profiled to provide good compression seal near the crown without drag at the skirt.

### Cylinder features

The cylinder liner is of flanged, drop-in design with one exhaust, two side and one boost port configuration. All three transfer ports are inclined upwards, the two side ports at about 75° to the cylinder axis and the boost at about 30°. The exhaust port of the high-tipped (glow) liner is notable for its stepped upper edge which causes the piston initially to uncover a narrow window before revealing the full port width.

*The new front induction, side exhaust Nelsons at left and centre below, with the existing rear-exhaust diesel at right.*



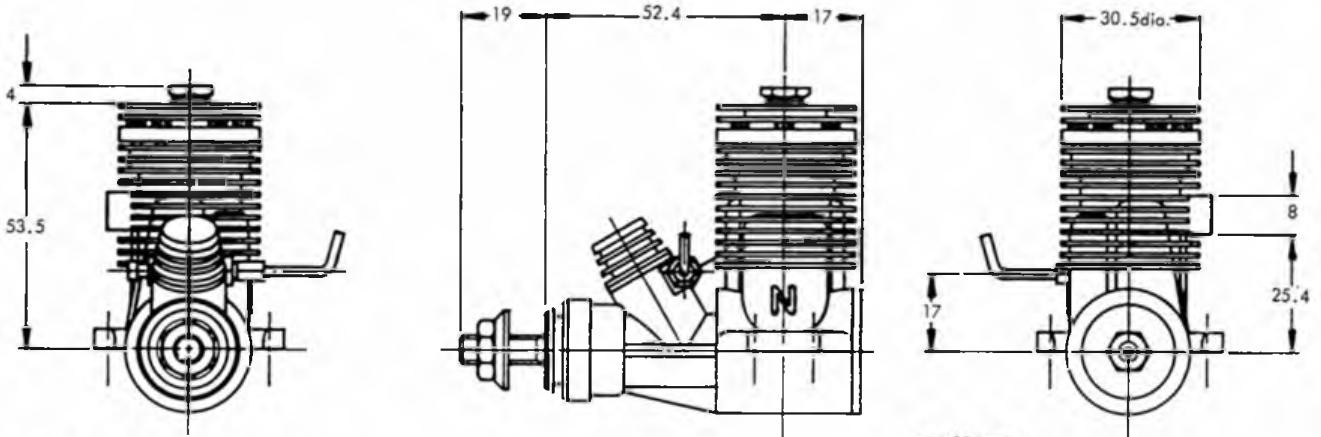
The diesel cylinder head is a push-pull design where a small diameter aluminium alloy contra-piston moves within an aluminium alloy head by means of a brass compression screw. The screw is actually a sleeve nut manufactured with an external right-hand thread and an internal left-hand thread. Thus when the screw is turned clockwise, the contra-piston is pushed into the cylinder liner, but it is pulled when the

screw operation is reversed. This clever design overcomes the problem of a sticking contra-piston sometimes encountered with all aluminium heads (and some cast iron ones too!). A point to note with this type of head arrangement is that the contra-piston is for fine adjustment of the compression ratio. Large adjustments, as required by large changes in propeller load (eg. Combat 8x6 to Goodyear 6x5) or fuel formula, should be made by changing the head shim pack thickness. For events where it is permissible, an optional compression screw with tee-bar can be obtained.

The glow cylinder head comprises an insert and a clamping ring. The standard insert is suitable for straight or low nitromethane content fuel using a conventional long reach glow plug. However, there is an alternative insert which offers the significant performance advantages of a Rossi type head with the convenience of a conventional plug. This unique Nelson plug seals on its face, thereby eliminating threads within the combustion chamber. Adherents to the Glo-Bee system can also use this head insert with the appropriate retaining nut.

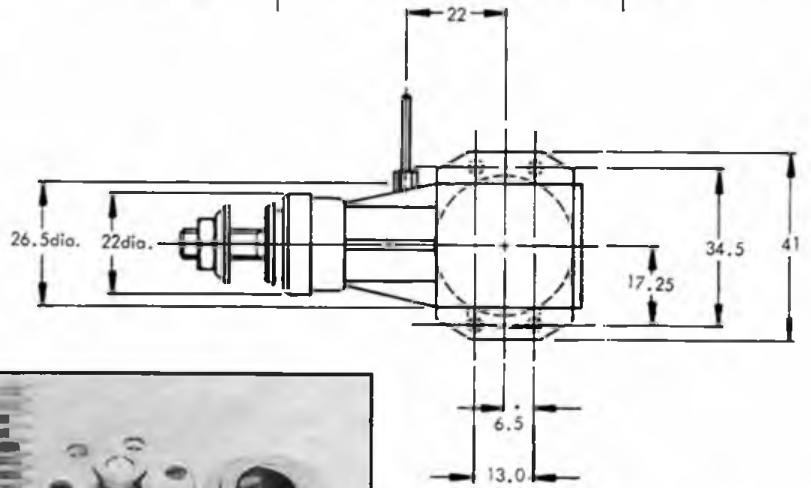
The rear of the crankcase is sealed by an aluminium alloy backplate which is tightened via an 8mm. A/F hexagon and incorporates an undrilled nipple for tapping crankcase pressure. For applications where weight saving is important an optional acetal resin backplate is available which reduces engine weight by three grams. The induction port of the crankcase is fitted with an aluminium

alloy venturi which is held in place by a tangentially located brass spraybar and sealed with a nitrile O-ring. Various venturi sizes are available, eg. 4, 6, 7.2, 8.8 and 9.5mm. bore and are supplied to suit the application. Typically, a pressure fed engine for F1C Free Flight or Goodyear T/R would use 9.5mm bore whilst an F2D Combat engine would use 4mm. (as required by current rules). An optional 4mm. Diesel Combat venturi with

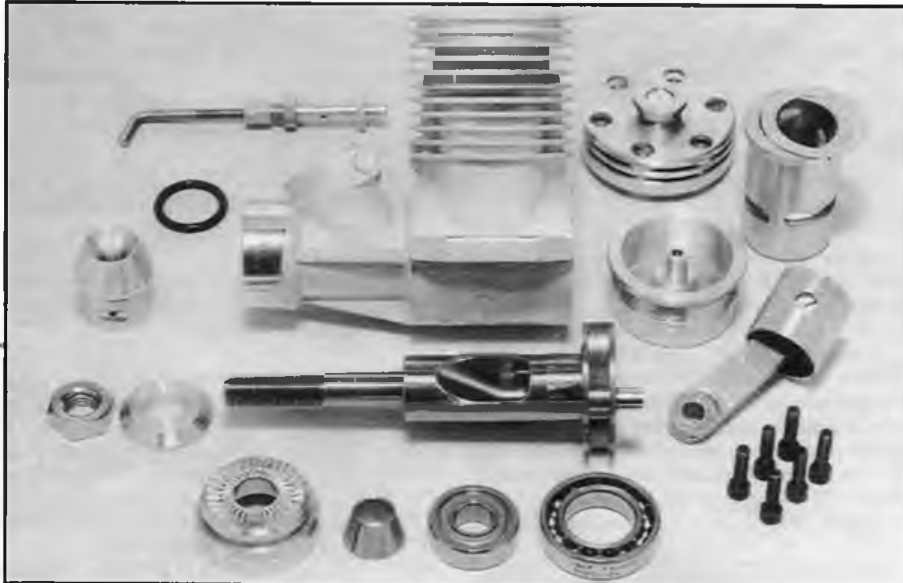


Will it fit your model? Already established as amongst the world's best engines, thanks to fine construction, excellent fits and intelligent use of metals, the new Nelsons look set to push the boundaries

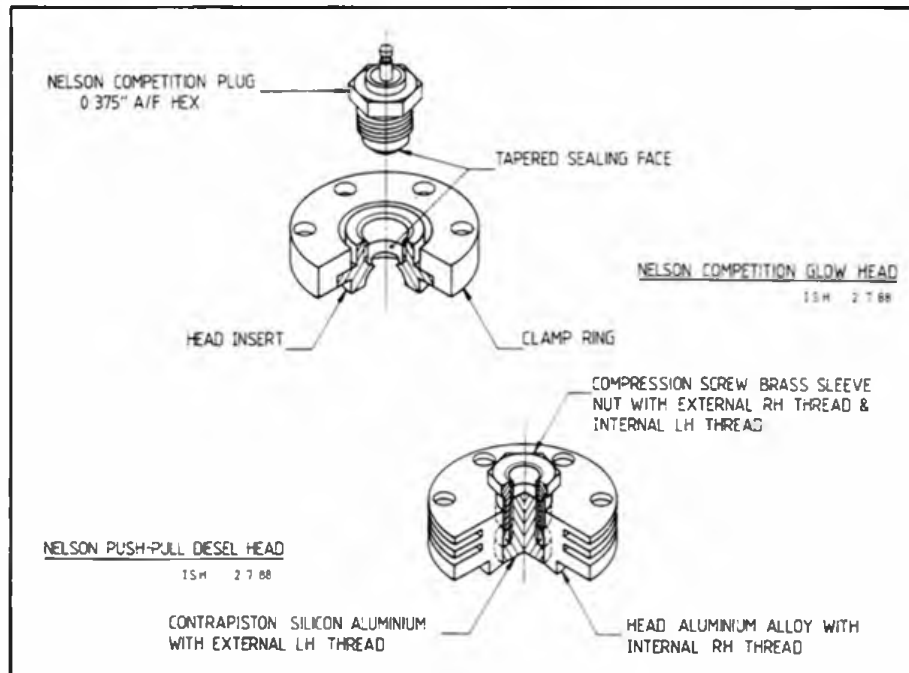
back even further. Front-induction glow is at least 300 rpm on existing version, a 'white' Tornado 8 x 6 allowing 13,700 or 14,200 if cut down to 7.5/8in. diameter



Prices are:  
**ABC Diesel** \$170  
**AAC Diesel** \$185  
**ABC Glow** \$160  
**AAC Glow** \$175  
 plus \$9:00 direct from Nelson Competition Engines



Nelson Diesel internals revealed. Photos: Mark Thomason



a tube jet (for better suction) can also be obtained. This item has provision for the retention of a flexible sleeve over the venturi mouth so that dirt is excluded during "vertical landings".

### Performance

The initial batch of UK engines have been tried in Diesel Combat and Open Goodyear T/R models. A comparison of lap times is shown below and leaves no doubt that the Nelson 15FI,SE engine is one of the most powerful in the 2.5cc class.

#### Diesel Combat

MVVS D7 (David Holmes)	31-32 secs/10 laps
Rossi 15FI D (Paul Stanley)	30-31 "
Nelson 15FI,RE,D,AAC (Vernon Hunt)	28-29 "
Nelson 15FI,SE,D,AAC (Vernon Hunt)	27-28 "

#### Open Goodyear T/R

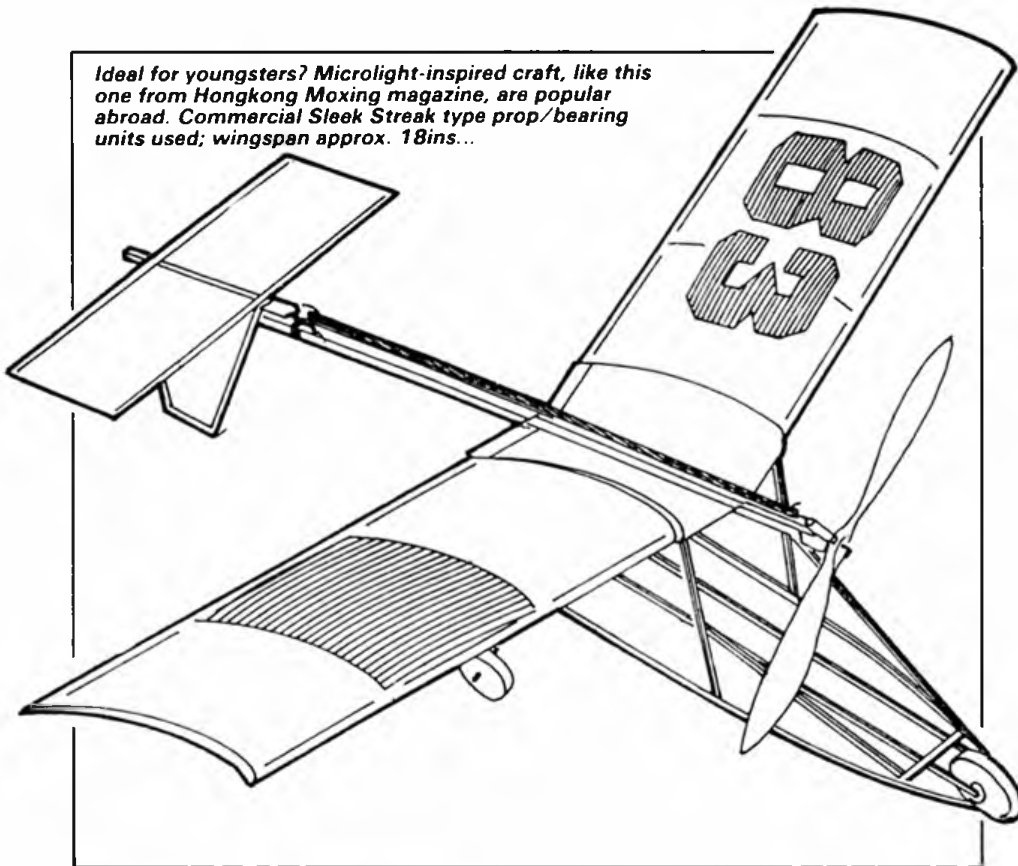
A D 15 (Clarkson/Needham, Mr D)	20.5-21.5 secs/10 laps
Nelson 15FI,RE,D,AAC (Groom/Horne, Mr D)	20.5-21.5 "
Nelson 15FI,SE,D,AAC (Groom/Horne, Mr D)	19 -20 "

### Availability

Contact Ian Horne on 0773 820181 for further details of any Nelson products and spares or write to:  
 Nelson Competition engines, R.D.2 Box 233, Ramsey Road, Zelenople, PA 16063, USA.

# READERS' LETTERS

Ideal for youngsters? Microlight-inspired craft, like this one from Hongkong Moxing magazine, are popular abroad. Commercial Sleek Streak type prop/bearing units used; wingspan approx. 18ins...



## Youngsters — get building..

Dear Sir,  
Tony Sizer is obviously doing a terrific job at Chigwell School with his cheerful bunch of very lively lads (Please Sir, Aeromodeller, July). Everyone concerned is clearly enjoying the best of all possible hobbies. Who knows — several may end up flying full-size machines with airlines or the RAF.

It is heartening to look in, as it were, on young people enthusiastically doing something constructive. But hang on a moment; the boys are not, apparently, doing much building. Indeed, according to Tony, the construction side of the activities seems to be a bit of a problem. Are the boys really content to fly models that someone else has originally designed, built and flown? Do they want to rely on manufacturers to provide them with the source of their Tuesday lunchtime fun? Should Tony Sizer need to spend his evenings mending broken models?

As some sort of encouragement it might help to remind these keen young fliers that building flying models has been one important strand in the development of some famous designs.

The Gossamer Condor built in California by Paul MacCready and his team was successful because they departed from conventional ideas which had previously produced overweight and unsuccessful craft. The inspiration for the prize-winning design came initially from the microfilm models flown by several members of the team.

Dick Rutan, pilot of the round-the-world Voyager writes of his brother Burt who designed the aircraft: 'All of Burt's airplane designs have

been an extension of his fascination with building model aircraft — the legacy of modelling is physically visible.'

Not building the models takes away half the enjoyment of flying — and when the weather is poor what is to be done when you can't fly! So, come on young people; take up a stout blade and a sanding block and make an interesting chuck glider, for a start. Well made these can fly for 20 or 30 seconds and provide a lot of fun...

London, N14

John Coolen

## No grey matter

Dear Sir,  
I was appalled to read Bill Dennis' comment regarding documentation at the Scale Nationals, namely: 'If the rules had been applied to the letter, half the entry would have been disqualified'.

If documentation provided is not of the required minimum standard then the judges have no alternative but to award zero score or to disqualify as appropriate. There are no grey areas within the rules, nor room for such comments as 'poor', 'good' or 'excellent' documentation. It is either of the required standard or not. No doubt the judges were in a difficult position, for they were faced with only two options:

- decimate the entry, or
- accept inadequate documentation.

It is unfortunate that they took the easy way out. I am not familiar with the rules for CO<sub>2</sub>/Electric but we have a situation here where non-fliers qualified higher than a flier. All of this in a National Championships...

Bridlington,  
N. Humberside

Jeff Anderson

## Let sanity prevail

Dear Sir,  
I agree entirely with Mike Woodhouse's view on Area Centralised Contests (Aeromodeller, June) for I do not like the move made this year when the first four meetings were brought forward, starting with the 1st Area Meeting in January. Some areas cannot use their venues when snow is present (e.g. Barkston), and yet others have been without sites due to resultant booking problems (doubled bookings at Driffield and not enough time for the OK and obtaining of the licence at Church Fenton). No doubt there have been other problems in other areas!

As I believe is implied, the Area events certainly cater for the 'sports competition flyer' (to which happy band I now belong) who are willing to travel up to about 80 miles to a meeting for an enjoyable day's competition alongside fellow club members against the members of other clubs in their own Area, with much friendly rivalry and banter!

Here's hoping sanity prevails and the six Area meetings are returned to their rightful dates in the SMAE Contest Calendar.

Morley, Leeds

John Godden

(See Dave Hipperson's amplification in this month's Free Flight Scene. GC).

## Loopy

Dear Sir,  
I wonder if any Scale-minded readers would care to develop the following ideas, perhaps for Old Warden next summer?

- Remote ROG. The fully-wound rubber motor is held by a loop of thread between propeller and undercarriage leg (or leading edge-mounted 'cannon?') and released by a D/T fuse. Light, stand back, and watch the aircraft take off in its own time! A more complicated thread linkage to one fuse for a simultaneous scramble of trios of WWI biplanes, Hurricanes and Spits... A sheet of hardboard on the grass at Old Warden Scale Weekend? Nice for indoors too...

- Rubber Aerobatics. Profile, sheet-built Pitts, Christen Eagles, and so on, in full gloss liveries (concern will be for strength rather than weight); grossly over-rubbered and with no down-thrust, so as to roll repeatedly and loop or roll-off-the-top from a hand launch. Room for a how-many-manoevres contest in a far corner of Old Warden?

London, W2

Anthony Maynard

## A doctor writes

Dear Sir,  
It is a simple matter to solve the Great Jetex Space Ship Controversy. I have one. If any of your Rocket experts would like to build it I am open to offers. I collect Jetex Tailored kits.....  
Hinckley, Leics. Dr. M.J. Mellor  
(Letters will be forwarded. GC)



# ABC ROBIN



*Realism plus! The Robin in Rubber configuration. Only the static scale prop needs substituting. Model won Open Rubber and was third in CO<sub>2</sub> at this year's Indoor Scale Championships.*

**A**COUPLE of years ago, while looking through some copies of *Aeroplane Monthly*, I spotted this pretty little craft hiding in an article on British Pre-War Ultralights. One look convinced me that I had to build the machine; what I didn't realise at the time was that it would take nearly three years to get the beast into the air. However, it was completed in time for the 1988 Indoor Scale Champs at Alumwell, where it surpassed all my expectations by coming first in Open Rubber and third in CO<sub>2</sub>!

The model flies quite well on rubber power and with a Brown Twin up front. I see no reason why a Telco could not be used provided that the weight does not exceed about two ounces. Bear in mind, though, that there will be little power in reserve with this motor and icing-up may present a problem if the model is flown in a hall full of 'sweaty bodies'! Duration on rubber is between 17 and 20 seconds from an ROG; and with Brown Twin power, about 25 seconds may be achieved with a gas charge in a 6cc tank, again from an ROG.

One final warning before you start on this project. The tailplane is minute at only 15% (approx) wing area, and the tail moment is small. The model is stable with the rigging shown on the plan (wing at +5 degrees incidence and tail at -1). Provided that the CG is not allowed to stray behind the point shown and your building is light and accurate, all will be well. My model required an 18gm nose block on a model of 65gms total weight.

## Robin research

Finding details of the prototype sufficient to build a competition class model became my major headache for several months. A three-view appeared quickly, discovered in *Flight* of May 30, 1929, page 442. Whoever

## Andy Sephton's painstakingly researched Ultralight winner for Rubber and CO<sub>2</sub>

said 'there is no such thing as an accurate drawing of an aircraft' must have seen this one; I had to draw my own! Needing amendment were the spinner, cowl shape, windscreen, windows, strut ends, wing roots, tail skid, fin shape and elevator shape...

The second problem was a little less apparent. Only one full-size Robin was built. After test flights, several modifications were made, mainly to improve stability. These included raising the line of the rear longeron, increased fin/rudder size and exposure of fuel filler caps by moving the windscreen back. In spite of an extensive search, I can find

pictures only of the right side of the first version (which I'll call Robin 1), and pictures only of the left side of the second (Robin 2). As the fine detail, such as cable guides and the lettering is different on each version, I made my first assumption: that each machine was built and coloured symmetrically.

The third block to stumble over was colouring! *Aeroplane Monthly* and *Flight* state the scheme as 'orange and black'. That holds good for most of the machine, but what colour is the cowling, and what about the vertical and horizontal tapes on the fuselage sides? More assumptions: how about silver dope for the tapes and natural, matt aluminium for the cowl? A picture of the aircraft in *Aeroplane* shows turnings on the cowl: I can't find other evidence of this in the many photographs picture was taken at Olympia 1929, I've ignored it as a one-off.

Hurdle number four was the wing lettering, solved by close study of photographs of 'Robin 2' on page 1227 of *Flight*, November 15, 1929 assuming of course that the second version is identical to the first in the wing department! The photos on this page also show slight sweepback; thus hurdle number five was negotiated.

The final research problem was motor detail. This was solved by a study of photographs and a two-view in *Flight*. It was only after the model was completed that I realised that Shuttleworth's DH Humming Bird is also powered by the ABC Scorpion; so now you know where to get your detail!

# ABC ROBIN

## Model gen

I made the Robin as accurately as I could, but after the redrawing of the three-view, a debrief with the judges at Alumwell and a chat with Doug McHard and Doug Sheppard (who kindly gave the model and documentation the once over at the RAFMAA Champs), several errors were highlighted. Amazing how one can study a machine for a couple of years and not see the obvious! Anyway, save for the thickness of the wing, I've corrected what I can on the plan. For reference, the main differences are: section size at former F2 reduced, fin shape, position of rocker arms, hatch size, strut to fuselage position and side window size changed. In addition, the thickness of B7 has been increased from 1/64in. to 1/16in. as the former (pun intended) was too weak.

The model's aerofoil is Gottingen 795, a section with a good lift/drag ratio at low Reynolds Number - essential for good flight qualities on Indoor scale models. The disadvantage: the wing is thin. Alter it at your own risk, but if you do I would be very interested in the result - especially if you also move the CG back.

## Structural secrets

There are only two unconventional methods used in the construction of the model; silver soldering and airmail paper fuselage covering. A word on each is probably in order, but consider them as similar to moulding canopies: out of the question until you try; then every model must feature it somewhere!

I used silver solder on the undercarriage to achieve a permanent joint with the minimum of material. Many heavy landings have since proved the worth of the minimal extra effort involved. The airmail paper proved an excellent simulation of plywood, and it's easier than tissue to apply. I used Boots own brand paper, taped it to a sheet of wood, water shrunk it and gave it two spray coats of 70/30 thinned banana oil (that's non-shrinking dope with plasticiser, to the uninitiated). Tissue paste pulled it onto the wood and simulated the edge tapes quite nicely. Joints were covered with tissue strips as per the prototype after simulating the rivets (or whatever they are) with small drops of PVA. Give the method a try, you may be pleasantly surprised!

Use good quality light balsa; not soft blotting-paper grade, just good lightweight stock. The lightest you can find must be used for the tail; be sure to match stiff stringers for the fuselage. I used balsa cement and Ambroid (when I could get it) as adhesive; both are adequate for the job. Stay away from cyano for the balsa structure - it stiffens the wood too much, makes a weak point at the edge, and joints are set forever. If you want to change a balsa cement joint, it only requires a few drops of thinners to melt it, and extra cement to rejoin. Have you considered carrying an old nail varnish bottle of thinners in your field kit? Perfect for field changes that require melting of joints, and it provides an instantly available dope brush for field repairs to tissue.

The basic construction is straightforward, and needs no detailed instruction. Try not to put any pins through the wood; instead, use small scrap balsa pieces to hold components in place.

Do as much finishing as you can during construction. For example, the laminated tips should be sanded and shaped before fitting, and the fuselage sides may be smoothed before joining. Try to blend in all the gussets. This provides a lighter joint which is stronger in the long run than the traditional triangular gusset. The latter gives a stress point at the joint.

The only components which may cause heartache are the small parts of the Scorpion motor. I used bamboo skewers and turned them to shape at low speed in a Minicraft Drill. The turning tool was a good quality Swiss needle file, which required no formal tool support. The drill is held on the bench with one hand and the file is held in the other. If the drill speed is set to a minimum, or just above it, spark plugs and push rods are a joy to produce! The main cylinder was turned from dowel in the same way, and old Telco copper tubing was used for the plug leads. The rest of the detail is on the plan. It remains only to add sanding sealer and Humbrol Metalcoat to complete the job.

As detailed, the undercarriage is lightly sprung (if you have put the cyano in the correct place). Make the effort to achieve the springing, as the landings will have less bounce and will thus gain more marks in competition! It's also worth making the effort to retain the knock-apart structure and the



removable wheels. Both will facilitate transport, and the former will avoid serious damage in the inevitable crash. In fact, during trimming flights the original hit a hangar wall head on, at full flying speed, with no damage.

## Covering and finishing

Cover the machine with Jap tissue, using dope to attach it to the frame. Tissue paste pulls the tissue hard into the wood, giving the wrong effect. Water shrink, jiggling the components to the board with scrap balsa blocks, and when dry, remove and spray with one coat of 75/25% thinned banana oil. Again, jig to board to dry and a stable, warp free frame should result.

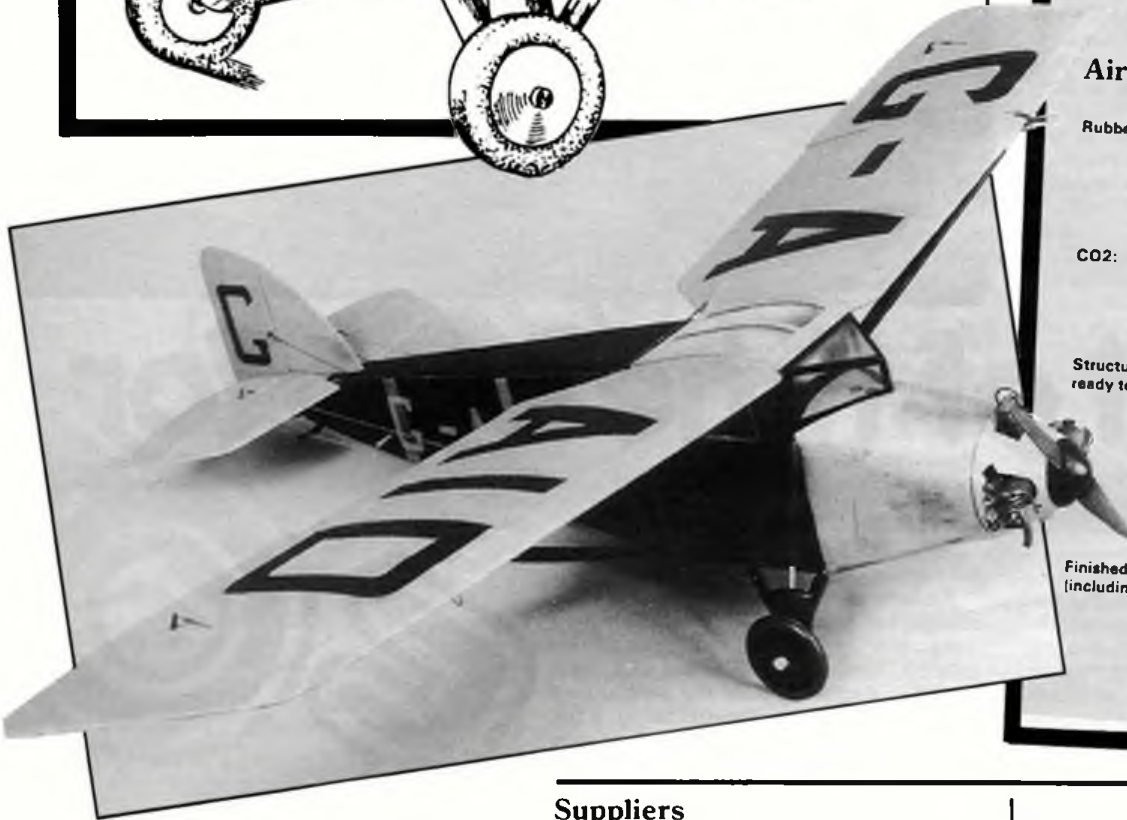
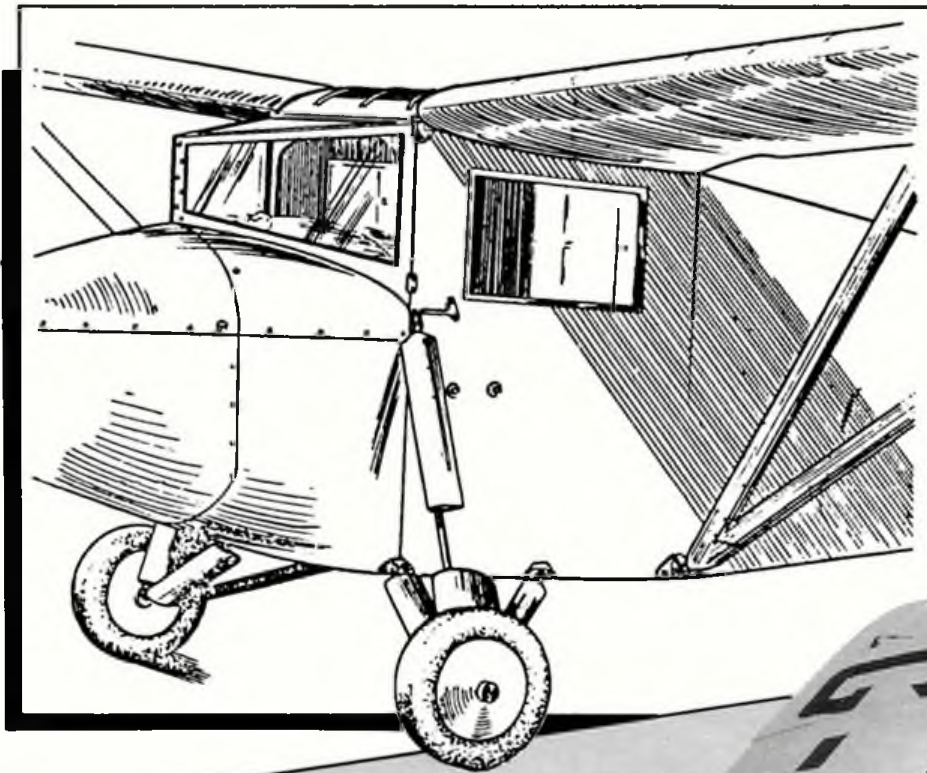
Note that there is no twist on the wing, washin and washout being achieved with the moving surfaces. The original was sprayed with thinned colour dope, using Frisk Film to mask the lettering. A thin spray of photo-mount adhesive was required on the back of the film to ensure adhesion.

## Assembly and trimming

Initial test flights were made with the tail held on by thin rubber, the canopy simulated with masking tape and the struts removed. At the meeting in question, one modeller commented that the model looked a bit old. I was quite insulted! Anyway, it saved damage to the machine in trimming and the tail remained attached with thin bands until a few days before the Champs.

*Above: Brown Twin CO, motor in place, fitted to alternative nose assembly. Build light and fit a Telco! Rubber set-up in foreground. Below: Tiny Robin rests between flights.*





## Robin data

The final trim on my Robin was as follows:

Thrustline:	0° side, 2.5° down	It may be worth rigging the tailplane at 1° rather than zero°, and setting the elevators at neutral.
Left aileron:	1/32in. down at TE	
Right aileron:	1/16in. up at TE	
Rudder:	1/32in. left at TE	
Left elevator:	1/8in. up at TE,	
Right elevator:	1/4in. up at TE,	

## Other data on prototype model:

Rubber: 0.190in. good FAI set in single 26in. loop 1130 turns were used from a theoretical maximum of 1770. Distance between motor hooks 12in.

## Airframe weights are:

Rubber:	Prop and noseblock:	20.5	Total	66.5 gms			
	Airframe:	41.5					
	Rubber:	5.5					
CO <sub>2</sub> :	Motor and cowl:	22	Total	63.5 gms			
	Airframe:	41.5					
Structure, sanded and Tailplane: ready to cover:	Elevators:	0.20 gm					
	Fin:	0.11 gm					
	Rudder:	0.17 gm					
	Right wing:	3.48 gm					
	Left wing:	3.20 gm					
	Fuselage:	7.80 gm					
	Finished weights (including detail):	UC:			5.8 gm		
		Struts:			2.4 gm		
		Fuselage:			20.2 gm		
		Left wing:			5.9 gm		
Right wing:		5.8 gm					
Canopy:		1.4 gm					
Total:	41.5 gm						

## Suppliers

1/32in. wire and small BA nuts and bolts: MESAS, 175-177 Parr Stocks Rd, St Helens, Merseyside, WA9 1PA. Tel: 0744 53634 or 22294

Indoor balsa, Ambroid (if available) etc: SAMS. Address in Classifieds.

## References

- 1 Ultralights, Richard Riding. Includes 3 pages of text and pictures of both Robins.
- 2 Aeroplane Monthly, September 1977, pages 499 - 502. Text and pictures of both Robins. Includes colour data and one cockpit picture. Also shows several views of uncovered machine.
- 3 Aeromodeller, July 1946. Eddie Riding's rubber powered plan feature.

- 4 The Aeroplane: July 24 1929, page 228. Picture of Robin at Olympia. July 31 1929, page 372. Good picture of instrument panel.
- 5 Flight: July 10 1924, pages 441 - 443. Article, 2-view, components and sketches of Scorpion engine. May 30 1929, pages 441 - 445. Article, several pictures of uncovered Robin, 3-view, sketches. July 11 1929, pages 580 & 581. Repeat of above sketches and 3-view. July 18 1929, page 699. Front right 3/4 picture of Scorpion. July 25 1929, page 748. Front left 3/4 sketch of cabin area. November 15 1929, page 386. 4 photos of Robin 2, showing wing lettering, and sweepback. April 4 1930, page 386. Repeated article, plus 2 photos.
- 6 Janes All The World's Aircraft 1929. Front right 3/4 picture of Robin 1.

My trimming technique starts with setting all the surfaces to zero and launching the model into space. Not all that drastic if it's launched from a stooping position and held, between thumb and forefinger, at the top of the fuselage. A six-inch launch height should be aimed at for the first heave, working up very gradually to a full launch, with power, from shoulder height. Make small alterations to the flying surfaces before each flight, and make several CG position checks - it has a habit of moving as CO<sub>2</sub> is charged, or rubber added. After a powered glide with slight left turn has been achieved, built up the power, again gradually, until an ROG is possible. For rubber, adjust motor length and size to obtain a flight of over 15 seconds with a power-on landing. My latest method, for CO<sub>2</sub>, is to use an oversize motor, oversize tank, running on low power. This ensures the least probability of icing-up. If high power is demanded, or the nose momentarily lowered with liquid in the tank then instant misfortune will fall on the competition flyer as his motor spits and coughs itself to a standstill.

1988 National Slow

Open Power winner Phil

Ball lets us into all his

latest secrets...

Build a model

and beat him!



Stephanie Ball holds Dad's bright-winged winner. Gift wrap tissue on foam wings and tail. Location of photo is not the flying field!

# Short of time? Go for



ONE OF THE most difficult things to accept about model aircraft is that you never have enough time to build all the models you wish. Anything that enables you to build quicker, makes models longer-lasting or easier to repair has got to be worth investigating.

Over the past few years composites have been used more and more in such industries as aerospace, boating, and motor racing. Most composite techniques need expensive moulds and dies which are time-consuming to repair. One of the few exceptions is Expanded Polystyrene which may be cut to shape with a hot wire. This material is not new to aeromodelling; for many years it has been used for wings of R/C models and for fast, expendable combat models; but it has seen only limited use in the world of free flight.

Recently, I started calculating the weights of various types of models with flying surfaces based on E.P. cores. It soon became evident that it would not be suitable for Open Rubber type models; but for larger Power models and Gliders, airframes of weight comparable to conventional structures could be produced.

## What to choose?

Because I was in need of a new Slow Open Power model, I took the plunge and drew up a design which was basically a scaled-up Swinging 60 for an OS 35 FP. In the past I have said that a diesel .19 powered model was the optimum size for this class; I still do, but my desire to try the foam system on a model large enough to prove its ultimate suitability for a fast Open Power model won

the day.

We have all seen foam combat and radio models; but how do you build a polyhedral wing with enough strength in spanwise bending, torsionally rigid and still light enough? I decided to build the wing around a one-piece spar, first constructed on a flat board. The spar was made from spruce strip scarfed at the joints and webbed with hard balsa. I have since produced another wing with the spar made entirely from sheet spruce. There is no significant weight penalty. See Fig. 1. The wing was then assembled around this spar - the major structural member, which would also serve as the datum point for reference during the construction sequence.

## Cutting the cores

Although a lot has been written about cutting foam, the following points will be worth repeating.

## The bow

Any commercially available bow can be used but it should allow easy switching on and off without having to let go of the bow itself. Mine is hand-made to the design in Fig.2.

I have used templates from materials as flimsy as 1/32in. ply which needs stiffening at the TE with 18 swg wire epoxied in place but any thickness of ply or aluminium can be used. Allow approx. 1/32in. all around the outline to allow for melting during the cutting process. Templates should be marked with

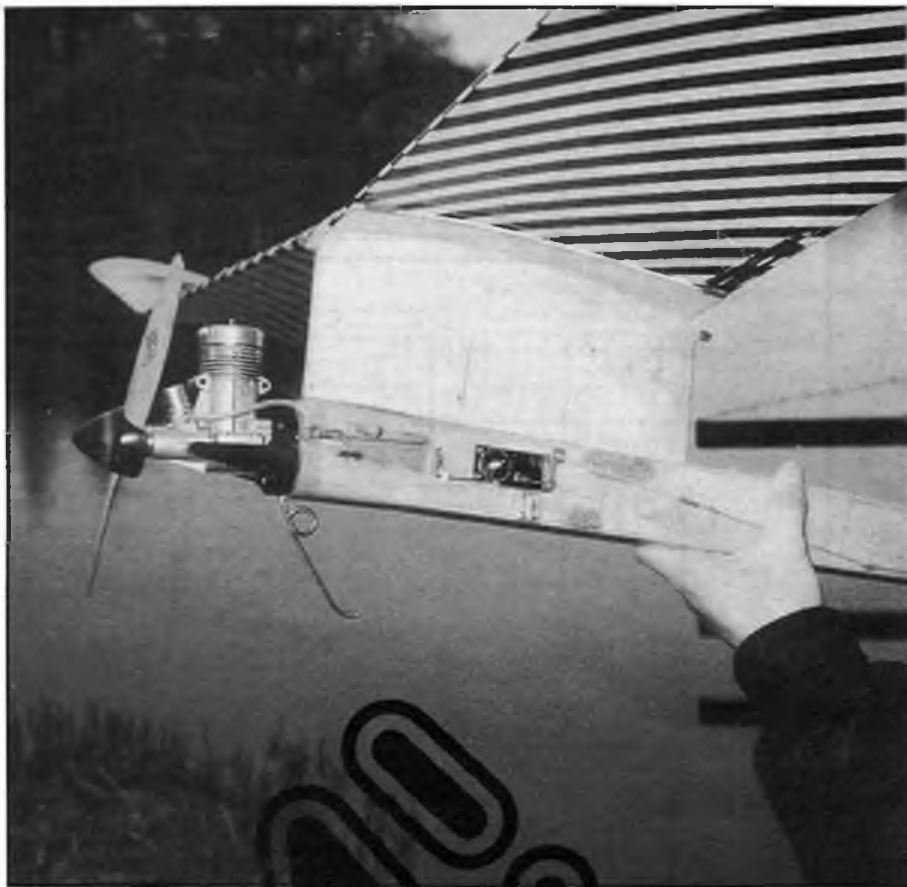
LE, spar and TE positions. These marks are very important for the template is located on to the block by aligning with the spar position which is also marked on the foam blank (see Figs. 3 and 4). The LE and TE positions are then marked onto the foam blank to be used as cutting guides.

## Marking out

Because I have used a one-piece spar as the datum for construction the foam blocks must be marked out accordingly. The spar is positioned at 37% of the wing chord; it must be at right angles to the ends of the block (see Fig. 4 again). The taper will be in proportion as the spar is at 37% throughout the wing.

The bottom off-cut will be used as a building board at a later stage so an allowance should be left on both width and length. One quarter of an inch is adequate.

During the marking-out stage warps can be introduced by altering the relationship



*The business end. OS 35FP gives plenty of power: Phil wanted to try a step-up from his usual PAW 19 models.*

between each end template (see Fig. 5).

I have always cut foam cores without any help. This means graduating each end of the block to help you to keep the cutting wire even during the cutting process (see Fig. 4 yet again!).

### Switch on, heat up and cut!

To cut the panels successfully you will need to weigh the foam down to stop it moving and to prevent it bowing with the heat from the hot wire. I position the foam blank on a slightly larger flat board with a smaller board on top weighed down with house bricks. See Fig. 6.

Position the bow with the wire placed on the lead in position of the template. When you are happy everything is OK switch on and wait for ten seconds for the wire to heat up. Slowly pull the bow towards you, making sure that the cutting rate is the same at each end of the block by checking the progress of the wire against the numbered marks at each end of the block. Apply a little downward pressure on the bow to make sure the wire is in contact with the template. On completion of the cut, switch off and place the bow aside.

Turn the blank over and repeat on the other side.

The panels are then trimmed with the simple guillotine shown in Fig. 7. This allows consistent, vertical cuts to be made. Using as a guide the lines which were transferred from the template to the foam prior to cutting, trim the surplus foam from the LE, TE and spar area. Use the base offset to support the foam wing blank. See Fig. 8.

# AMMO!

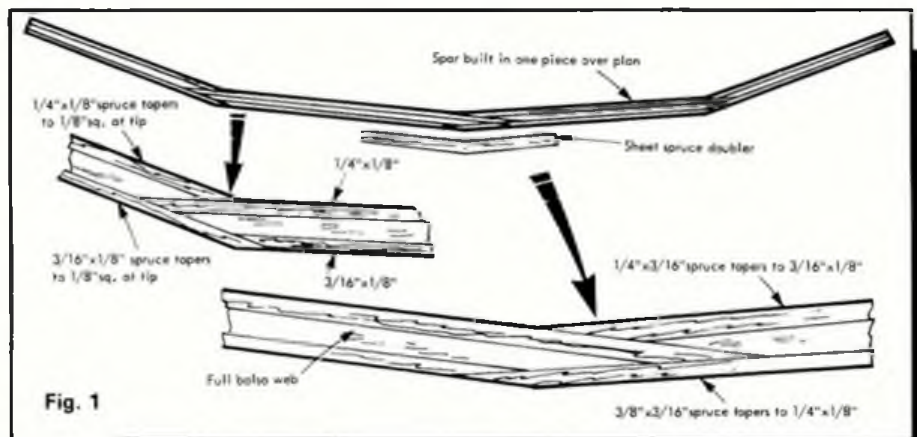


Fig. 1

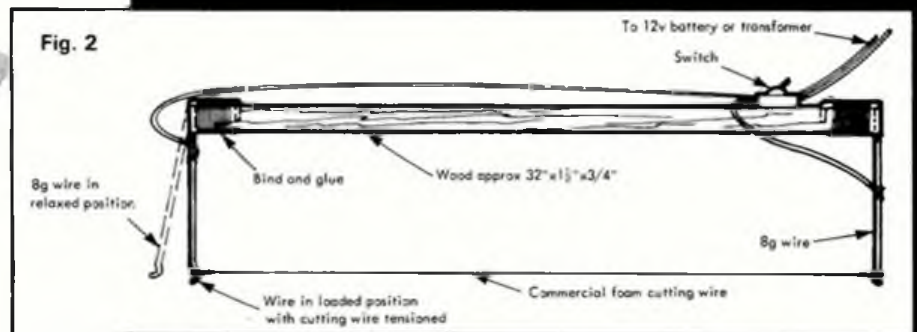


Fig. 2

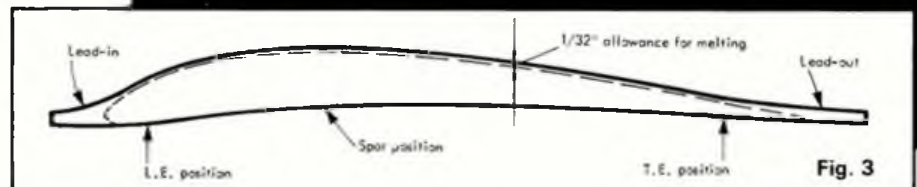
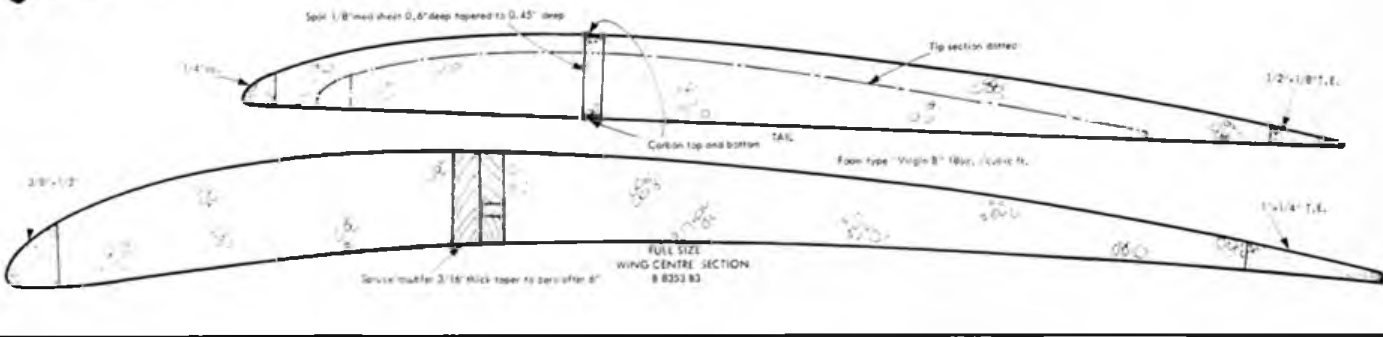
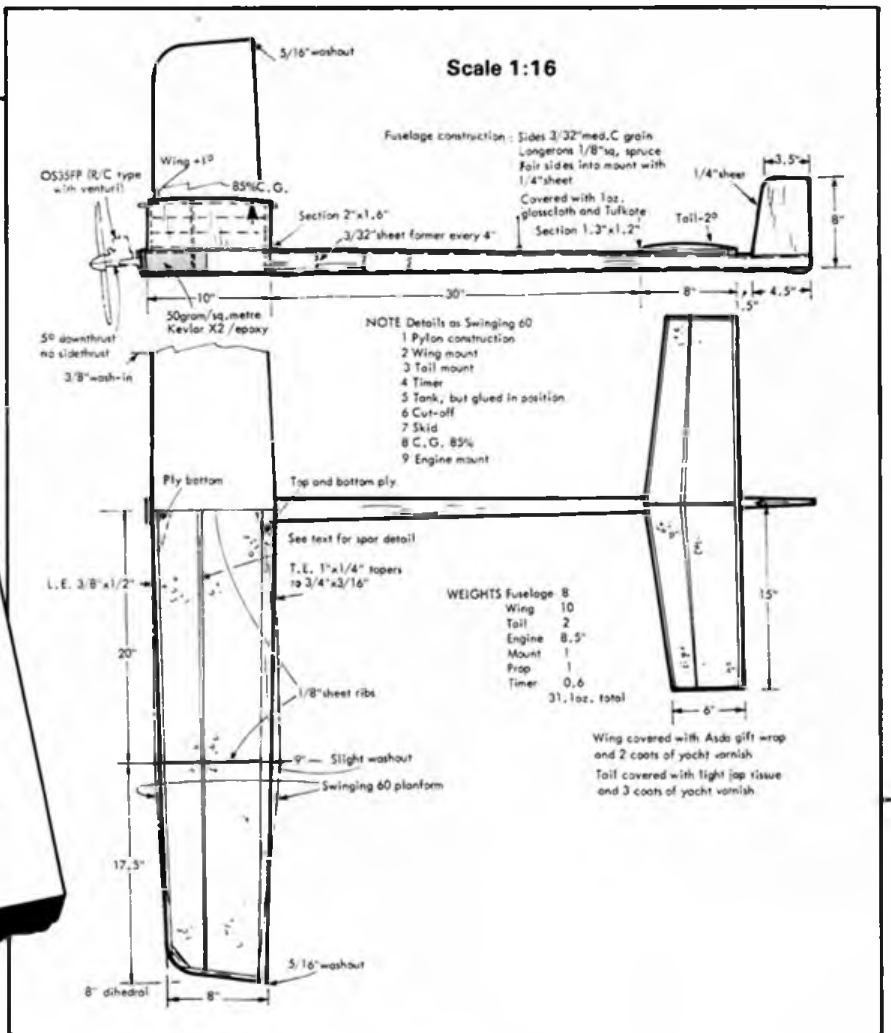
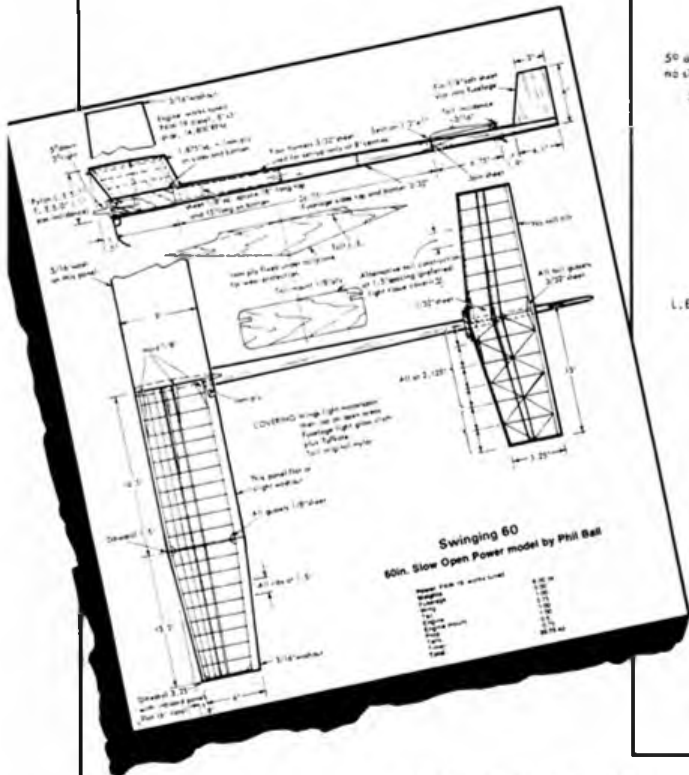


Fig. 3



*Even further development has produced this Open Power design. Techniques used for wing and tail described in text. 80in. model weighs 40 oz; could easily reduce by five ounces. Yet to come - a 100in. version for piped K & B 40!*

Below: Proven basic design of original **Swinging 60**, below (*Aeromodeller*, March 1987) has been used on new, enlarged variant at right. Full-size sections shown beneath.



**Put it all together**

To assemble the wing start at one wing tip; complete, move to the adjoining panel and so on across the wing.

Use the bottom foam offcut as a building board. It will have LE, TE and spar positions marked on it (plus any washout or wash in, as described earlier). Locate the spar with pins so it is flat on the relevant panel and block up the remainder under no stress. I use thin polythene sheet to stop parts sticking to the foam offcut. The front and rear foam sections are stuck in position with five-minute epoxy. Use the minimum amount of glue because the foam has only limited strength and a perfect glue joint is not necessary. When the foam-to-spar joints have dried add the LE, TE, top rib and dihedral joint rib. When the glue is hard (usually a quick cup of tea and a biscuit will give enough time) remove the panel from the board, trim off excess wood and foam and lightly sand. Repeat this panel by panel until the whole wing is completed. I found it took a maximum of two hours per panel, and my first wing (which was 75in x 10in) was completed in

a weekend's spare time, between the usual shopping, odd jobs and gardening. After final sanding add ply reinforcements to dihedral joints and carbon fibre two caps to the dihedral ribs to tie everything together (see Figures 9, 9a, 10 and 11).

**Covering and finishing**

This is the stage when the weight can get out of control if you are not careful. My first attempt at covering and finishing a tailplane resulted in this component doubling in weight, so it was discarded. I had used Heavyweight Jap tissue which is very porous and soaked up epoxy paint at a tremendous rate. It soon became apparent that the lightest paper might not result in the lightest total finish. Shiny gift wrapping papers and brown papers are much heavier than Jap, but as they do not soak up paint, they are much stronger for the same weight. Most component rigidity is gained during the covering stage, so it is worth covering each panel separately, allowing it to dry while pinned down. I have found that in normal conditions, two days is sufficient for this. This means a normal

four-panel wing will take eight days to cover but if you build the wing first it will be ready long before the rest of the model is complete.

To attach the covering use medium-strength wallpaper paste - as little as possible, or the drying period could be extended. Coat the paper and the structure lightly, then use normal covering methods, making sure all air bubbles are removed. When dry apply any trim and give two coats of yacht varnish. This results in a very water-and-oil-proof coating.

**The way ahead?**

Refinements to the covering process could be to use glass cloth and epoxy covering or by stiffening with carbon fibre tows.

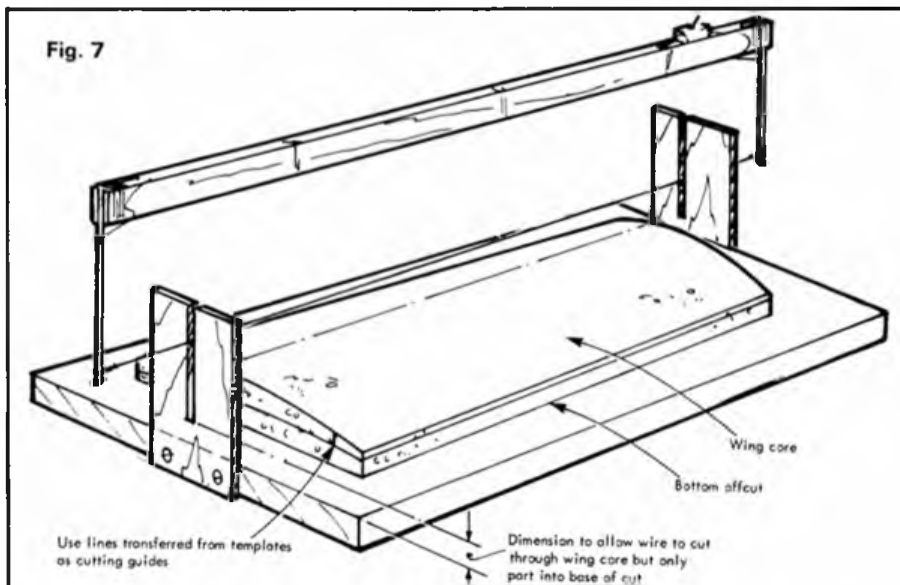
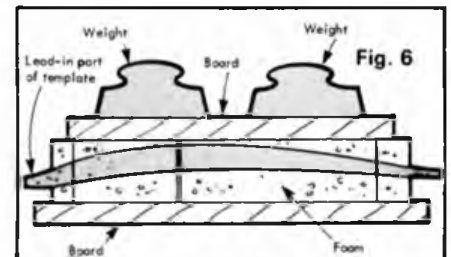
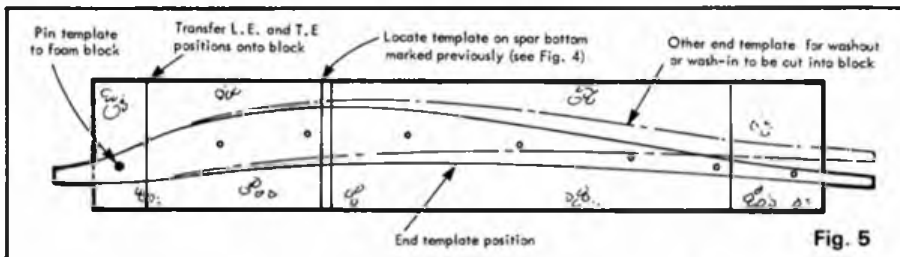
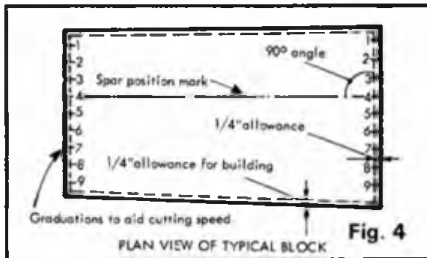
One of the advantages of foam construction is that the offcuts can be used to produce a very successful press to clamp the wing panels under pressure whilst the epoxy sets. This eliminates the need for vacuum pumps or other complicated apparatus.

On my latest Open Power model I have incorporated diagonal carbon fibre tows which vastly improve the wing's rigidity. The

# Short of time? Go for FOAM!

Table of Paper Weights

Paper Type	Weight of Covering + Paste: oz. per 100 sq. in.	Total weight of covering incl. 2 coats of Yacht Varnish: oz. per 100sq.in.	Remarks
Light Jap Tissue	.054	.117	Ideal for tails up to 250sq.in.
Light Brown Paper Paper Bag type paper	.094	.183	Tough but dull looking.
Typewriter Paper	.117	.212	Tough easy to seal ideal for tips under Dayglo paint.
Giftwrap Paper (Asda stripe used on test)	.161	.239	Bright; very easy to seal. Dull colour.
Heavy Weight Jap	.098	.278	Very porous. Not suitable for use with foam. Much less strength than light brown paper.

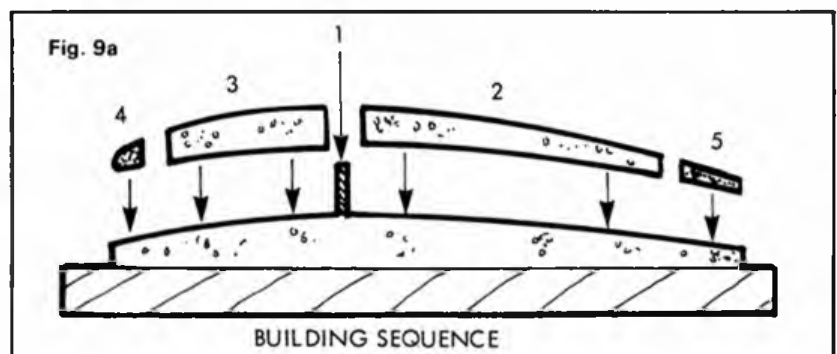
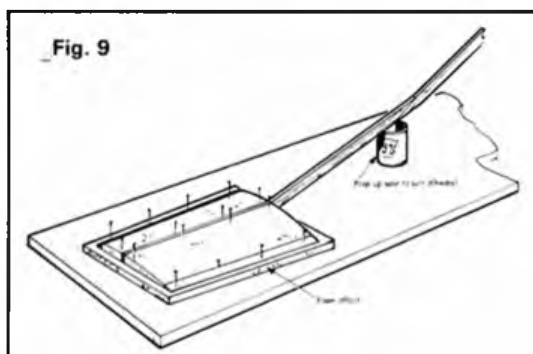
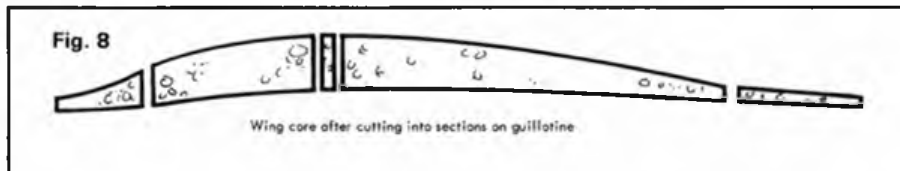


carbon tows were positioned with thin laminating epoxy and then clamped with the foam offcuts in a press (see Fig. 12). Thick mylar drawing film was used as a release agent but heavy gauge polythene sheet is just as good. This resulted in the epoxy and carbon being pressed into the surface of the wing with only a very slight wetness after covering - but with a great increase in rigidity. Using the same press, wings can be covered in glass cloth and epoxy. First cut heavy gauge mylar or polythene slightly larger than the wing panel. Lay glass cloth on this and paint with thinner to evaporate (so that it doesn't damage the foam), then lay up on the foam wing, place between the offcuts and clamp in position. The finish is a very high gloss which is also fuel and weather proof.

I am sure that with a bit of experimentation many variations on the above theme could be developed.

## On the field

Although my Slow Open Power model has only had a limited amount of flying I have put the structure to a few severe tests, including a very heavy landing on the runway at Barkston when the tail bands broke just as the engine cut. The only damage sustained was slight compression marks around the tip



# Short of time? Go for FOAM!

rib. A heavy DT'd landing into a pile of builders' rubbish resulted in a few minor dents but no structural damage. The biggest test came when I tripped and fell on the model at Bottesford. This resulted in a crumpled area (about 6 x 3in.) on the wing just out from the pylon. Although this looked quite a mess I managed to mend the wing by pulling out the wrinkles and strengthening locally with glass cloth and cyano. This repair had the model back in the air within fifteen minutes but I hate to think of the damage had it been a built-up structure...

Because of the ease and speed of construction serious damage can be repaired by simply cutting out the damaged area and replacing with a new foam section (see Fig. 13).

## Slow Open Power model

This is my first model with foam surfaces. It is basically a scaled-up Swinging 60 (see *Aeromodeller*, March 1987 for details of this model) with a fully tapered wing. The all-up weight of approx 31oz. gives the same wing loading as the earlier model. I think I am just

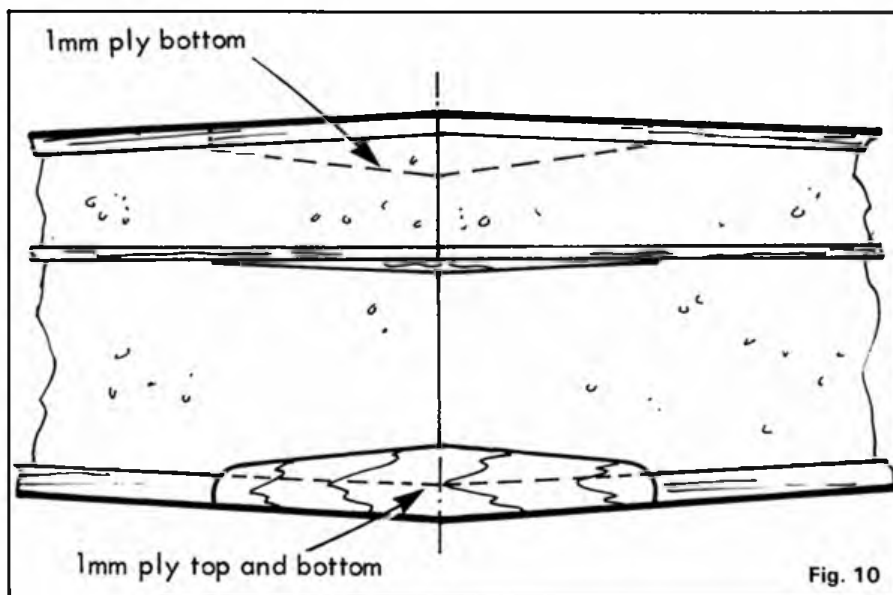
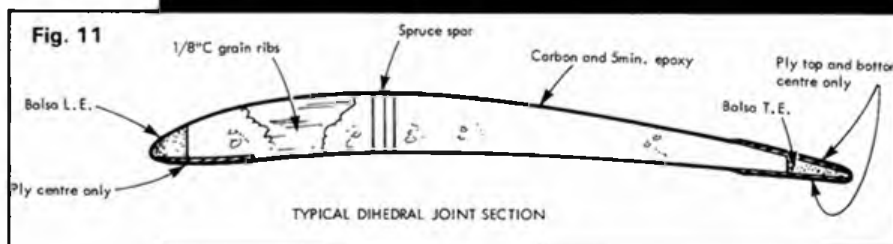


Fig. 10



TYPICAL DIHEDRAL JOINT SECTION

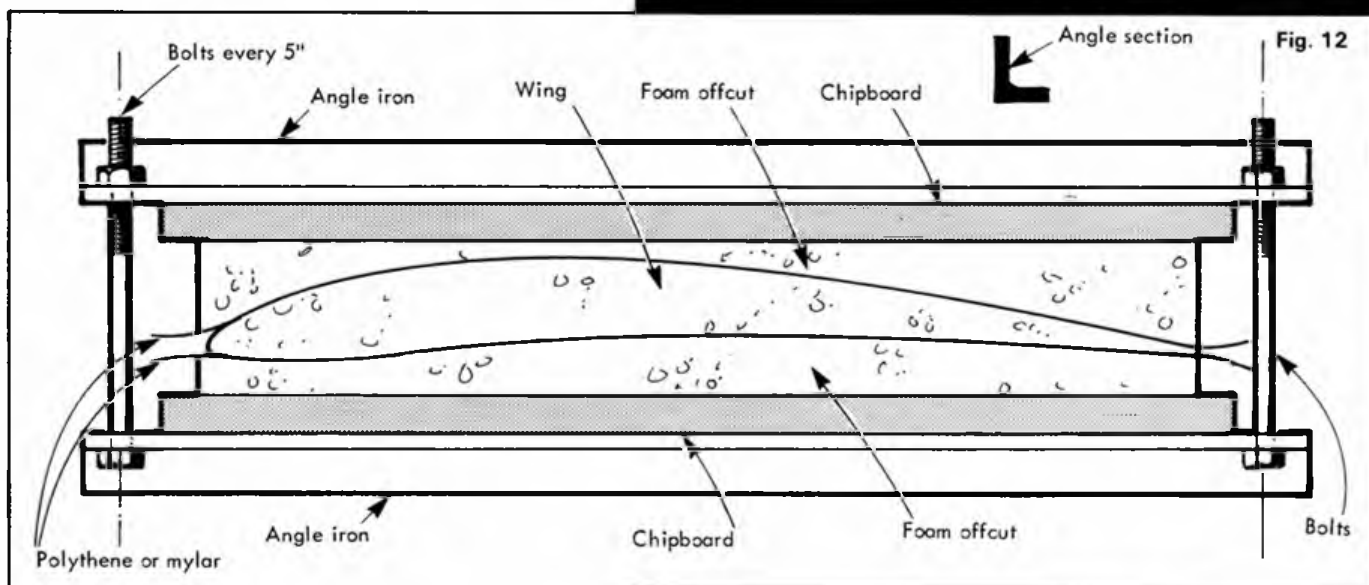


Fig. 12

getting to grips with the trim; this has not been helped by a new OS.35FP which has been very slow to run-in. Just when I think I have the trim sorted the motor loosens-up even more, producing more power which then requires further trim adjustments.

After one hour's running the motor was turning a 10 x 4 nylon prop at 12,000 with very little RPM increase after launch. It now turns around 14,000 on the ground with a marked increase in the air. Oh well; I suppose it's much better than the engine deteriorating...

To conclude: I must admit I am sold on foam construction for large models. When I have completed the Open Power model shown in the photographs I intend to build with a wing of about 100in. span and 12in. chord for a K & B 40 with mini-pipe. The estimated weight of 50oz. would result in a wing loading still much lower than a FIC model.

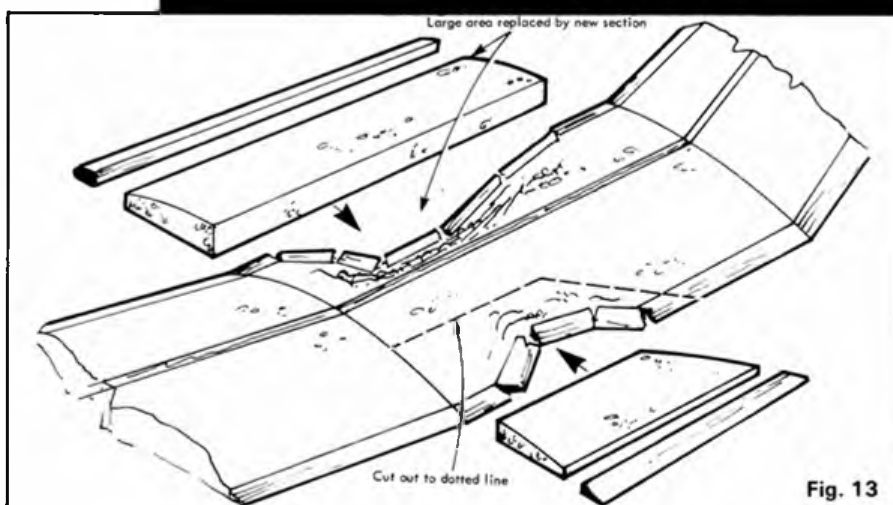


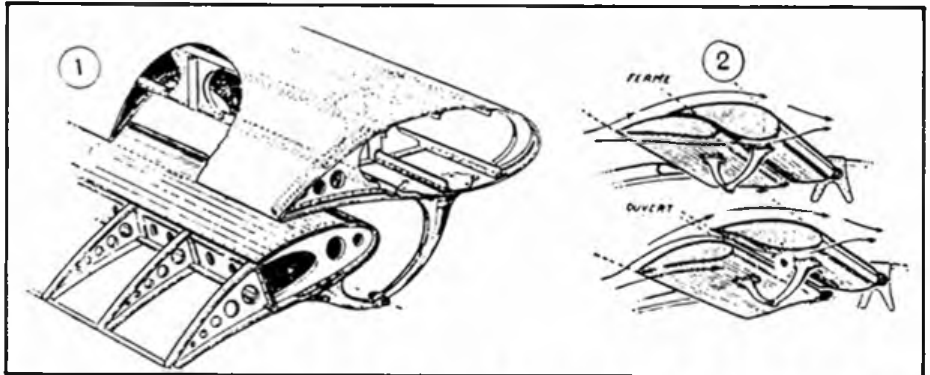
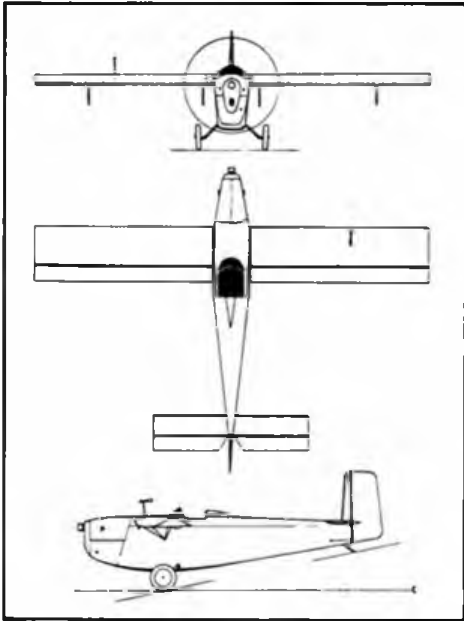
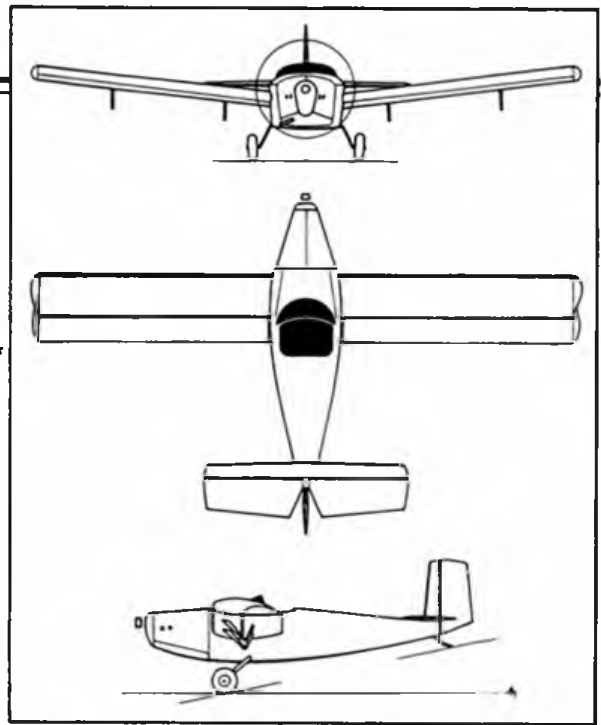
Fig. 13



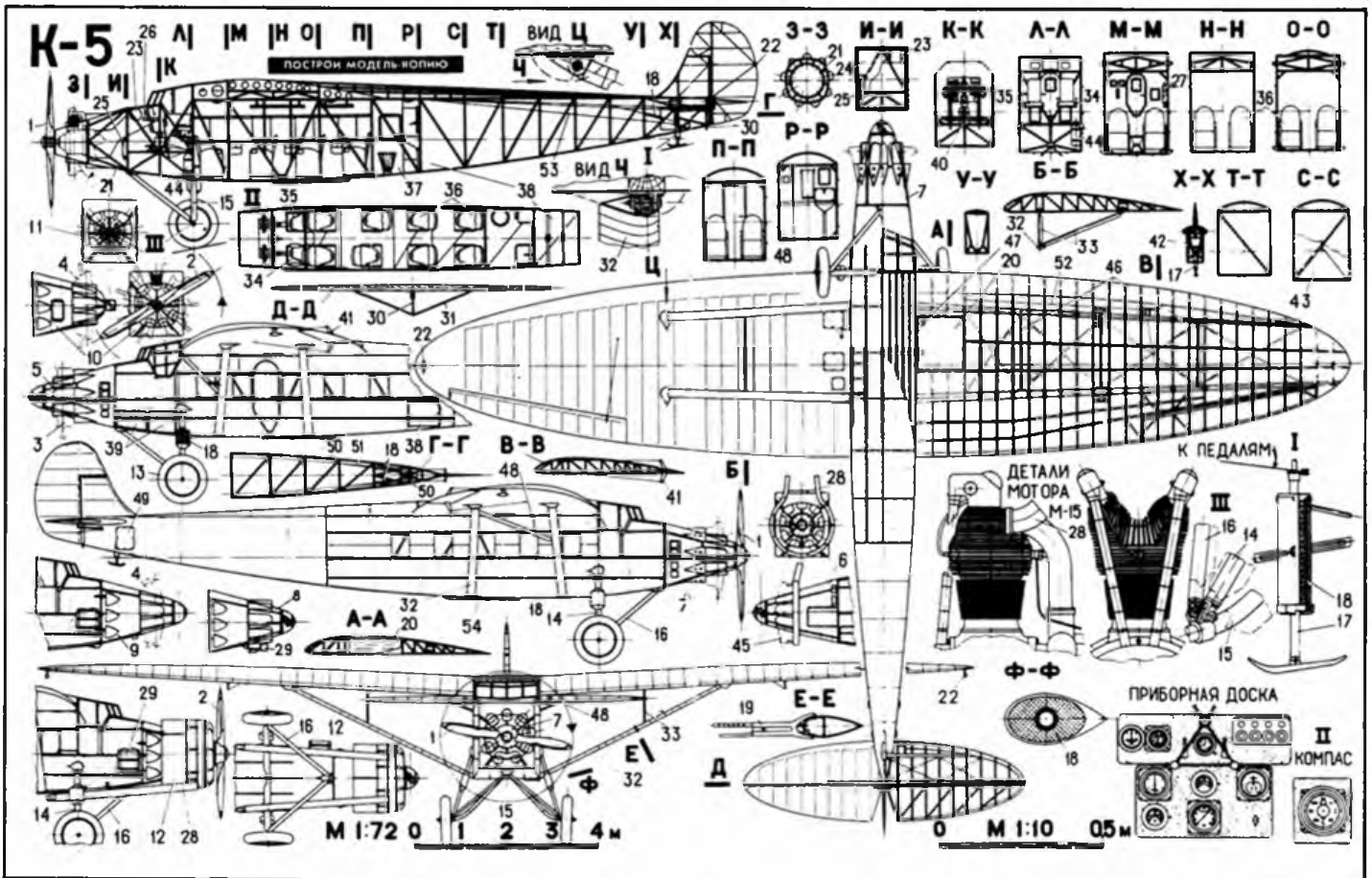
# Subjects for Scale?

Top three-views show two of the little-known slotted-wing designs of Louis Bechereau. Machine at left is actually the Kellner-Bechereau E1 of 1936 which, powered by a 40hp Train engine, gained several speed records in its class. In the following year the two-seat all-metal E-5 appeared (right). Wingspan of the latter machine is 8080mm; length 5353mm.

Details of the E-5's wing mechanism below: low landing speed and fast cruise the raisons d'etre. Who'll try a flying model?



Below: The Kalinin K-5 possesses excellent proportions for F/F scale. An Open Rubber choice? More details of the craft on this page can be supplied. What has your research uncovered?



# WORLD



# SKETCH PAGE

Fragments from overseas captured for your interest



## Elektro-Leichtmodell

Spannweite: 1870 mm  
 Länge: 1270 mm  
 Flugmasse: 427 g  
 Tragflächeninhalt: 23,24 dm<sup>2</sup>  
 Leitwerksinhalt: 4,14 dm<sup>2</sup>  
 Gesamtflächeninhalt: 27,34 dm<sup>2</sup>

Flächenbelastung: 15,6 g/dm<sup>2</sup>  
 Flächenprofil: Sokolov  
 Leitwerksprofil: NACA 4406

Antrieb: Carrera-Student  
 oder ähnl.  
 Propeller: Top-flite 8"x5" als  
 Klapplatte  
 Akku: 8 Zellen Sanyo rot  
 270 mAh

Elektro-Leichtmodell M1:20

### ОСНОВНЫЕ ДАННЫЕ МОДЕЛИ ПЛАНЕРА

Площадь несущая, дм<sup>2</sup> . . . . . 33,5  
 Масса взлетная, г . . . . . 415  
 Угол крутки консолей, град. . . . . 12

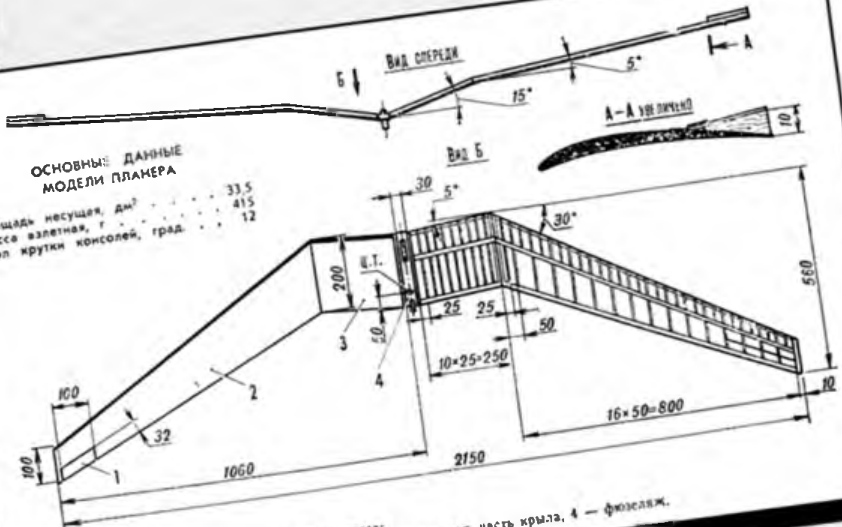
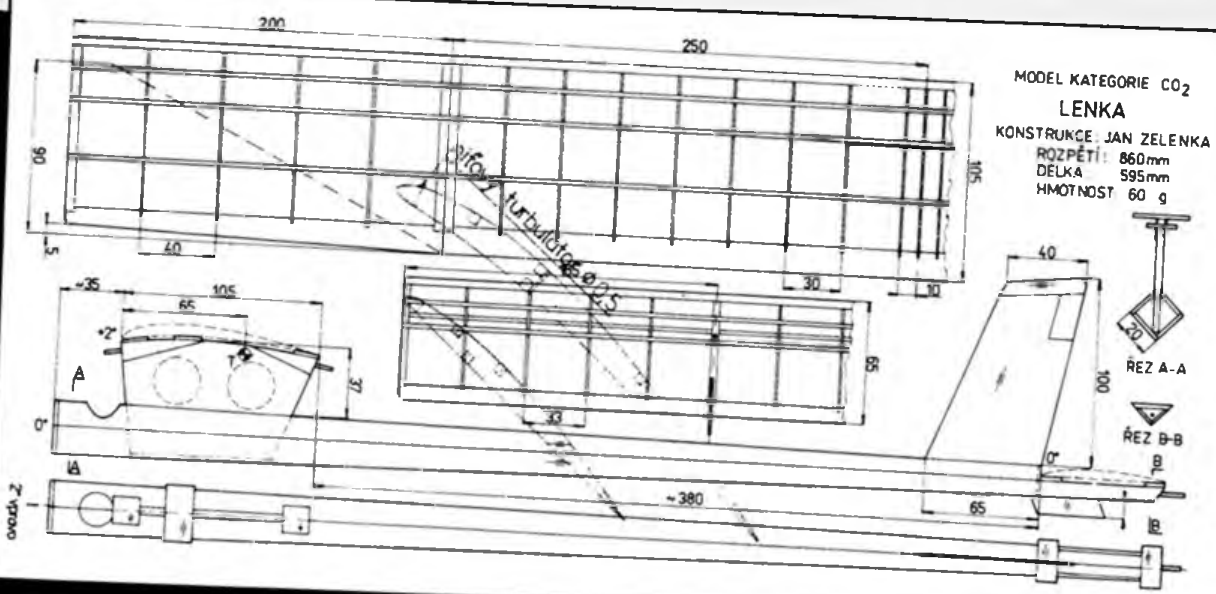


Рис. 1. Модель планера экспериментального класса:  
 1 — шток, 2 — консольная часть крыла, 3 — центральная часть крыла, 4 — фюзеляж.

Above: From Germany and FMT magazine, Wolfgang Heide's electric R/C experiments all involve super-light craft like this. R/C Wakefields have also been tested. More news to follow...

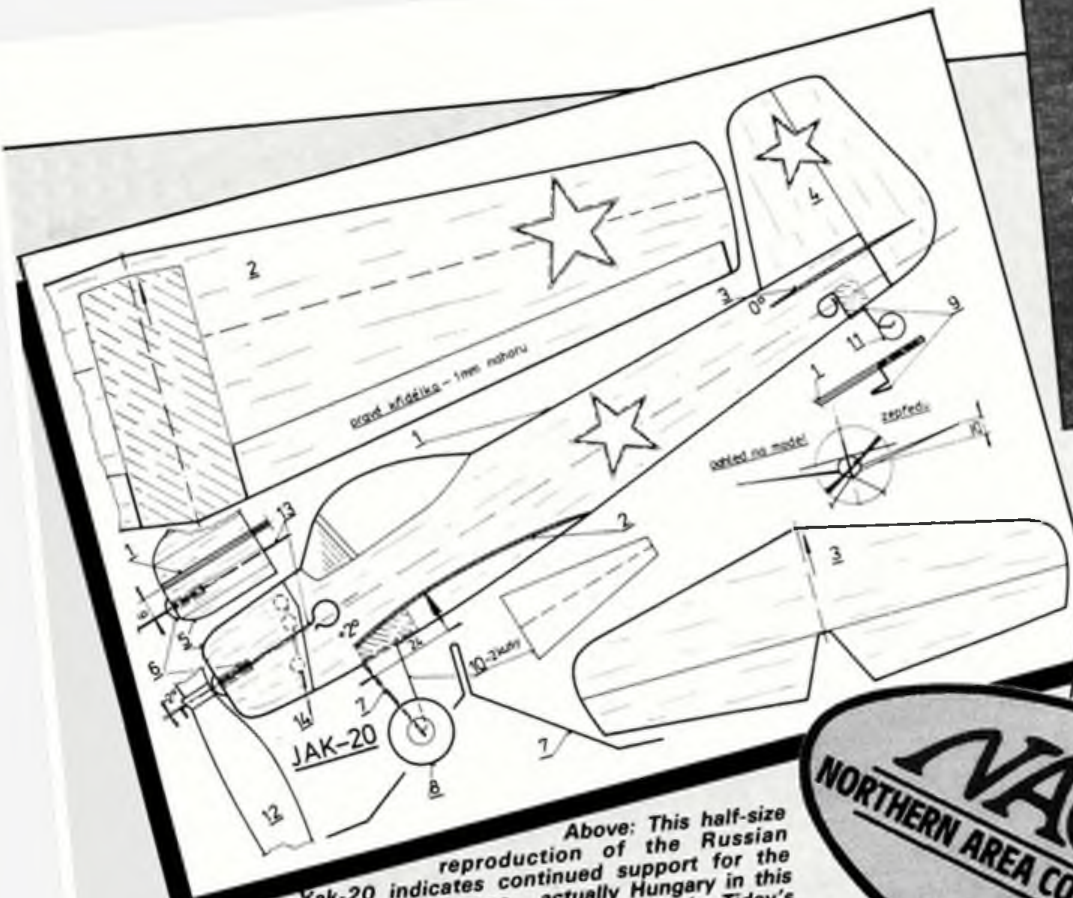
Left: Tailless models are popular in many countries including the Soviet Union whence comes this compound wing with hardly any vertical area to its name. 7ft. approx span.

Below: Turbulated Czechoslovakian three-footer for Modela CO<sub>2</sub>; power features robust structure with diamond-section sheet fuselage. Why the tiny sub-fin, we wonder... Opposite page, right: This Italian forward-sweep stunter is a new design from Franco Ballesio. ST46 power and 11 x 5 1/2 in prop used. Has anyone else tried this layout?

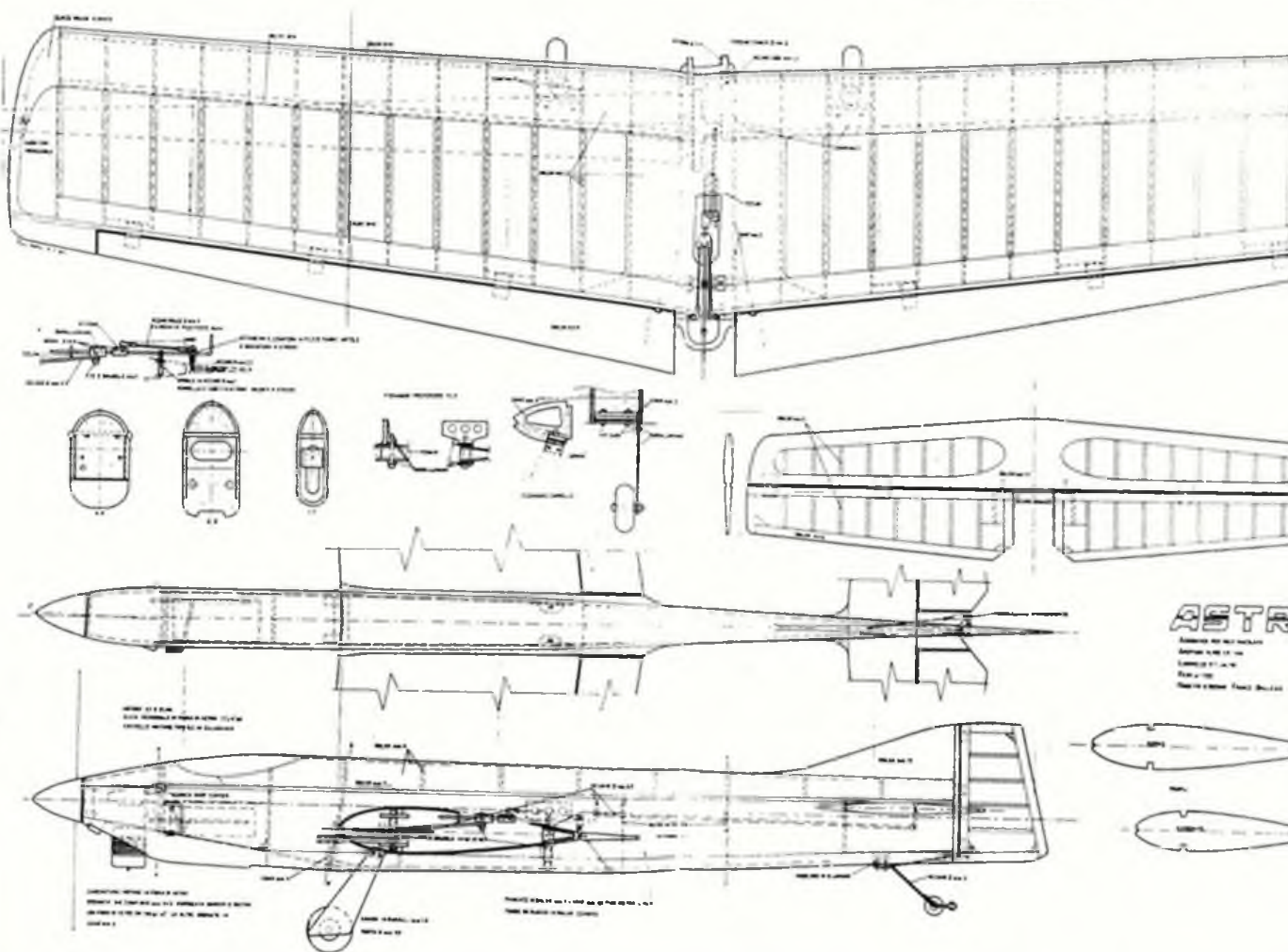


### MODEL KATEGORIE CO<sub>2</sub> LENKA

KONSTRUKCE: JAN ZELENKA  
 ROZPĚTÍ: 860 mm  
 DELKA: 595 mm  
 HMOTNOST: 60 g



Above: This half-size reproduction of the Russian Yak-20 indicates continued support for the young model flier in Eastern Europe - actually Hungary in this case. Above right: All the way from down under - John Tidey's Starduster stunter, in true Aussie green and yellow Solarfilm-and-paint scheme, placed eighth in the '88 Australian Nationals. This ST.46 turns a 12 x 5 Zinger. Thanks for the decals, John (right)!



# IF ONE WING IS GOOD~

# Two are

CAN YOU imagine a modeller who doesn't like biplanes? I can't. Nor can I resist the beautiful lines and exciting look of a biplane performing aerobatics. Over the years I've built quite a number of bipes for pure fun. No effort was made to achieve good aerobatic performance. Two were capable of the full pattern, but they didn't reach the level of a 'serious' stunter. My experience was that these airplanes had lots of drag which reduced flight performance and resulted in a glide not unlike that of a rock. Also, the models tended to swing in the rolling plane during manoeuvres, especially the upper corners. While for competitive stunt flying the biplane seems to have too many drawbacks, I couldn't resist the challenge of giving this idea another try. To me, the design criteria were:

- 1 to keep the drag low
- 2 to keep the weight down (which also calls for simple construction)
- 3 to find means to increase sharpness in corners.

I searched my modelling library for a pretty biplane. I found many exciting designs with neat wire bracing, telescopic undercarriage, wing struts, and so on. Alas, we have to put aside all these things. Low drag is of prime importance. A more functional shape should give better results. The looks of the airplane will be pretty enough, anyway. Since we cannot do much about the fuselage - as with any other stunt model - most thought should be concentrated on the wing design. There are several aspects to be considered.

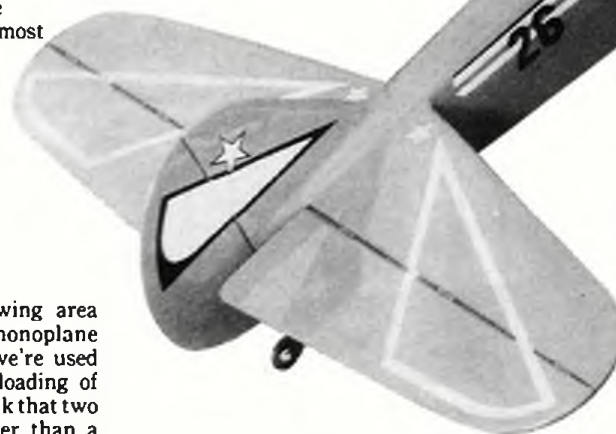
- (a) area
- (b) area distribution
- (c) aspect ratio
- (d) shape
- (e) airfoil

## In order, then...

There's no reason to use a wing area different from a comparable monoplane stunter. We need to keep what we're used to. Usually that means a wing loading of about 13oz/sq.inch. You would think that two wings ought to be heavier than a single wing of the same area - and remember those wing struts; but it's not always so, in my experience. More on that later. I'd prefer to use a little less area than a monoplane with weight and drag reduction in mind. Most full-size biplanes feature a larger top wing. No doubt this serves quite well for their intended use. However, for our requirements a fully symmetrical layout is logical so I'd suggest equal-span wings of identical area and shape.

One cannot talk about drag reduction without mentioning aspect ratio. Aspect ratio is the relation of chord to wing span. The smaller the chord (for a given area) the smaller the induced drag. 'Normal' stunters have an aspect of about 5:1. For a biplane we should consider a much higher figure. Depending on airplane size, 6:1 is recommended. We must remember rigidity, too! For reasons of simplicity a constant-chord wing can be used - it doesn't look too ugly on a biplane, really. For yawing stability

## Claus Maikis investigates the world of control-line aerobatic biplanes



we need the usual wing sweep of around three degrees. Again, for symmetry I'd prefer exactly the same shape for both wings.

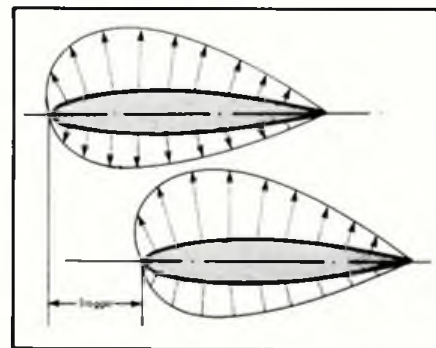
The wings should be located at an equal distance from the engine thrustline to give identical flying characteristics during inside and outside manoeuvres. The distance between wings should be no less than one chord width; preferably a little more. The airflow around the wing (while producing lift) is influenced a considerable distance from the wing surface. If both wings are too close to each other the airflow from one interferes with the other, giving increased pressure beneath the top wing and decreased pressure above the lower wing. The bulk of pressure occurs at the front one-third of the airfoil. So if we use stagger (the horizontal difference in wing position) we effectively separate the wings even more and avoid airflow interference. On average, modern stunt airplanes have an airfoil thickness of about 18% (flaps included). With higher thickness

lift is increased - but so is drag! A thickness of 12% should be sufficient (for comparison: the Nobler has a 13% airfoil). However, with a high aspect-ratio wing, the structure may be too thin, causing rigidity to suffer. The bigger the airplane the smaller an airfoil thickness we can use, because with a larger wing the thickness increases automatically.

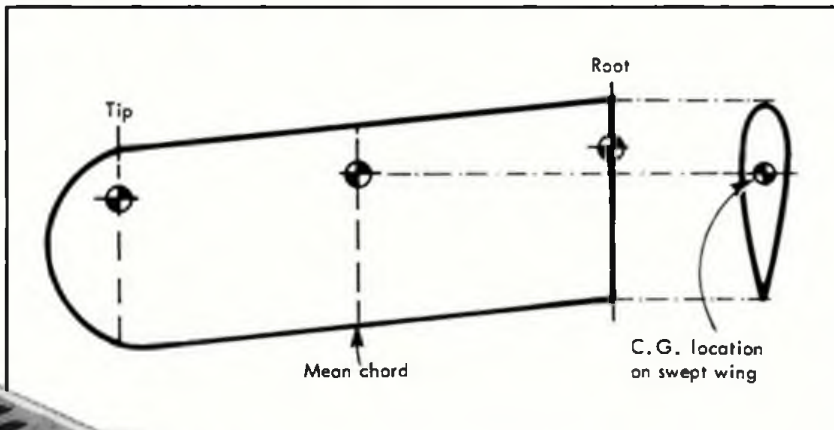
## It's a drag...

There's some controversy about whether to use flaps or not. On a high aspect-ratio wing the dampening effect of the flaps is less, and the wing is more effective, anyway. So we might actually be able to forget flaps. But we don't have enough information about those angles of attack we need for flying corners. I fear that with a non-flapped wing we need such a high angle of attack (to produce the necessary lift) that it may produce more drag than a flapped wing with deflected flap at a lower angle of attack. Who knows? Anyway - when using flaps I'd suggest considerably less deflection than we

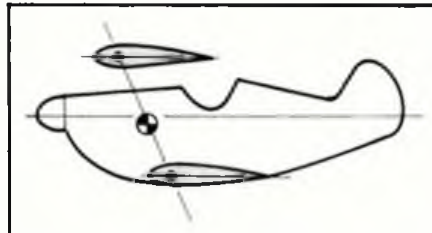
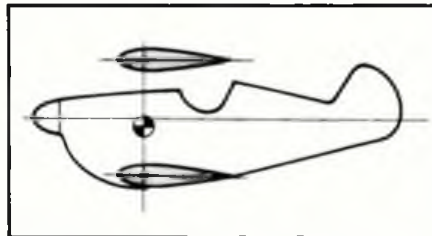
**Biplane wing lift distribution. Use enough stagger to avoid interference.**



# better!



*Main picture: Claus' Duetto, soon to be featured, employs philosophy in text. 44in span; Super Tigre 46 power.*



*Top diagram: Swept-wing CG location. Diagrams above: Maintaining CG by staggering wings fore and aft.*

might be similarly positioned; that is, with the top wing slightly 'negative' and the bottom wing slightly 'positive' instead of the usual zero-zero configuration. At any deviation from 'straight ahead' the faster-moving part creates more drag, and is forced back. Thus a self-stabilizing effect occurs. No proven information is known about this. However, the whole idea sounds quite logical. Maybe it should be given a try.

## Swinging!

Firstly, given the same wing area as with a monoplane, the biplane has a much smaller wingspan. The distance CG to line guide is less, too. Actually it's proportionally even less than you might at first think, since the line guide is not mounted at the extreme wing tip. Usually it's mounted at the wing strut, inboard of the wing tip (nobody wants to build a biplane with the strut at the tip itself. Would you?). The distance 'CG to line guide' stabilizes our airplane around the roll axis. The only thing we can do here is to place the struts as near to the wing tip as our aesthetic eye permits. And - this is another advantage of the high aspect ratio wing!

Secondly, I think that the vertical location of the leadouts has not been designed carefully enough on many biplanes (including mine). What is not a problem with a monoplane can be quite tricky with a biplane. Since it's difficult to guess the vertical location of the CG, a line guide with provisions for horizontal and vertical adjustment is a big help. We can expect the CG location to be slightly - about half-an-inch - below the engine thrust line (with an inverted mounted engine) but, of course, this depends on design. The line guide is then mounted on the strut in the same vertical place as the CG. Horizontally we use the conventional amount of three degrees backward rake.

Those simple struts (as on the Tiger Moth or similar old timers) look nice, but they are not easy to install and are heavy if built from wire. Plywood struts are simpler and lighter. On the other hand, fancy plywood strut shapes expose large areas to the wind which may result in unpleasant, uncontrollable motion when flying in wind. So take your choice. If you think about it, shape and looks have always been a big argument in favour of biplane design. Sentimental feelings and nostalgic viewpoints seem to have more influence than rational considerations and science. I think this is not such a bad situation. Advanced technology is wasted time and effort on a biplane, anyway. We could as well build a conventional stunter with better flying characteristics. The challenge to make a biplane fly lies on another level. It's like control line flying in general: it's obvious limitations yield a greater challenge. I know that monoplane airplane can fly better. But - how well can I make a biplane fly? I cannot resist this challenge. I'm at the drawing board already...

Coming soon: Duetto!

normally use. Again, to reduce drag, airfoils with a notably forward point of maximum camber, or high point, should be avoided. An airfoil with a more rearward high point has less drag. I wouldn't like to use a section with high point further aft than 25% (Nobler: 23%). Penetration - so necessary for windy weather - is better, too. And that's very important for a 'draggy' airplane!

I see no reason to change any other dimensions. We can use the same fuselage moment arms, CG location, and tailplane size (which is somewhere between 20 and 25% of wing area; the smaller amount for the non-flapped configuration, because we don't have the dampening effect of the flaps).

## Find the spot

CG location on biplanes causes some enthusiasts to shudder but it's not really a problem. Rather than drawing some fancy plans and desperately guessing or calculating the CG position, I use the opposite procedure. Starting from a given existing fuselage design drawing, I draw the CG location at its known point. This is quite practical, since with another craft of identical size the CG will be in the same place again. Now we have to draw the CG location relative to the wing planform. Remember that with a swept wing, the CG must be found on the mean chord. Now this point is drawn into the centre section of the wing.

This section and CG location can be used

now to draw into our fuselage side view. Without stagger we simply draw the wing sections so that the CG's coincide.

If wing stagger is used, we simply 'slide' both wings by the same amount - the top wing forward, the bottom wing back. A happy side benefit of stagger is that we get more room for the tank compartment, which is always a problem with a short nose (which I prefer). Also, some people like the 'stubby' nose. With stagger this is easily achieved because, in plan view, the top wing covers part of the fuselage nose and makes it look shorter than it really is!

## What's the angle?

A very interesting topic is the angle of incidence of biplane wings. Over the years a lot of confusing information has been given by all kinds of experts. My friend Wolfram Reuter brought this topic to my attention again when he offered some advice which gives some food for thought. Rather like the front wheels of a car which are pointed towards the centre line of the car and thus provide a considerable stabilizing effect, it can be argued that the wings of a biplane

# FREE FLIGHT SCENE

Dave Hipperson starts his competition round-up with a look at Thermistor 5, a family winner...

**T**HIS IS the design that has won the flyoffs at the last two Easter meetings. It was born way back in the Sixties when Neil Cliff was still flying in Scotland. After a break from contest free flight (shortly after the original Thermistors were flown) Neil returned to the scene four years ago. Much of the model's original style and construction has been retained, as has the 'right power, left glide' trim so popular around the time the early designs were flown. Remember Bob Bailey's model of the period?

This super-safe set-up allows Neil to dispense with warps, apart from the natural wash-out that always so conveniently appears in tips - even fully geodetic ones! The tail area of the original 1964 model has been increased slightly and a further-forward CG aids stability.

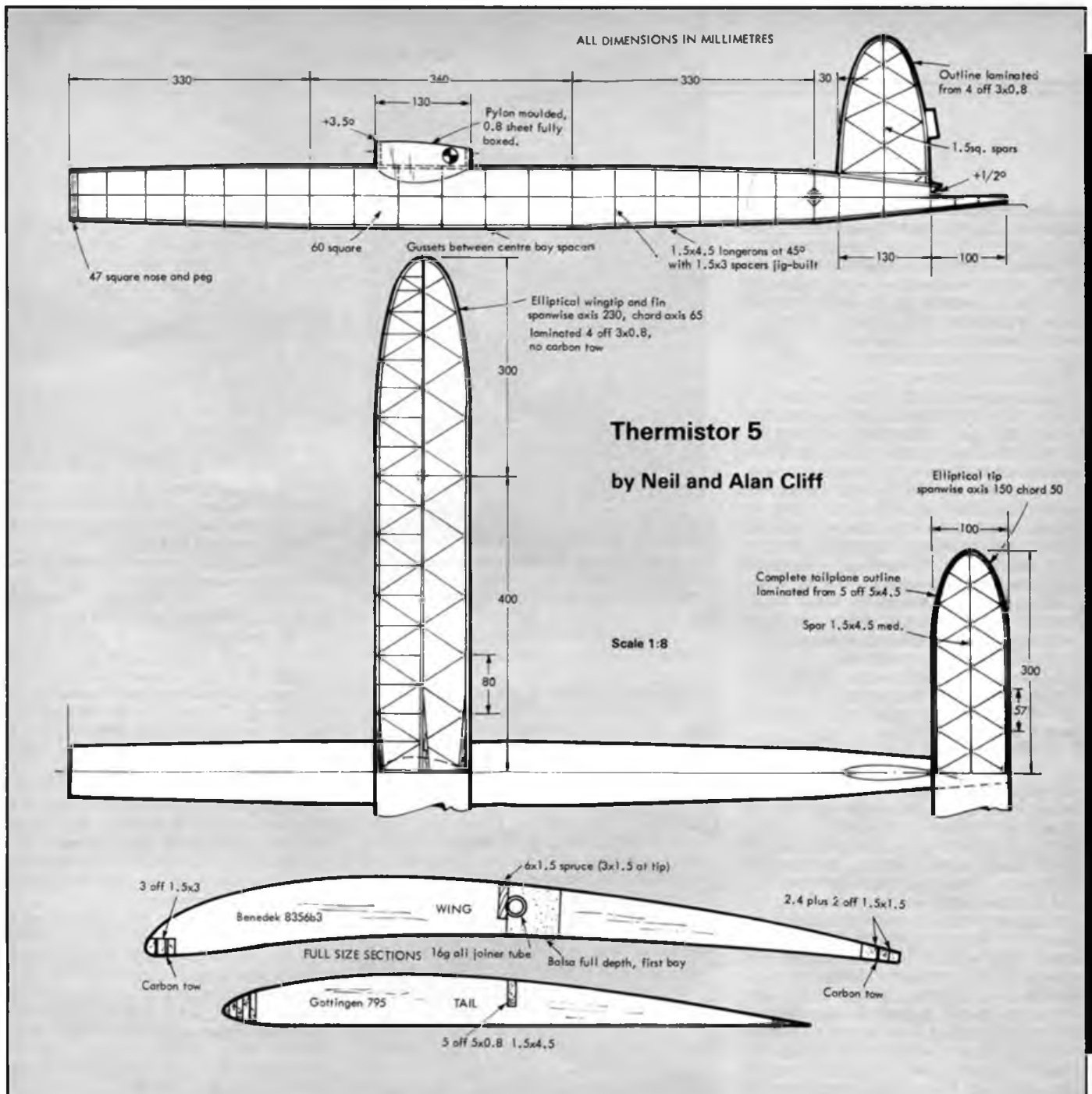
Of course, Neil has had help with development from his son Alan who flies the



*Heading: It was wet at times at the Nationals! Gerry Pink, runner-up in Wakefield, gets away nicely. (John O'Donnell photo). Left: The leading father-and-son team of Neil and Alan Cliff prepare Neil's F1B.*

same design. Indeed, it was Alan who encouraged his Dad to fly Open Rubber again after that long lay-off. Alan built the '64 design, flew it in the '85 Nats - and Neil found himself bitten again. Alan's activity culminated this year in his Frog Junior win. A look at the Nationals results will show that his winning flyoff flight wasn't just the best in the Junior event; it was the best of the entire Nationals!

The fuselage has 'pure' diagonal longerons



- a form of construction which out of necessity has to be jig-built but it is very light at 34 grams finished weight. Neil points out that it can be built from more conventional 1/8in. square and there is little advantage in trying to pare the weight down too far. It is important that the fuselage can take handling loads at launch. It is covered with white Modelspan - doped well enough to ensure it doesn't go slack when damp. Between coats it is given a coat of Meltonian black shoe dye. This gives very dense colour saturation and although tricky to use (it runs in the dope and onto bits you may not want to be black) it is almost weightless and has the added benefit of tending to waterproof the tissue. However, the operation smells a bit and leaves the component very dark indeed - including inside.

The wing is unusual, too. Apart from its geodetic structure and perfect elliptical tips, it is in halves, joined by a single 16swg wire extending a little past the first rib intersection, and taped together for flight. This simplifies retrieval in wind and localises damage, making field repairs easier; but it's

still an unusual approach on a medium-sized Open Rubber model.

Since the advent of FAI Rubber Neil has become even more convinced of the benefits of 'right/left' trim. The 100 grams of rubber run off through a 24 x 24in. helical prop in 90 seconds or so. With such a 'bursty' run the model could indeed be tricky to tame in any other way. Trimming is a matter of setting a reasonably-sized fin tab at ten degrees to the left, and then cutting pieces off until the correct glide diameter emerges. The right-hand power phase is then adjusted solely with thrust direction. On full turns the model climbs very steeply, banking slightly left. As the torque begins to drop, the right turn - of which there has to be quite a bit - pulls the model around to the right without a power stall. A useful side effect to this is that (just like a model rigged with VIT and AR) once the model has been trimmed to fly safely on three-quarter turns, full power - where the troubles usually start showing up on conventional 'right/right' trim - can be applied with confidence and no need of further adjustment. This has the added

advantage of encouraging one always to wind up tight on comp flights rather than have any nagging doubts about the model looping or winding in.

Between them, Neil and Alan have taken almost a dozen major placings with this design in the past three years and can now build them to fly virtually 'off the board'. Plans are afoot for a different design to give them the edge in calm flyoffs when out-and-out glide performance is important. This craft will be more along the lines of a scaled-up Coupe d'Hiver model.

### Free Flight Team Trials: Barkston Heath, 11th and 12th June

A Trials is the only SMAE event that can be 'adjusted' during the day to suit conditions and venue. Fortunately maxes have to remain at three minutes but rounds can be lengthened and the whole event stopped if, in the CD's opinion, conditions so dictate. This scope formed much of the thinking behind the 5.30am start here - it was not,

as some imagined, an attempt to cram in all fourteen flights regardless, although the rules, and daylight, would have allowed this. The early starts were hopefully to coincide with calmer weather and hence reduce the possibility of out-flying the field. Barkston was co-operative only in wind direction - virtually a northerly all weekend. The first day was nasty even by Barkston's standards. The temperature never rose above 48°F and the sun made a reluctant guest appearance only in the closing stages. The wind certainly took models out of the drome, but not far. Strong thermal flights, which were not common, went further and became a problem.

A summer's day this early in the morning under thick low cloud at Barkston felt as one would expect around mid-day in November! Entries and attendances were reduced not by this but by the closeness of a European Champs and the distance of the World Champs venue to which the teams would have to travel. Certainly, before the flying very few admitted to being willing or able to travel all the way to Argentina.

Glider performances were erratic. John Cuthbert, who had such a good Nationals, did not max until round six, then losing the model. A very unlucky day for him.

Fantham dropped time in deceptive air on the third, fourth and fifth flights; Bartle strung five maxes together, but no one had a full score by the end of the day. At 7am cloudbase problems precluded any Power flights. As it was, on the first round, a couple of people had narrow scrapes. Screen went OOS in a few seconds on the glide and then nearly did it again on the re-fly. Faux had one very hazy flight that was always difficult to see. However, competitors were encouraged by advice from CD Phil Ball who managed to reconnoitre downwind once models began leaving the drome. He even found time to talk to those landowners most likely to be making the acquaintance of the retrievers. He was able to do this both during the 'held' power rounds - and thanks to able assistance in the control van from his daughter Stephanie. The resultant feedback of information as to the non-hostility of the farmers served to ease the tension for the Rubber and Glider flyers, but did nothing for the power men who had got up early only to have to wait it out after one flight. There was an additional breakfast break after which the cloud gave no more trouble and power (by now two rounds adrift) could recommence.

F1B fliers played it too cagey. With fairly neutral air, at least for the first few rounds, a fresh motor was usually better than a long wait for little lift. However, even Chilton - who often uses this technique - came apart badly in the 4th round with little over two minutes. Early leader was Peter King with his distinctive DPR model. After five rounds he still had a full score. Hipperson had dropped a few seconds in the 2nd round, hit a hangar on the 3rd, then flew a reserve with a bunched motor and sticking prop on the fourth to lose more time. Taylor had hit the same hangar but Peers and Gaunt, well up with few problems, both maxed impressively on the last and very important 7th flight of the day - a period which was windier and caused trouble for many.



**Andrew Cordes, here imparting maximum energy at launch, is now very competitive in F1C. Placed second at the Nats.**

Glider and Rubber finished by 5.30, leaving plenty of time and clearing skies for the F1C fliers to catch up. There were moans about this extended session but it was a most intelligent thing to do. Too few of the people to whom I spoke understood the rules, which preclude more than seven flights being made in one day - whatever the weather. Had power not been tidied up to finish all the possible flights, and then had the next day been reasonable, it still would have been impossible to finish Power. Fliers in that class may well then have found themselves in position of having to travel a fair way later in the year for a couple of Trials flights - all on their own, too!

Ken Faux was busy cementing his return to competitive F1C after a win in Hungary against some stiff opposition a few weeks previously. Only a premature D/T robbed him of a perfect score. Screen had also D/T'd early on his 7th fight when well high enough to max - but he had already dropped time on his third.

### First Trials: Barkston Heath, 11th and 12th June

#### F1A (11 flights)

1	M. Fantham	30:13
2	D. Bartle	29:55
3	G. Madelin	29:33
4	J. Carter	29:16
5	W. Colledge	28:40

#### F1B (10 flights)

1	D. Hipperson	28:59
2	R. Peers	28:32
3	P. Gaunt	27:55
4	I. Taylor	27:48
5	P. King	27:43

#### F1C (9 Flights)

1	K. Faux	26:59
2	P. Watson	26:46
3	S. Screen	26:17
4	R. Johnson	26:04
5	R. King	20:55

## The second day

This dawned much calmer - good enough to allow early arrivals a few trim flights at 5am! There was a clear, sunny sky, although almost as soon as the contest began a little fog appeared, which put the Power round back a slot. Rubber and Glider stayed on schedule but the A/2 fliers had the unenviable task of testing out the very early morning air with bright, horizontal sunshine across very wet grass. A lethal combination for patchy and erratic lift. Fantham and Bartle both dropped substantially after looking all set. Many models flew well for perhaps a minute, then came tumbling down. The only two maxes came from Garry Madelin and Joe Flynn. In Rubber, a few moments later, the story was the complete opposite. There were practically no bad flights.

The wind was increasing steadily. Even by the next round models were again leaving the drome if in lift. All the top half-dozen maxed in glider after having got the measure of the conditions. It was Rubber's turn to fare less well. Hipperson led the pack into a patch of air that did himself, Woodhouse and Aslett the power of good but left the rest wallowing. There were many flights of around two minutes here. Peers fell out the bottom of the lift and Gaunt, with Taylor, flew too early in sink.

Power came back on stream, the leaders all maxing although not as effortlessly as the three-minute score looks on paper. The wind was rising and trouble was inevitable. What was more, it was veering to the East - not a good direction either for upwind turbulence or downwind retrieving.

Maxes from Carter and Colledge on the 10th glider round brought scores up tighter. The tenth F1B flight was virtually a mass launch into a very strong thermal out of which Hipperson nearly stalled and Gaunt nearly glided with a late auto-rudder operation. Those who centred were in real trouble. Mike Woodhouse never saw his model again and other flights ended many fields outside the perimeter.

The wind veered considerably for what was to be the last Power flight. It was rough, even at altitude. Faux maxed again but Watson didn't after a slightly out-of-wind launch and untidy transition. Screen launched his 'bunter' far too flat - the wind under the tail levered the model down just at the moment of release. Seconds later it was debris on the peri-track. His re-flight maxed comfortably but landed otherwise, spiked by a thick branch of a dead tree a couple of miles downwind right through the foil wings!

It was now unpleasantly windy. By the time the glider fliers were out the direction was awkward; despite a launch line adjustment, models were crossing the compound in a couple of minutes. Flights in this round disappeared downwind far too fast for their owners to have any hope of keeping up with them and watching them into crops - the only way to recover from corn. Bartle, Fantham and Madelin maxed, reinforcing their positions at the top. Carter dropped a little but stayed in touch; and Colledge and Edge also maxed. Joe Flynn, one of the only two to max on the difficult first flight that morning, rounded off a good day with another max, making the only four consecutive maxes





**Left: Tony Brown went for Tailless Power Fund loot at the Nationals. Model needs sorting - but TD 049 gets 30 secs. motor run allowances . (J O'D Photo).**



**Right: Pete Gaunt favours trusty Dusty in Vintage but out of Nationals luck this time. Below: Put your name on your prop! Russell Peers found John White's handiwork way downwind at the Nats - result, one delighted owner. Below right: Derek Wain's lovely Bazooka gets away at Port Meadow.**



in glider that day. This lifted his position to seventh despite four flights of around 90 seconds the day before!

There was now an ominous hold in the proceedings - a pause to see if the weather would improve. Such a shame after the poor visibility of the previous day. Here was a ginclear sky, hot sun but a screaming north-easterly wind. Remember the '63 Nationals? It was a carbon copy. Phil Ball called it a day. He was right. The wind didn't slacken. There were few moans. Not many wanted to continue! Still outstanding therefore were three flights in Glider, four in Rubber and five in Power. These will take place in October.

The Contest Director had sailed a very straight, if exciting, course within the scope of our Trials rules. It might do no harm if a few of the contestants became better acquainted with them and as a consequence were better prepared for all eventualities, including flying late. And what a delight to have scores in English, or rather minutes and seconds that we could understand; huge, visible score sheets that we could see were always up to date, and positive organisation.

### **Oxford Rally. Port Meadow; 19th June**

For some years the Northern Heights Gala at Halton held the monopoly on repeatedly good weather. It would appear that the Oxford Rally at Port Meadow has taken over. In many ways this is a very similar event; and like Halton, Oxford's geographical location must help. After all, the further away you get from the sea the more stable the weather becomes. High summer and a notice banning thermistors greeted what was to become a record 125 entries. Given the slight walk to the flying area I detected more than a little relief that at least some of the more fiddly equipment was not going to have to be carried out. This was a tricky rule to impose; it illustrates well the high regard in which the competitors held both the spirit of the meeting and the CD in particular, for there was no complaint. It would appear that some unattended poles were very nearly eaten by cows last year and this, quite rightly, was considered too big a risk to the animals' digestion. Although never windy, (5mph mostly, often much calmer) the draught was enough occasionally to take models to the river. Control position was limited so most flew from a point about two-thirds the way across the shortest dimension. By the end of the day, when thermals were even stronger, many were walking way upwind in an attempt to stay on the field - even if it meant having no pilot models to fly with. In strong thermals models crossed the river to descent mainly into an enormous field of corn. Those that just sniffed the edges of lift, D/T'd very promptly - or were just lucky with drift direction and speed - landed upwind of the water. Few actually landed in it.

The river hazard was tough. Crossing meant a very cold swim or a very hot dusty walk around a half-mile detour via the nearest bridge. This was tantalisingly close to a very inviting pub and numerous picnicking groups reclining stylishly on the river banks. They looked so clean and cool...

## Oxford Rally: Port Meadow, 19th June

All 2-minute maxes except flyoffs.

### A/1 (20 flew)

1	B. Lavis	16:00 + 2:30
2	K. Smith	10:00 + 1:45
3	D. Wain	10:00 + 1:42
4	C. Sharman	10:00 + 1:20
5	J. Carter	10:00 + 0:56

### Coupe d'Hiver (32 flew: 8 in flyoff)

1	G. Ferer	10:00 + 2:30
2	P. Carter	10:00 + 2:19
3	D. Davitt	10:00 + 2:10
4	M. Steag	10:00 + 2:06
5	P. Mc Mahon	10:00 + 1:46

### HLG (21 flew: 1 minute max, all five flights counted)

1	P. Ball	5:00
2	J. Buskell	4:04
3	J. Foster	3:57
4	I. Clark	3:46
5	M. Page	3:42

### CO2 (6 flew)

1	P. Gibbons	10:00 + 2:30
2	D. Hipperson	10:00 + 1:32
3	J. O'Donnell	5:39

### Tailless (3 flew)

1	R. Peers	6:00
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### Vintage Glider (164 ft line: 7 flew)

1	G. Beal	5:30
2	G. Smith	5:07
3	B. Harvey	4:46

### Vintage Rubber (27 flew: 12 in flyoff)

1	W. Beales	6:00 + 2:30 + 3:32
2	G. Beal	6:00 + 2:30 + 3:07
3	D. Wain	6:00 + 2:30 + 2:45
4	D. Davitt	6:00 + 2:30 + 2:23
5	P. Michel	6:00 + 2:30 + 2:17

Top Junior: Martin Kemp

Gala Champ G. Smith: total time 28:07  
J. Carter: 25:01

It was common to see more than a dozen models simultaneously thermalling across the Meadow. Rounds maintained a constant pressure all day but necessitated some pretty frantic searching at times. By the 5.30 close temperatures were still well into the 70s and a couple of dozen people had qualified for the flyoffs. As usual these were held in such a well organised and dare I say 'crisp' fashion as to be both exciting for the participants and a fine spectacle for the audience.

Tailless was an additional event this year. Peers' three maxes were more than enough to devastate the opposition. Neither did Vintage Glider require a flyoff. Gordon Beal dropped just 30 secs with his Mick Farthing lightweight - still half-a-minute ahead of Geoff Smith's SATU. HLG was flown to five flights, all to count with no attempts; so Ball's winning score represents a remarkably consistent day. I have suggested recently that no one will ever be able to produce nine consecutive maxes outdoors. I am not so sure now. The usual top threat, now that the emphasis is so much more on consistency, is Mike Page, who, strangely, was in poor form on the day.

The A/1 flyoff provided a clear win for Brian Lavis who was the only one to achieve the 2.1/2 minute max. No-one else came close. Coupe d'Hiver was next. With the air still very warm it was surprising that times were not higher. Dennis Davitt's large, floaty model did just that to glide on and on, even when quite low down but it couldn't reach 2:30. Peter Carter repeated his good performance of last year with a flight only ten seconds short but Gerry Ferer topped them all, flying last with a noticeably higher climb and better glide than the rest. His flight exceeded the max by about 20 seconds. Gerry flew a large and quite high aspect ratio design with new surfaces on an existing fuselage. He had topped the Champagne flyoffs held the previous evening with two similar flights.

CO<sub>2</sub> was scheduled next but Pete Gibbons sportingly insisted that it be delayed as Hipperson, his only opponent with a full score, had been delayed with a lost model on the last max. The first round of the evening's premier event was run off instead. The Vintage Rubber flyoff had no less than twelve participants. Many of the models seemed to have been built especially for the contest. This was an extraordinary standard from a collection of Bazookas, Senators, RAFF Vs, Buckeridges, and more besides. With rounds of a snappy five minutes it was guaranteed that onlookers would be treated to practically a mass launch. These guys had been practicing - and it showed! There were a large percentage of 2:30 maxes as one after another the models floated into a gentle patch of lift. While the successful seven re-grouped for the second round CO<sub>2</sub> was run off.

Hipperson launched first with a reserve model and a very feeble, short run. The model was back on the floor in little over 90 seconds. Pete Gibbons released at about this time but had no such problems. The comparatively small model, equipped with a large, silver plastic prop just never looked like stopping on the climb. It would appear the run was pushing two minutes. The max was a formality. Fortunately his D/T got the model down before the river, giving a convincing victory with no loss.

Conditions had cooled a little for the second round in Vintage Rubber and the drift was less; only just perceptible. The max was lifted. This would be an unlimited flight. Once again there were some very impressive climbs. Derek Wain had sorted out a slight motor problem on the first round and his brand new and very neat Bazooka turned in a splendid 2:45. Dennis Davitt, flying a Senator, and Gordon Beal with a Dyna-mite (a Marcus Bazooka derivative) launched late but in reasonable air. Both climbed well but the Dyna-mite outglided the Senator by more than half-a-minute. Gordon Beal's three-minute effort then looked in with a chance but young William Beales (no relation) from Croydon had beaten him with a slightly unusual Mike Farthing lightweight making over 3.1/2 minutes!

Understandably there were many remarks about how Andy Crisp could order up perfect weather every year. Of course, he can't. He has just been lucky. What wasn't luck was the obvious work before hand and the effort during the contest that he and a handful of fellow Oxford club members had put into the day. Handling a larger entry number than ever before and sticking to a tight but imaginative arrangement with progressive maxes and short flyoff rounds produced a finale fitting of a most prestigious contest indeed. No wonder people are building models specially for the event. His contest has also illustrated that in Mini Vintage we have a very popular class. Also, it is clear that progressive flyoffs - if organised properly - can be a very sensible and fair way of testing the man/machine combination.

His prize giving was a treat, with Andy's own handmade earthenware pots for all placings and bottles of wine for the top two, with special awards for Gala Champion and top Junior. Wonderful...

## The future of Area events - an explanation

Mike Woodhouse's letter in the June issue seems to have stirred up some passion. I believe I can shed light on this (being on the Free Flight Technical Committee). The FFTC experimented with a slightly stretched calendar this year, bringing in the first Area event a month or so earlier and, in turn, moving all the others up. What with the indifferent weather that coincided with these - not the crisp winter calm for which we had hoped - and the sad fact that Areas were unable to have their say on the matter at Council the experiment was universally unpopular. Before we returned to the status quo we took the opportunity of asking Areas, through their Comp Secs, what they would like to see as the SMAE Area centralised programme in future. Mike saw our questionnaire as a challenge to the whole Area system. He was over-reacting by a mile.

All we wanted was the opinion of all the other Areas on paper so that we could come to a calendar that as near as possible pleased everyone. No sinister motive. Simply clear feedback that we could refer to both now and in future seasons.

Most Areas were very forthcoming. A few didn't reply. The over-riding impression was that the format of recent years was about ideal. If anything, a move to compress the events into Summer rather than out into spring and Autumn was most popular. Trophies for Area events were regarded by most as important.

It is the FFTC's intention to take all the data very seriously and to draw up a calendar very much along the lines of '87. We want to please the maximum number of fliers. Thanks to all the response it looks as if we will be able to do just that in '89.

## What's happening: SMAE Free Flight

28th August  
Club Champs  
Open Glider/Rubber/Power. Club teams and individuals.  
Venue: Salisbury Plain, Training Area 10.  
Contact: Phil Ball. Tel: 0332 665361.

Friday 2nd Sept  
Southern Gala  
O/G for Pilcher Cup; O/R for Flight Cup; O/P for Short Cup; A/1 for Ripmax Trophy; 1/2A for Quickstart Trophy. CDH and HLG. All SMAE events.  
Venue: Little Rissington.  
CD: Mike Howick.  
Contact: Phil Ball. Tel: 0332 665361.

11th Sept  
5th Area Centralised event  
O/P for Keil Trophy for Teams, and Plugge points for individuals.  
FIB for Gutteridge Trophy. A/1.  
Venue: Areas.  
Contact: Area Comp Secs or SMAE Comp Sec Richard King. Tel: 01-890 4504

# OF DIAPHRAGMS AND DIESELS

**T**HE STORY of this conversion starts some years ago when I bought a Davis Diesel Conversion kit for a Cox Babe Bee .049. This was installed in a Bowmans Sunduster on which I taught myself R/C, the idea being that the model could be trimmed to fly free-flight without my help (or hindrance), the engine compression being backed-off to produce less than full power. The idea worked; but as more experience was acquired, and more power needed, the Babe Bee became stressed to its limit. After breaking three crankshafts the engine was converted back to glow and the diesel conversion put aside.

Some years later I designed the Skystreak 32 (published in Radio Modeller, August 1986). This model is powered by a Cox TD .049 fitted with a Tarno R/C carburettor. This engine always died at low revs. Out came the David Diesel Conversion and hey presto, power and really good throttling. But there is always a snag. This time the synthetic discs used as a compression seal failed - burned out - on each flight after about two minutes. Soon the pack of spares had been used up. What to do?

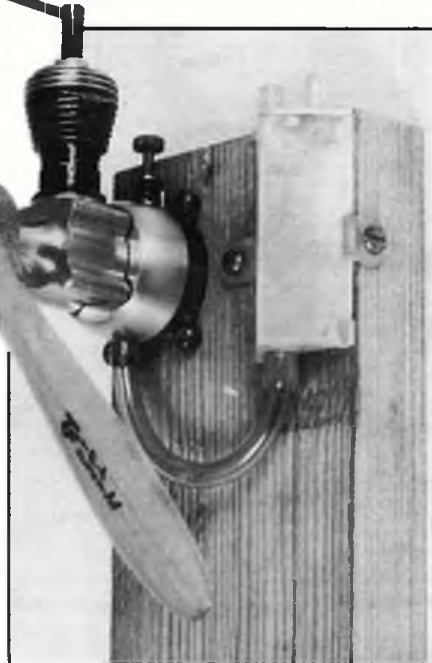
## Ali oop!

Brainwave! Why not try thin aluminium discs instead? To my surprise (and that of a few club members too), it worked, allowing the compression to be adjusted in just the same way as before. It is amazing how the disc, about 0.5mm thick, is formed to shape like a saucer by the explosions inside the cylinder.

When the chance came to buy a second-hand Cox Pee Wee I decided to try my own diesel conversion. The Pee Wee has always fascinated me but it has some drawbacks. It is surprisingly powerful for its size when run on the recommended 4.1/2 x 2 propeller, but like most small glow engines it does not like to run slowly.

If set rich it leans out at the end of the run - something not advisable for consistent free-flight trim. And as it is fitted with an integral tank the length of engine run cannot be accurately predetermined.

In order to convert the engine to diesel only basic modelling and household tools are required; and few materials.



## Glow to diesel!

Graham Winch did it

- this is how...

Electric drill and drill stand  
Various files  
6BA and 4BA taps  
Scissors  
Sanding block  
Scalpel blade and holder  
Nail punch  
Hacksaw  
Drills  
Cox spanner (Part No. 1030)  
6 x 4 propeller  
5/16in. aluminium rivet  
Empty aluminium drink can  
4BA brass screw  
Compression screw  
Brass fuel nipple  
Small-bore fuel tube

## Here's what you do!

- (a) Remove cylinder head.
- (b) Saw head off rivet and mount remainder in jaws of stand-mounted electric drill. Carefully file rivet until it is a good sliding fit in the cylinder. No need for precision here - just a reasonable fit. Remove from drill. You have just made a contra-piston.
- (c) Fit glow head into drill jaws gripping

on the 'plug' to avoid distortion. Machine inside of combustion chamber to suit contra-piston. I used a scalpel blade on a suitable tool rest, rather as if I was wood turning. Sounds crude but it works! The contra-piston should be a good sliding fit in the head, and the recess itself should be approximately 3mm deep. When finished saw rivet to produce a contra-piston 2.5mm long. Use sanding block to make ends flat.

- (d) Remove cylinder head from drill and place on a piece of wood with a hole drilled in it to clear the glow connection. Using a nail punch knock out the glow connection and scrape away the insulation.
- (e) Refit head to engine and tap centre hole 4BA. Do not worry about swarf as this will be removed later. Remove head and fit a 4BA brass screw in the thread, taking care that it does not protrude below the level of the contra-piston recess. Use thread-lock to secure screw in head. Saw through brass screw flush with top of head and file flat.
- (f) Refit head to engine; then drill and tap brass screw insert 6BA to form thread for compression screw (mine is from a DC Merlin). Drill a 1/32in. diameter hole at an angle from top of head into contra-piston recess. This is important; it vents any gases that pass the compression seal when engine is running. Without it, adjustment of compression is difficult.
- (g) Remove head from engine and file flats on top fin of cylinder to suit Cox tool. Don't use a spanner through exhaust ports as this can damage the cylinder. Later engines have flats as standard.
- (h) Dismantle engine and clean thoroughly to remove swarf.
- (i) Drill hole in tank shell and fit fuel nipple so that an external fuel tank can be used.
- (j) Reassemble engine. Fit the tank with an internal fuel tube from existing feed nipple to new one. Make a thin (approx. 0.5mm) cylinder base gasket from a red fibre washer. Refit the cylinder and gasket.
- (k) Make compression seal disc from the side wall of a drinks can (I used an empty Mackeson can - it does us old 'uns good).

Mark out a circle 9mm diameter and cut out disc with scissors – not round the circle but by a series of straight cuts gradually working into the outline. Finish with a sanding block.

- (l) Fit the compression seal into the cylinder, leaving the original copper gasket in place.
- (m) Refit cylinder head contra-piston and compression screw (with locking bar if required) and the conversion is complete. The head will have to be tightened as the seal beds in. Look for leaks and tighten as necessary.

### Flipping good!

Now to try the engine. I use a Top Flite 6 x 4 wood propeller and, as my engine has seen better days, a fairly oily fuel to aid compression. This is the mix:

33% Castor; 33% Paraffin; 33% Ether; 1% IPN  
It's surprising how many old diesels can be coaxed into life by adding some oil to the fuel to get better compression...

Prime the engine and fill tank. Be careful at first – the seal needs to form to its 'saucer' shape and initial compression may be high. Take it easy – once the engine has fired you're away. You will find that it can be run quite slowly by reducing compression.

A few tips to end with. If you use a DC Merlin compression screw you should file the tommy-bar so it does not come too close to the propeller. The same applies to the locking bar.

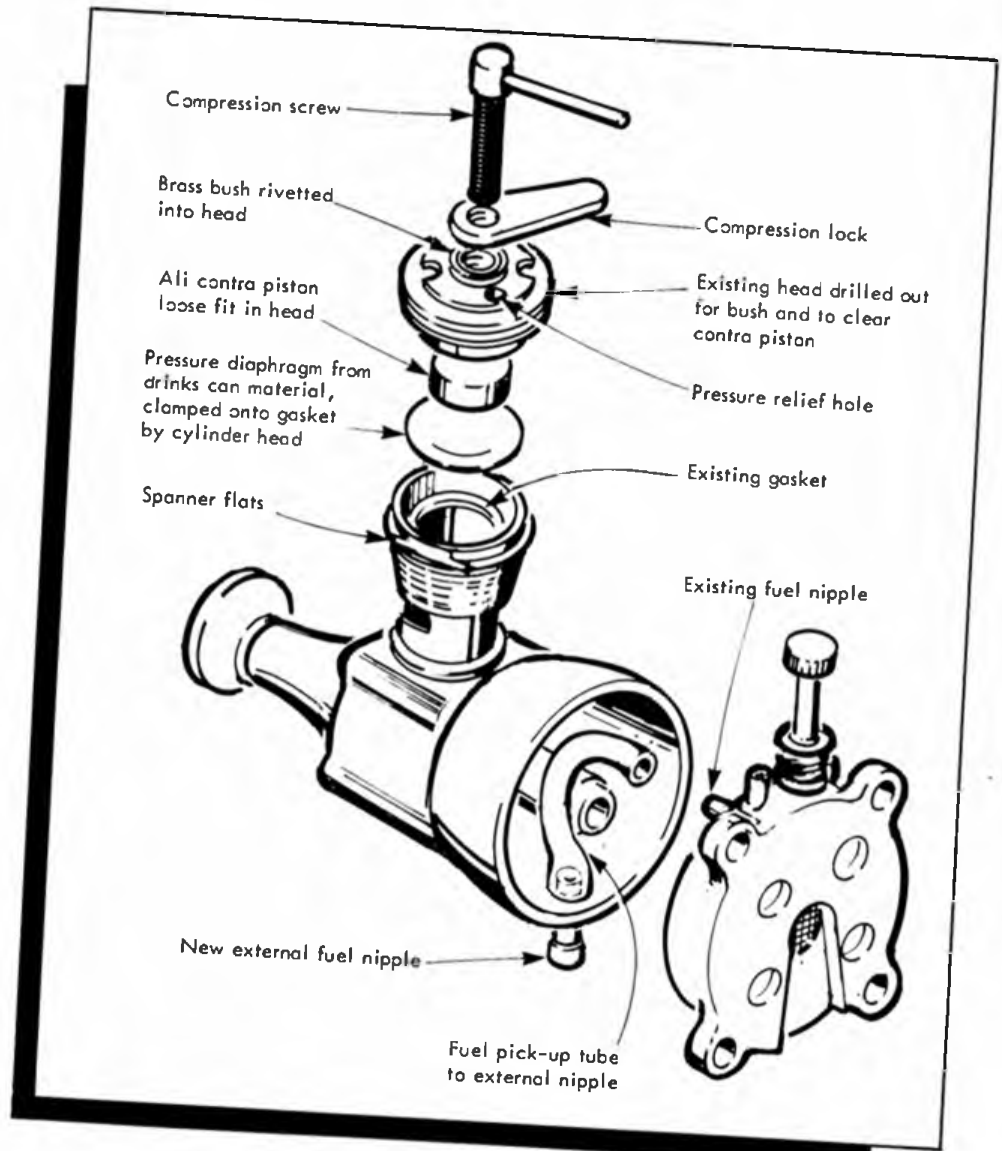
Should the 'small end' ball and socket be loose a simple tool can be made to tighten it; namely, a length of steel bar drilled with countersink at one end and with a saw slot to clear conrod. A few light taps with a hammer on this tool, placed inside the piston, will take up any play.

Happy flying with your conversion. Mine is destined for a half-size Madcap. See you at Old Warden!

### Postscript

I now have a Tee Dee 010. It fires on a diesel prime so it should also be OK to convert! I'll keep you posted...

Cox motors and accessories are imported by Amerang Ltd, Commerce Way, Lancing, West Sussex BN15 8TE. The Cox Pee Wee costs £14.99; the spanner, Part No. 1030, costs £1.15. Available at model shops. Graham bought his from Model Makers, 31 High Street, Chesham, Bucks who at the time of writing also stocked the Cox R/C throttle equipped Pee Wee at £17.25.



Easy – all you need to know in exploded form, above. Photo below shows Pee Wee cylinder; new contra-piston and diaphragm; Pee Wee head bushed for compression screw and locking lever (shown at right). News of similar experiments welcome!



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# WHAT'S ON

**20-21st August**  
**ASP VINTAGE MODEL WEEKEND**  
 Venue: Old Warden Airfield.  
 Contact: Aeromodeller. Tel: 0442 41221.

**21st August**  
**FACCT MINI GLIDER BARCS RULES**  
 Venue: RAF Weston-on-the-Green. Pre-entry £2 + SAE and 2 frequencies.  
 Contact: Mr N.G. Webb, The Bungalow, 13 East Street, Fritwell, Oxon OX6 9PX.

**27-29th August**  
**SMAE LONDON AREA F/F GALA**  
 Venue: Training Area 11, Salisbury Plain. A/1, 1/2A, CDH, HLG (Saturday) FIA, FIB, FIC (Sunday, 7am start) + SOP (10am). Open Rubber, Open Power, Open Glider, Vintage (Monday). Contact: Glenda Bracken. Tel: 01-263 9849.

**28-29th August**  
**INDOOR FLYING AT CARDINGTON**  
 Team Trials for 1989 Indoor Eurochamps (best 2 from 6) and fun-flying.  
 Contact: Bob Bailey. Tel: 0438 723642.

**28-30th August**  
**SMAE SCALE AND R/C NATIONALS**  
 Venue: RAF Barkston Heath  
 Contact: SMAE. Tel: 0535 518500.

**11th September**  
**SMAE NORTHERN GALA**  
 Budapest Trophy for 1/2A T/A. Wharfedale Trophy for FAI T/R. Venue: RAF Dishforth.  
 Contact: Jeff Smith. Tel: 0532 663432.

**11th September**  
**SHUTTLEWORTH MODEL GROUP SILENT DAY**  
 Venue: Old Warden Aerodrome.  
 9-6pm. Everyone welcome. No i/c engines to be run.  
 Contact: Mick Staples. Tel: 0223 241 978.

**18th September**  
**WALSALL MAC VINTAGE MEETING**  
 Venue: Newtown, on A34 between Bloxwich and Cannock Taka J11 off M6. Classes 1.2, Texaco, Flying Fifteen.  
 Contact: Tony Proggatt, SAE to 12 Tower View Road, Landywood, Gt. Wyrley, Walsall WS6 6HE.  
 Tel: 0922 415883.

**18th September**  
**INDOOR FLYING AT CARDINGTON**  
 All-in Index and fun-flying  
 Contact: Bob Bailey. Tel: 0438 723642.

**18th September**  
**THREE KINGS C/L SCALE DAY**  
 Venue: Old Croydon Aerodrome, Purley Wy, Croydon, Surrey. FAI Scale and Profile Classes. Best WW2. Silencers and proof of insurance essential.  
 Contact: Wai Cordwell. Tel: 01-764 1661.

**18th September**  
**NORTHERN GALA**  
 Venue: Driffild. Contact: Dennis Davitt. Tel: 0532 675433.

**26th September**  
**SAM 35 FREE FLIGHT EVENT**  
 Venue: Tatton Park, nr Knutsford, Cheshire. Events: Mini-Vintage Rubber (34in max span). Flight Cup Park open 10am: comps start at 11am. First flights to be made by 1.30 pm. Prize for top junior. Contact: Douglas Tennant. Tel: 0625 874440.

**2nd October**  
**FAI RALLY**  
 Venue: Driffild. Contact: Dennis Davitt. Tel: 0532 675433.



**16th October**  
**SMAE INDOOR SCALE MEETING**  
 Venue: Alumwell Centre, Walsall. Two minutes from M6, J10. Peanut, Open Rubber, CO<sub>2</sub>/Electric, Kit Scale and Air Racing. Lots of trimming time. Come and join the growing numbers!  
 SAE for full details to: Doug Sheppard, 13 Luckington Road, Monks Park, Bristol BS7 0UT.

**23rd October**  
**SOUTH BIRMINGHAM MFC VINTAGE C/L Rally**  
 Venue: Rubery Hill Hospital, Rubery, Nr. Birmingham.  
 General flying for SAM 35 and SMAE members. Fun competitions too.  
 Contact: Peter Martin. Tel: 021 459 5520.

**29-30th October**  
**RAFMAA INDOOR EVENT**  
 Venue: RAF Upavon, 10am - 5pm. Informal competitions for Helicopter, Scale Pylon Races, Portsmouth Duration, Pistachio Scale. SMAE members only. Pre-entry

essential. Contact: Fit Lt A Sephton. Tel: 0252 541009.

**30th October**  
**SAMS INDOOR FUN FLY**  
 Venue: Watford Leisure Centre, 11am - 6pm. Every form of Indoor model! Lymene Scale event. All welcome! Contact: George Wallbridge. Tel: 076 388 384.

**30th October**  
**CROYDON WAKEFIELD TROPHY**  
 Venue: RAF Barkston Heath. Classes: F1B: Vintage Wakefield (8oz and 4oz), own-designs to pre-1951 rules. Croydon Club trophies and Ted Evans Memorial Trophy.  
 Contact: David Beales. Tel: 01-858 2714.

**20th November**  
**SOUTH BIRMINGHAM MFC. SAM 35. MECA SWOPMEET**  
 Venue: St. Brigid's RC School, Frankley, Beeches Road, Northfield Birmingham. 12 noon start. Contact: Peter Martin. Tel: 021 459 5520.



## Vic Dubery - an appreciation

and made it clear that he hoped to resume normal activity as soon as possible. Sadly, this was not to be....

Vic always maintained that his love of aviation began after childhood visits to the Air Displays at Hendon, followed ere long by a flight in one of Alan Cobham's machines. In 1933, aged 11, he produced his first successful flying model, graduating within four years to a Bert Judge Wakefield (a design which he was later to favour upon discovery of Vintage Wakefield competitions). Administrative skills, later to mature during a full career in the Treasury, also served aeromodelling from Vic's days in Yorkshire when he took on Secretaryship of the Batley DMFC.

Vic aimed high early, entering the 1939 Wakefield Trials with a Chasteneuf Streamliner. By this time his allegiance, following a move to South London, was firmly with the Park M.A.L., whom he represented as a club delegate on SMAE Council.

Club activity was put aside from 1941 to 1946 occupied Vic's time, when other considerations namely Fleet Air Arm service with 811 Squadron. Nevertheless, Vic maintained his aeromodelling, even when on board ship, and would later claim to be the only person ever to have flown a model in mid-Atlantic, actually on the hangar deck of HMS Biter in 1943 during the Battle of the Gap. His model, incidentally, a peanut-sized cabin design, was recreated by Vic not long ago and was offered to us for publication. Soon it will appear.

Vic enjoyed aeromodelling during those postwar boom years. He entered, and placed in, numerous local and national competitions, and during the period 1947-1955 wrote consistently well for Aeromodeller and Model Aircraft magazines. Enthusiasts will recall his Piper Pacer, AM Air Coach, Rigid Midget sport and scale designs; his

Wild Goose Wakefield was clearly Warring-inspired. Perhaps because of Judge influence he was always a proponent of the 'semi-streamliner' school....

Although the Wakefield was his truest love, he tried all types including radio control (via a Rudderbug and home-made R/C gear) and control line, thanks to a Jim Walker Fireball. But most effort went into qualifying for the Wakefield Trials, an achievement managed every year until 1956; he proxy flew for South Africa in 1949 (placing 57th) and came 23rd for Great Britain, proxy flown, in 1954. Apart from activities within the Leeds MFC, Vic was Chairman of the SMAE Northern Area and organiser of the famous Yorkshire Evening News Model Flying Festivals.

Career moves curtailed Vic's aeromodelling for a time, but he was eventually to develop full-size aviation interest, notably gliding, often taking the chance to fly over the Home Counties on a fine Friday afternoon off... Inflation plus the eventual wrecking of the co-owned glider (not while in Vic's charge) meant a return to aeromodelling; gradual at first via R/C sailplanes, and then with the full force of rediscovery after a visit to an Old Warden Vintage Day. Vintage flying, coupled with a healthy dose of Indoor and Coupe d'Hiver, gave Vic the opportunity to recharge old friendships alongside formation of the new. Vintage Scale became a fresh enthusiasm, whenever Chairmanship of SAM 35 allowed; and Vic's writings on the subject became a much enjoyed part of that Society's newsletter.

But it is Vic's keenness of thought and precise action that distinguished him as a person, not just as a model flying enthusiast. An efficient manager, he would often lecture spontaneously whenever he saw a model not performing as he thought it should. Disarmingly, his own models were not immune from this analysis....

Quite simply, we have lost a model flying friend whose energy and cheerfulness (sometimes masked on first acquaintance, for Vic was gently reserved of manner) were inspiring. Old Warden, and Chobham Common, will not be quite the same again.

Our sincerest condolences go to Grace, and to Vic's family. GC

**N**EWSP OF the death of Vic Dubery at the age of 66 will come as a total shock to all who remember his enthusiastic and energetic participation on the flying field. Although recent investigations had proved the need for heart bypass surgery, Vic, with characteristic optimism, regarded this merely as an irritating obstacle to be dealt with as speedily as possible. He left meticulous preparations for the Masfield Trophy Vintage Scale competition, now an established and much-enjoyed feature of our Old Warden Scale Weekend, so that it could be run in his absence.

# HANGAR DOORS

## ASP 40 engine competition

What have you ever had named after you? We loved it when we noticed the ASP R/C engine, advertised Stateside by World Engines Inc. In two twinks of communication from Ron Moulton, our Editorial Director, a box arrived at Hemel Hempstead containing this aptly-titled motor.

What else could we do but offer the ASP 40 as a competition prize? And what better than to limit the competition to the under-sixteens amongst us? This is an R/C engine, so what we



invite are plans, sketches or doodles of the radio-controlled model they would most like to see published in *Aeromodeller* or sister magazines RCM & E and Radio Modeller. Ingenuity, originality and careful thought are the keynotes of design. Entries should be submitted by 31st October to: ASP Engine Competition (Dept. AM), PO Box

Continued from page 472

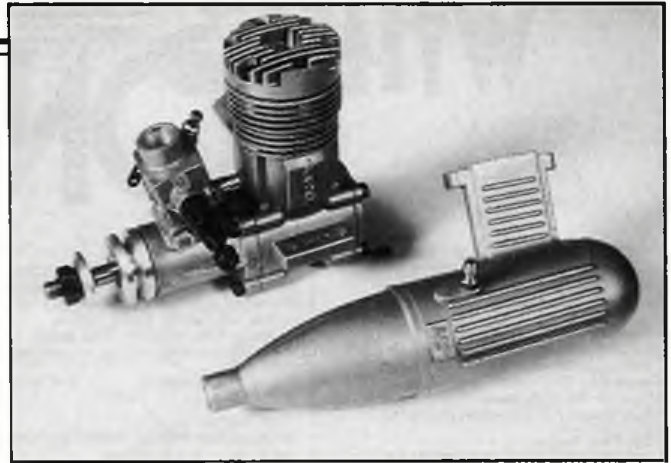
35, Wolsley House, Wolsley Road, Hemel Hempstead, Herts HP2 4SS. What can we tell you about the motor itself? Despite the resemblance to the OS 40 FSR, bore/stroke ratios and port timing differ. This Chinese engine is a neatly produced job, clearly capable of useful service on the flying field. In company with its .61 and .90 brothers, the motor is now being imported into this country by MacGregor Industries. And the initials ASP? They stand for Acceleration, Speed and Performance. But you'll know that already, won't you...

### Robert W. Ellam Memorial Trophy

Control-line combat is a keenly-contested discipline. Since last year Diesel A Combat at the Nationals has merited its own hardware, the Robert W. Ellam Memorial Trophy. Bob's friend and colleague Pete Redhead explains:

'I first met Bob in Oman in 1977. He soon became a confirmed aeromodelling addict, building and flying a wide range of subjects from Indoor EZB to "full-house" radio. He was especially interested in control line and was looking forward to settling in the UK with the prospect of taking part in Club and National events. Tragically, however, he was killed in a motorcycle accident in June 1986 during his first week home in Barnsley. Bob was just 39. His mother, Queenie Ellam, and I felt that the best way to realise his dream would be to arrange a Memorial Trophy from the sale of his aeromodelling effects. He will at least be able to attend, in spirit, one contest a year...'

First recipient of the Trophy was Paul Stanley, presentation



Above: ASP 40 engine - subject of our latest competition. Left: The 'Ellam Memorial Trophy for Diesel A Combat.

being made at the 1987 SMAE Prizegiving. Who'll win this time?

### Motors, motors, motors

Here's a bitter-sweet tale. The sister of a long time aeromodeller decided to have his collection of model engines valued at his favourite model shop, at which he had been a regular customer for years. Quoth the Proprietor, 'There's not much of any use here. Forty quid. Those Frog engines are useless, but I'll take them off your hands if you want'.

Happily, this is where we were contacted - and we could confirm that the motors (and other items) were worth substantially more than this miserable quotation.

To avoid similar indignities, and to prevent unannounced or unwanted callers at this lady's house, we are listing these engines for bids. Note that engines have not been run: their description is our opinion only and there can be no inspection. Bids must be 'sight unseen' with no right of withdrawal once accepted.

Successful bidders will be notified by post. Send no money in the first instance. The address: ASP Vintage Engine Bids, Aeromodeller, PO Box 35,

Wolsley House, Wolsley Road, Hemel Hempstead, Herts. HP2 4SS. No correspondence will be entered into.

### F/F Eurochamps extra

Advance news (main report will be in the October issue) is that the best Brit at the F/F Eurochamps was Stafford Screen, 4th in F1C after dropping ten seconds in the six-minute flyoff. A hot performance to match hot, calm conditions in Zrenjanin.

#### F1A

1	Viktor Tchop	USSR
2	Mihail Kochkarev	USSR
3	Ivan Horejsi	Czech
30	Mike Fantham	GB
31	John Cuthbert	GB
33	Andy Crisp	GB

#### F1B

1	Alexander Andrukov	USSR
2	Leif Ariksson	Sweden
3	Krzysztof Rozycki	Poland
29	Mick Chilton	GB
33	Derl Morley	GB
39	Ron Pollard	GB

#### F1C

1	Valery Strukov	USSR
2	Eugene Verbitski	USSR
3	Alexander Muhin	USSR
4	Stafford Screen	GB
23	Pete Watson	GB
28	Alan Jack	GB

### Vintage engine auction

Ref No.	Description	Condition	Remarks
VE1	PAW 149	V. Good	Non R/C
VE2	WanMac 049	Good	From plastic model
VE3	Frog 100 original	Good	Complete with spare crankcase - no needle
VE4	Cox Pee Wee .020	Excellent	
VE5	McCoy 049	Good	From plastic model - not standard crankshaft
VE6	Allbon Javelin	Good	
VE7	Cox Pee Wee .020	Good	
VE8	Frog 80 diesel	Good	
VE9	Embee .75 diesel	V. Good	Made in small number in Leicester Later, red head, version
VE10	Frog 100 diesel	Good	
VE11	Mills .75 original	Good	
VE12	Indian Mills .75	V. Good	
VE13	Silver Sallow 2.5cc	As new	In box
VE14	ME Snipe 1.5cc	Excellent	As new in its box - probably unrun. Both require work on needle valves
VE15	DC Bambi	Reasonable	In original box
VE16	DC Bambi	Doubtful	Home made tank
VE17	Kalper 32	V. Good	
VE18	Kalper 32	Good	
VE19	Kalper 32	Reasonable	
VE20	DC Merlin	V. Good	
VE21	Cox .010	Good	
VE22	Allbon Dart	Good	
VE23	Frog 100 original	Fair	Cylinder alignment incorrect
VE24	Vintage V Models (Victory, Surrey) Electric winch with Mighty Midget motor.		
VE25	Two Elmic pneumatic timers in reasonable condition		
VE27	Miscellaneous metal and plastic fuel tanks		

VE28 Miscellaneous Minimax receivers, switches, electric motors etc.

VE29 Miscellaneous small number of fuel needles, comp screws, con rods.

### Plans

Tipsy Junior	Little Willie Mk II
Sharkface	Vultee VA
Barnstormer	Spinner
Sir Jasper	Humbug
Zaunkonig	Viking
Ryan PT20	Fledgeling
Luton Minor	Playboy Senior
Mamselle	Piper Cub
Peril	Sopwith Pup
Nieuport II	Sopwith Swallow
Phoebus	
Apprentice	
Jodel DII	
Duration	
Little Willie	

### RE 8

Curtiss-Wright Junior
Chrislea CH3 Super Ace
Westland Lysander
Condor Clipper
Waterman Gosling
Fokker D VIII
Fokker E IV
Focke-Wulf Stosser
Blackburn Monoplane
Cessna Bird Dog
Beagle Pup
Fairchild Argus
Bellanca Sky Rocket

Bid as a complete list.

### Model Aircraft Kits

VKA	Frog Aerobat:38in. wing span - does not appear complete.
VKB	DH Tiger Moth:33in. wing span - appears to have some balsa missing.
VKC	Luton Minor:12in. wing span - appears complete
VKD	Piper Cub:30in. wing span - appears complete except for tissue
VKE	Piper Cub:34in. wing span - appears complete except for tissue
VKF	Comet American Classics DH4:25.5/16in. wing span - appears complete except tissue.
VKG	KaifKraft Short Sea mew:28in. wing span - appears complete except tissue.
VKH	Comet American Classics Curtiss Robin:24in. wing span - appears complete
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## Appendix - Links to the plans

The original issue comes with a free plan (ABC Robin) printed front/back on a pull out banner of four sheets. The banner is not included in this document.

### Cloud Nine by Frank Smart

CL Combat

Free plan not found

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### ABC Robin by Andy Sephton

FF Rubber (or CO2) Scale

[https://outerzone.co.uk/plan\\_details.asp?ID=2537 ...](https://outerzone.co.uk/plan_details.asp?ID=2537...)

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