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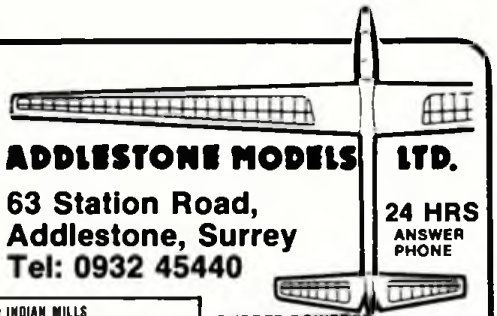

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FEBRUARY 1987

Volume 52
Issue 613

ISSN 0001-9232

AERO MODELLER

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Editor *Geoff Clarke*
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Cover:
Building that winter project? Why not try something magnificent, like Jym and Dave Leddy, scale modellers extraordinary, who chose the Short-Mayo Composite as a control-line challenge. Adventurous subjects like this are just right for C/L - go for the out-of-the-ordinary during these dark evenings and bring it to Scale Weekend! Photo: Ron Moulton.

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Advertisement Offices: Argus Specialist Publications Ltd., Golden Square London W1R 3AB. Tel: 01-437-0626.

Postmaster: Send address changes to Argus Specialist Publications Ltd., P.O. Box 35 Wolsey House, Hemel Hempstead Herts HP2 4SS England.

Subscriptions: Direct subscription rate including index. Home £25.10. Overseas sterling £29.00. Overseas dollars (U.S. or equivalent) $38.50 from Infonet Ltd., Times House, 179 The Marlowes, Hemel Hempstead, Herts. HP1 1BB. Tel: (0442) 48434.

Overseas Availability: Second class postage paid in the U.S. at New York, USA.
Mailing Agent and distribution to news stand sales by Eastern News Distributors Inc., 1130 Cleveland Road, Sandusky OH10 44870. Distribution to North American hobby and craft stores museums and bookshops by Bill Dean Books Ltd., 166-41, Powells Cove Blvd. Post Office Box 69 Whitestone BY 11357 USA Tel: 1(212) 767-6632. USA Subscription agent Joseph D Daileda, Wise Owl Worldwide Publicatons, 4314 West 238th Street, Torrance CA 90505.

Argus Specialist Publications Ltd.

P.O. Box 35 Wolsey House, Wolsey Road, Hemel Hempstead Herts HP2 4SS

HANGAR DOORS

At the SMAE Prizegiving, eleven-years-young David Nicholls receives his Merit Certificate from Chairman Roy Nudds. This award was made for David's flying in R/C Aerobatics at the Nationals. As a bonus he was offered a flight in the RAeC chairman's Stampe; he'll soon know what his poor F3A model goes through!

Free Flight at RAF Barkston Heath

In recent months there has been much flying-field nattering on the subject of model flying at RAF Barkston Heath, an airfield which is arguably the finest F/F site in the country. Cause for discussion has been the much-quoted ban on F/F activity there; some modellers being of the opinion that the clampdown is total, others saying that exceptions would be made. Reason for all this is, as every Barkston flier knows, the risk of wayward models coming to rest in the infamous missile compound.

We thought we ought to find out exactly what's what. A phone call to Roy Nudds, Secretary of the SMAE, luckily coincided with the latest letter on the subject from Sqn Ldr. I. Palliser of the Flying Training School, Cranwell. The following is a precis of the letter's content (the document itself has not yet been seen by your editor) which can only be described as bearing good news for the aeromodeller, particularly when given the sensitivity of the matter...

Fundamentally, then, we can say that the following events are guaranteed as 'on' at Barkston; the Free Flight Nationals, Area events, and certain fun-fly events. Also, note that Free-Flight Scale will take place as part of the R/C, C/L and Scale Nats in the same way as usual - it being accepted that scale models, as well as Vintage, HLG and other relatively low-performance craft are of minimal risk. It is the state-of-the-art power jobs that pose the greatest threat to the missile site, and there may well be restrictions on the flying of these models at some events. The importance of the F/F Nationals is recognised, so it is to be treated as a special case; and personnel may well be supplied to retrieve models landing amongst the Bloodhound missiles. Otherwise, recovery will be at the discretion of 25 Sqn. Recovery is one of two problems; the other, of course, is the launching of models from such a point as to make their landing in the site too high a probability. In order to minimise 'disturbance' it is recommended that flying discipline be rigorously enforced, and that such basic considerations as wind direction and best launch area should be taken into account before trying for that max. In this regard it is expected that considerable common sense will be used, particularly by Contest Directors who, after all, shoulder the responsibility for the smooth running of such events.

Regular flying by the Grantham Club is still quite in order, subject to the provisos outlined above. There *is* one definite and inflexible rule, however, which applies to everyone – if there is snow, no flying of any kind may take place!

Anyone needing further clarification of the circumstances regarding the use of this airfield is recommended to contact the SMAE. We should say that Sqn.

Left: Amongst the models on display at the SMAE do was this pair of Superhawk stunters by Bill Draper. C/L Tech Committee member Richard King keeps a watchful eye on proceedings. Right: Recent interest in the Senior Monitor stunter has brought forth this Henry J. Nicholls plc of Martin Nicholls with the prototype model. This young gentleman, some forty years on, currently pursues the occupations of farmer and professional musician (the trombone being a speciality). Tempus fugit, and all that...

Ldr. Palliser's letter appears to be a well-reasoned, thoughtful and comprehensive document; we are pleased to be able to paraphrase it – even by telephone – and hope that the situation is now clear to all. Note, all you F/F Scale Nats enthusiasts, that this information supercedes that given in Bill Dennis' Scale Matters this month; you can go to Barkston in August after all!

Super Coupe – and news from France

We've just come back from the *Aeromodeller* Coupe d'Hiver event at RAF Henlow which, despite dismal weather and a depressing forecast, attracted one hundred entries – that's entries who registered scores – on the day. Thanks to all who took part; and congratulations to our winners, Pete Harris, victor in the 80 gm class and Dave Hipperson who was unassailable in 100 gm. Full report next month.

How rewarding it was to see some French visitors challenging for the Coupe Trophies (most successful being Bernard Boutillier, sixth in 100 gm and eleventh in 80 gm). Furthermore, they had some great news about F/F events in France later this year. Actually, the subject of the first bit of news is not all that far away. The second Maurice Bayet Coupe d'Hiver competition – the first was reported in our May 1986 issue – will take place on March 1st, again at the airfield of Reau-Villaroche. It snowed last year; real seasonal stuff! Classes will be: 80 gm and 100 gm (the first being ROG) with extra prizes for the top vintage coupe model, best junior, best lady flier and best club or team performance. Any number of entries may be made. Bear in mind, too, that according to French interpretation, Vintage Coupes are 'pre-1956'.

Fancy going? This brings us to the next point. No doubt many will make individual arrangements, or travel in convoy; but we thought that – if there's sufficient interest – we might organise party travel in a mini bus, or whatever's most suitable. At Henlow we noted a number of fliers who were interested, provisionally at least, are you? If so, call the *Aeromodeller* office *now* on 0442 41221 and we'll see what we can do. Accommodation should be sorted out for you; and hardened competition fliers will be pleased to know that trimming will be allowed on the field during the day before the contests – that is, 28th February. Come in – let's see if we can capture the Coupe Maurice Bayet!

And that's not all...

Right – now for the next bit. If model flying in France this summer appeals to you, this could be your year. The weekend of 8th and 9th August will see the commemoration of the 1937 Wakefield Cup, where, fifty years ago, a famous victory was gained by one Emmanuel Fillon. This is more than just a weekend of Wakes too, for there will be competitions for Vintage Gliders and power models – F/F and R/C-assist – on the first day. Four-ounce and eight-ounce (pre-1941) Wakefield classes will be flown on the 9th, as will a blanket class for pre-1951 designs. More details nearer the time. Oh – the venue ? Almost certainly Reaun-Villaroche, as for the Coupe.

Then there's the Free Flight World Championships from the 10th to 16th August and the Poitou F/F meeting on the 28th and 29th of that month. Not forgetting, of course – how could we? – our very own ASP Vintage Weekend on 15th and 16th August. Put 'em in your diaries now – we'll do our best to guarantee good weather...

We know...

Yes, we do – so apologies to Indoor wizard Reg Parham for mis-spelling his name in January's Hangar Doors ('Pearham', indeed!). This was a typesetting error that was spotted in time but the correction didn't make its way onto the printed pae. Likewise 'ormithopter'...

Anyway, by now the '87 Model Engineer Exhibition will be over, model flying demonstrations and all. Hope you all enjoyed it!

A matter of form...

You'll all have seen the announcement of the super improved ASP Insurance Scheme in last month's Hangar Doors. A pity it wasn't matched by the correct form on the inside back page. We were too quick with the news! Anyway, turn to the back cover this month, get your pens out and write away for the best deal in model insurance. Make a photocopy if you'd rather not cut your magazine. We won't mind!

What's on...

11th January
SLAITHWAITE INDOOR MEETING
EZB, HLG, PND. Scale. Rules as previous meetings. All welcome. Contact: Dennis Davitt. Tel: 0532 675433.

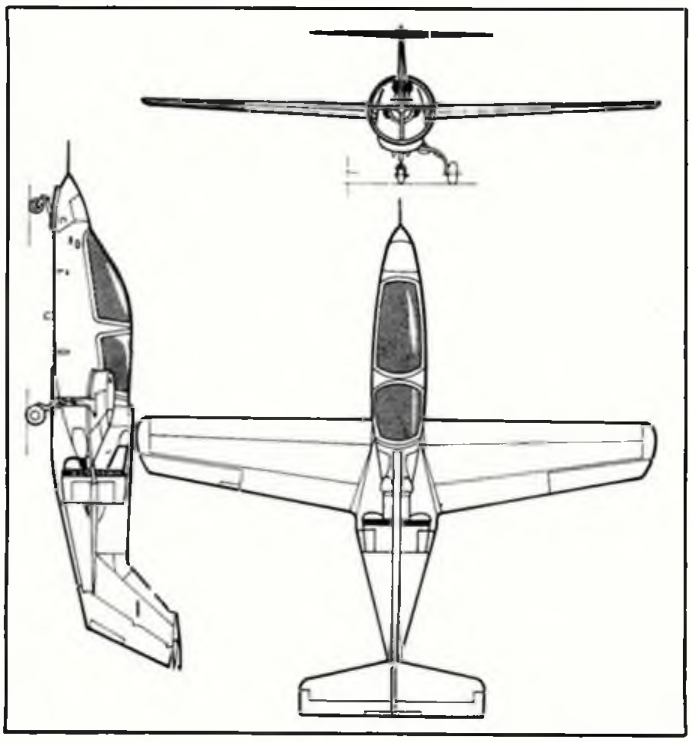
1st February
SMAE S.E. AREA ANNUAL INDOOR FLYING MEETING
Venue: Leisure Centre, Haslett Avenue, Crawley, West Sussex. 11am-6pm. Contac: 0293 510272.

14th February
DERBY LOW CEILING INDOOR MEETING
EZB, HLG, PND, SCALE VENUE: Rolls Royce Sports Hall (off A511 Derby Ring Road) from 9.30 to 5.00. Note: This is a Saturday meeting. Contact: Phil Ball. Tel: 0332 665361.

1st March
SAMS INDOOR FUN-FLY MEETING
Fly what you like from 11am-6pm! Venue: Watford Leisure Centre. Contact: SAMS. Tel: 0438 832011.

29th March
SOUTHERN AREA INDOOR ALL-SCALE DAY
Peanut, Open Rubber, Open CO_2. Venue: HMS Daedalus, Lee-on-Solent. Contact (essential): Derek Knight. Tel: Rowlands Castle 412058.

COME ON, CLUB SECS – LET'S HAVE DETAILS OF YOUR EVENT. DON'T LEAVE IT UNTIL THE LAST MINUTE! WHAT ABOUT SOME OUTDOOR NEWS, TOO...



Left: The only known 1986 photograph of APS Plans Service Commercial Manager Bill Burkinshaw in action, seen here at the August Nationals with one of his favourites, the rubber-powered Piper Club. Right: Fantrainer 600 from West Germany was a popular performer at Farnborough. Mid-fuselage ducted prop craft sounded more like a model than a model! We know it's been done for R/C (November's Radio

Photo: 1: Julian Hooper – designer of Superjacker – holds the magnificent Hamley Trophy. He also took home the White and Sir John Shelley Cups for his exploits in Open Power. Photo 2: Gold Trophy winner Tony Eiffiaender looks pleased with the result of his Stunt success at the Nats. Photo 3: A glittering array – just some of the trophies await presentation. Priceless historically... Photo 4: Derek Wayne and Bernard Aslett lift the Farrow Shield for the Bristol & West club. Photo 5: Ken Morrissey, fastest man in Great Britain, lives up to his title as he collects the Ralph Gould Memorial Trophy for C/L Handicap Speed.

ALMOST 20000!

The 1986 SMAE combined AGM and Dinner/ Dance was a great success – as our photo report on the prize-giving proves

THE SMOOTHEST RUNNING of annual general meetings at a new venue in Coventry on 22nd November resulted in a return of all the Officers, just a few changes in the technical committees and the encouraging announcement that membership totalled 19640 as of that day.

Main topics concerned the cost of insurance and the relationship of the SMAE to the Sports Council. Despite considerable increases on insurance premiums, the Society resolved to hold the annual subs to £7 Senior and £5 Junior (18 years and below). At these figures further growth can be expected, and there seems to be little reason why all clubs should not take advantage of 100% affiliation.

The Sports Council is another matter altogether. In a forceful proposition, Blackpool and Fylde RCMS presented a clear case for the SMAE to make known its status and needs to obtain a justifiable share of the £6.1/4 million allocated each year. Most ably explained by the delegate who made comparison with Archery, Hang Gliding, Parachuting, Ballooning, Land Yachting and Canoeing organisations, the cause is clearly deserving. One hopes that action will soon be taken to register the SMAE's claim for recognition.

Coincident with the AGM, an exhibition of specific aspects of aeromodelling from Indoor to Electrics and Helicopters (including World Record breakers) was arranged by the PRO to establish another commendable 'first'. This, coupled with a splendid dinner/dance/prize giving at which Charles Shea-Simmonds, the Chairman of the Royal Aero Club, revealed first news of a 'Youth in the Air' campaign for '88 amid a very lively speech, and seemingly hundreds of splendid Trophies were distributed by Mrs. 'Bobbie' McCairn, wife of the SMAE Chairman, set the seal on a year of success, with promise of yet greater things to come.

Photo 6: How could we not show the Aeromodeller Trophy! Neil Lunam, SMAE Records Officer, looks on as Chris Edge displays the cup, awarded to the top entrant in the F1A Team Trials, for the camera's benefit. He was also presented with the Caton Trophy. Photo 7: Anthony Ball has had a good season, though here he seems to be more concerned about press coverage than the Junior Kit (Rubber) Trophy! Photo 8: Well done, too, Ginette Moore who looks pleased to receive the Glider equivalent.

Photo 9: Pete Halman carried off the Model Aircraft No. 3 and Alan Woodrow Memorial Trophies for control-line Speed exploits. Photo 10: Junior F/F Champion at the Nats was Alan Cliff who received the Heather Cup for his efforts. Also his was the Frog Junior Trophy for combined Rubber, Power and Glider. Photo 11: George Lynn was presented with this specially-engraved bowl in affectionate recognition of services rendered to the SMAE. 1986 was George's last year of active involvement with the administrative side of our hobby. Photo 12: Two Sparkiets Trophies for Ian Dowsett mark his success at Indoor CO_2.

LIFT-O

THIS RATHER UNUSUAL control-line event was originally proposed as a crowd puller for a hospital fete. The idea was to have models flying all afternoon to entertain the patients, and to obtain sponsorship based on the duration of flights, thus to raise money for the hospital development fund. The flying area was a normal-sized playing field and the rules stipulated 'rise off ground' take off carrying a full fuel load. Models were subject to a 20× pull test, but apart from this were no other rules.

Various designs resulted - some serious, some not so (see photo!) bearing in mind the entertainment aspect. The technically-minded flyers realised the need for lots of power at take off, the aim then being for a low-throttle economical cruise. This was achieved via 3-line throttle control, or cunning devices of clockwork. Models ranged from converted stunters to purpose built barn doors. We were ready to go...

The day of the fete dawned bright and clear. First flights soon showed the enormous duration potential of even simple .19 glow-powered models carrying 1000cc of fuel. Even 'attempts' were taking half an hour or so, with several flights of over the hour. This meant that a flier could make only three or four attempts during the day; and the winning flight was nearly two hours long, resulting in considerable pilot boredom! Obviously something had to be done to create an alternative 'trial' but, most importantly, to retain the original fun and simplicity of the event.

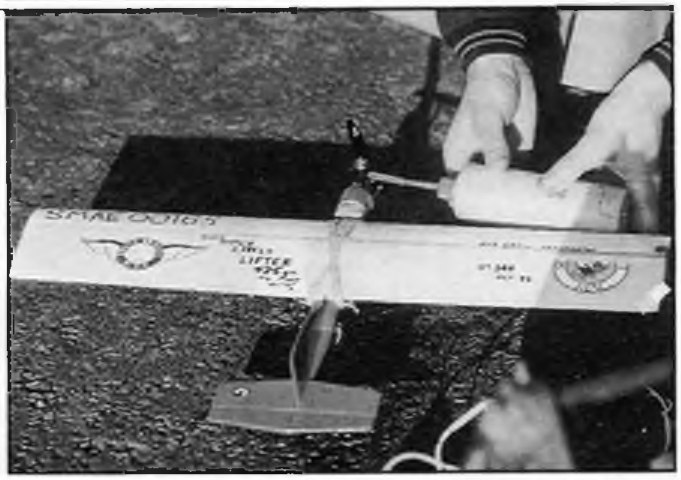
Nonetheless the fete itself was a great success, with six models flying for long periods throughout the day, with pilots gradually wearing a hole in the grass in the direction of Australia at the centre of the flying circle. Evidence from the various glow and diesel engines used in this exercise showed that the average fuel consumption was surprisingly consistent, being in line with what might be expected from the differing engine capacities. A magic figure was calculated, representing the potential duration that would have been achieved by a certain sized engine carrying one ounce of fuel. This was converted to the following formula giving the duration bonus in minutes related to removable payload carried.

$$\text{Duration (minutes)} = \frac{\text{Payload (grams)} \times 0.67}{\text{motor capacity (cc)}}$$

The calculated bonus is then added to the actual flight duration to give a score in minutes (and seconds!).

Flight operations shifted to our usual field which has the benefit of a tarmac runway, take-offs thus becoming much less of a problem. Throttles were no longer thought to be an advantage, since the minimum qualifying flight was set at ten laps, and most entrants opted for payload carrying rather than actual duration so that they could have several attempts during the day, gradually increasing payload until flight was no longer possible! This lead to much light-hearted banter and barracking for this by-now-traditional end of season event.

Models ranged from a tiny Cox .020 powered 24in. job to a five-foot span A/2 glider-wing craft using a PAW 1.49. Also taking part were even larger .20-powered biplanes and canards. Conventional models are usually the most successful; one of our early winners was a converted R/C trainer - a Tyro, in fact - powered by a PAW 1.49. This lifted so much leadweight that the overall flying weight of the model approached the SMAE maximum of 5kg!

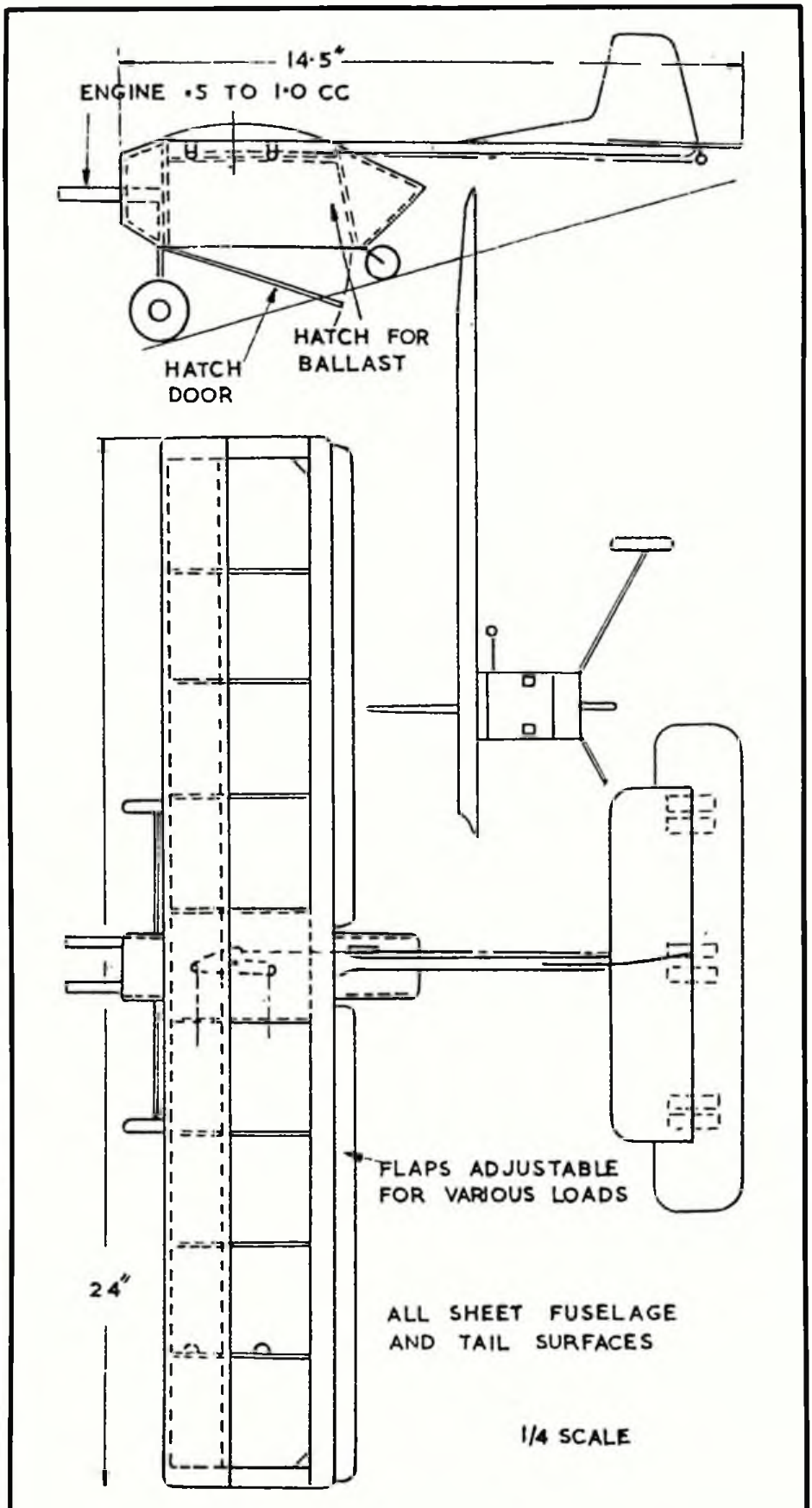


OFF

Heavy stuff – control-line payload endurance proved just right as a fun event for the South Bristol MAC. Chris Coote tells us about it

Something obviously had to be done to limit payload, so a new factor was introduced in the form of a one-metre-high barrier. This has to be cleared within one lap after model release. In this way the previous four- and five-lap lumbering take-off runs are now outlawed, and the emphasis is very much on good ground handling and a free running undercarriage. Significantly, last year's winner used a tricycle U/C on the little Cox .020 model, which was fed by 30% nitro fuel, the combination lifting 630 gm clear of the barrier for the requisite ten laps, resulting in a score of over 1000 minutes potential duration.

Heading: The South Bristol Payload Trophy, carved from a broom handle by Terry Taylor – more coveted than any of the club's silverware! Photos below: Top row, left: Matthew Coote releases Dad's Cox 020 job. Note one-metre barrier – a hurdle to be cleared. Centre: A motley collection of men and machines at the hospital fete that started it all. Right: Winner of the first event – D Anstey with his OS 19 foam-wing craft which flew for two hours on one litre of fuel. Bottom row; At left is a most successful design, Pete Stiles' Yuk-Truk which has an A/2 glider wing! Centre: Chris Coote's 020 powered Little Lifter is a design which has carried 740 grams of Payload. Right: A converted R/C model, this Tyro is taking off with 2.1/2 kilograms of lead on board!



Not a South Bristol design, this simple C/L payload model by W.I. Barrett was featured in the December 1958 issue of Model Aircraft. Inspiration for you to have a try?

The barrier, which may be seen in the photographs, is made of bamboo, and is designed to swing away on impact. It is emblazoned with a foam arrow so that myopic pilots have no excuse for not seeing it! Latest thoughts on this competition are on introducing simple aerobatics - loops for instance - to limit weight carried still further.

Winners, trophies and data

An interesting point is that most enthusiasts underestimate the payload potential and the volume or carrying capacity needed. Models have been staggering into the air with a whole variety of pliers and spinners strapped on in addition to the owners' original 'max' weights, and lifting performances have surprised even the most hard-bitten free flighters.

The most consistent winner over the years has been Peter Stiles' aptly named Yuk-Truk. Originally powered with a PAW 1.49, a PAW 80 is now lifting nearly the same payload, using an obviously efficient high aspect ratio wing (ex-A/2 glider) which flexes alarmingly in flight. The holder of the entirely appropriate hand carved trophy has the satisfaction of caring for the most coveted of our club prizes - since it is a caricature of our old club emblem, the bumbly bee, carrying an unspecified payload chained to his legs!

To conclude with some performance data, the maximum payloads lifted by various model/engine combinations are as follows:

Cox .020 - 735gm
PAW 80 - 1250gm
PAW 1.49 - 2800gm
OS 20 - 3400gm

Why not try this fun event yourself? Only two modellers are required to give an element of competition - but it's ideal for Sundays at the club field! *(Yes - and let's see a few designs. GC)*

Top: Dave Hanks chose a much enlarged APS T-Tray powered by an OS 19. Plenty of wing area! Above! From the same designer is this PAW 149 powered barn-door creation. Below, top left: Gordon May's much-decorated craft has a Webra 1.5. Note large tank and generally 'fishy' appearance. Top right: Weighing the winners. An anguished-looking Pete Stiles takes the strain. Bottom left: This attractive OS 20-powered biplane by Chris Cook flew for 80 minutes - the fuel tank is made from a one-litre oil can... Bottom right: Cranefly by Terry Taylor has fixed flaps - lifts over a kilogram. PAW 80 power.

WORLD FREE-FLIGHT 1987 TEAM TRIALS

Martin Dilly reports on the selection of our latest National free-flight teams

NINETEEN-EIGHTY SIX saw a change from the usual practice of holding the free-flight team trials over two weekends in the autumn; the first part was at Beaulieu at the end of June, and the final five flights were flown at USAF Sculthorpe on 11-12th October. Both weekends coincided with superb weather, so those coming out on top survived without the normal cases of exposure and rain-soaking that seem to characterise the British Way of Picking Teams.

Some adverse comments had been heard about scheduling this first Trials before the European Championships, the feeling being that this might inhibit '86 team members from risking aircraft they would need a couple of months later in Romania. British weather is rarely consistent enough to allow any planning to be based on it, but the combination of a summer and an autumn Trials seems worth repeating.

With the sole exception of Peter Gaunt dropping from third to twelfth, the top three in F1A, F1B and F1C remained the top three, though Ron Pollard, in top place after the first nine rounds at Beaulieu, had a nasty moment or two when he dropped 34 seconds on his first flight in Wakefield at Sculthorpe. With pretty manageable weather the flyers at Sculthorpe simply had to keep maxing during the second weekend. For Stafford Screen the sting was in the tail, though; after maxing throughout the Trials (and throughout most other Trials, too...) his climb was less than vertical on his final flight and the bunt resulted in the dreaded sway-backed bobble transition, putting him at less than half the usual height to start the glide. It says much for the glide of Silhouette that it still dropped only five seconds to leave Stafford in first place ahead of Roger Baggott and Ray Monks (welcome back to F1C, Ray) to make it an all-Brum power team for France next August.

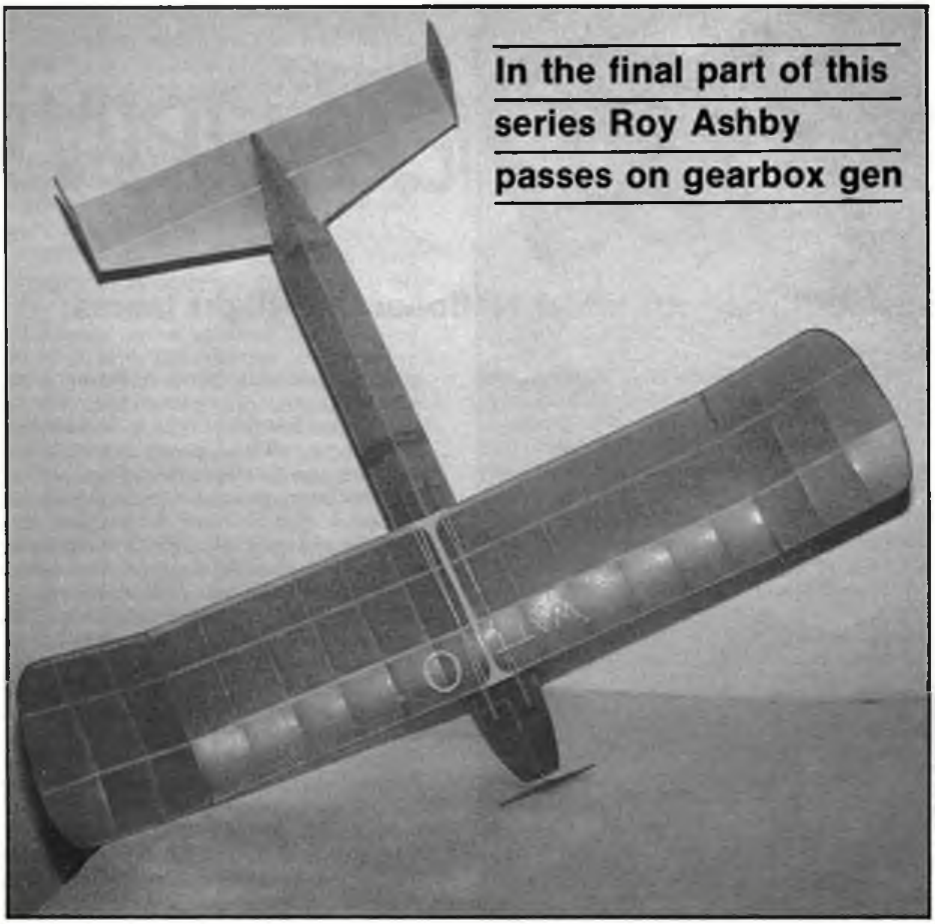
For several glider flyers the make-or-break round was on the second day at Beaulieu, when constant wind shifts led to a number of treks round the perimeter track as the launch line had to be moved. This time some of the treacherous local air fooled people into thinking they were in good lift, for them only to see models dumped into the heather at two minutes. This was Mike Fantham's undoing, and though he moved steadily up from eighth to fourth by maxing on every flight at Sculthorpe he finished still 35 seconds out.

Our F1A team of Chris Edge, Gary Madelin and Bill Colledge (the fourth Birmingham flyer for France) will all be flying in their first World Champs; all are currently in good form and would be on most peoples' 'six flyers most likely' list. For Wakefield, George Foster has flown for Britain at the 1980 European Champs at Mostar, and Ivan Taylor and Ron Pollard have a number of World Champs team places to their credit. Pollard and Taylor are using wooden-winged aircraft, while Foster flew a D-box model (and dropped a single flight out of the fourteen). Chris Edge used his Carbon-Ate glider which makes extensive use of composite structure; it was certainly withstanding some highly energetic zoom launches. Stafford Screen, now on his thirteenth consecutive British F1C team, stuck to the wood-and-glass winged aeroplane for the Trials, saving the aluminium-skinned wings for more forgiving terrain (but some of the Poitou sites are a bit rocky and stubbly, so perhaps we will need a team catcher for 1987). Both Ray Monks, who has been on British glider, Wakefield, Power and Indoor World Champs in the past, and Roger Baggott also flew aircraft with orthodox F1C structures.

Continued on p.108

Top: The F1A team, consisting of (left to right) Bill Colledge, Gary Madelin and Chris Edge. Below: All set for France - the F1B team of Ivan Taylor, George Foster and Ron Pollard.

Electri



In the final part of this series Roy Ashby passes on gearbox gen

ELECTRIC MOTORS RUN most efficiently when they are turning at a high rate of revs, so as soon as we connect a propeller to the driving shaft we tend to impair this because of the drag of the blades. The motor and the battery get hot, which shortens the life of both and the torque becomes less as the propeller size is increased; so all in all we have an inferior unit with a lot of wasted power. However, there is a much better way of utilising this energy and that is by the use of reduction gearing.

Several manufacturers market very excellent gearboxes or belt drive units but these tend to be for the larger electric motors, that is, the 380, 540 and upwards. The smaller units are usually part of a kit, which means that the whole model has to be purchased. This can be a quite expensive process. Here we deal with the production of gearboxes for the smaller motors, although the same methods can be used for larger versions with modifications to shaft size, a screwed nut prop fitting instead of a soldered cup washer, and so on. A reduction gearbox is quite simple to make and does not require special skills, just a little care and patience; and we can produce a unit which allows us to use a larger prop, giving a better 'bite' with the motor running much more efficiently and with losses kept to a minimum by care in construction.

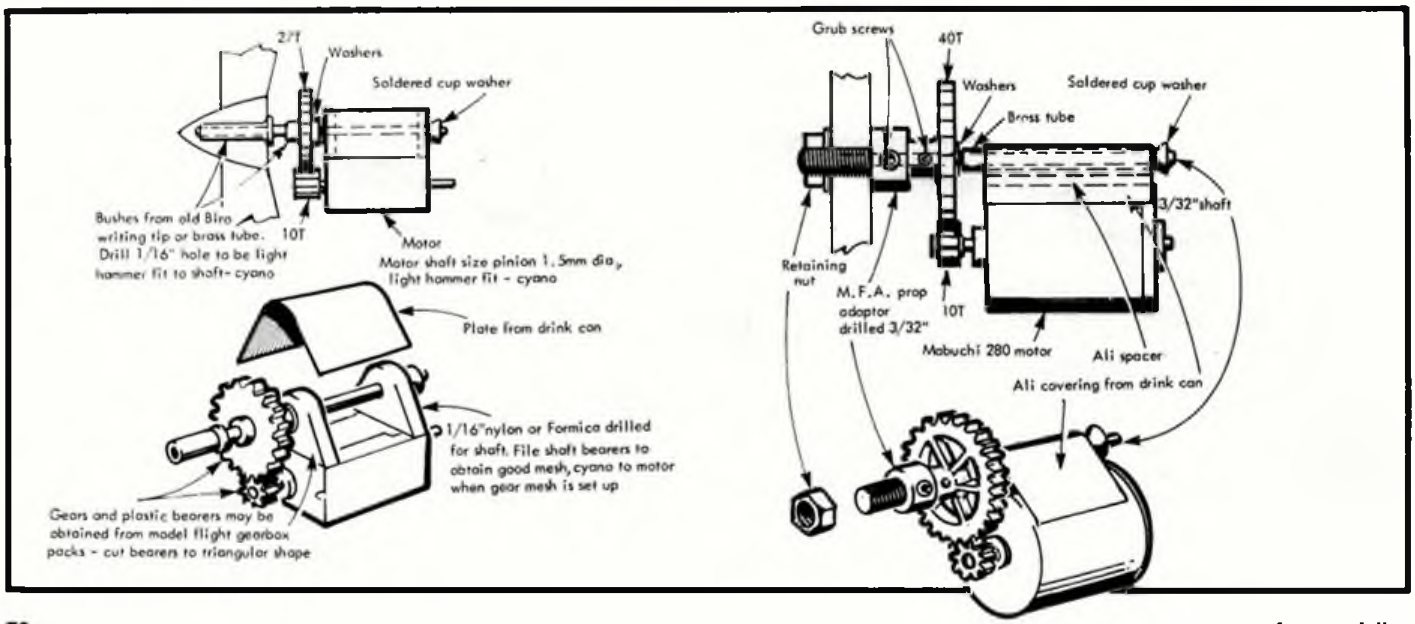
Cheap and cheerful

The first motor to be dealt with is the miniature Mabuchi which Proops were selling at 'four for £1'. This motor will not fly a model by direct drive but it becomes a different proposition with reduction gearing. The ratio I have found best is 2.7 to 1 although a model has been flown using 3 to 1, the ratio chosen depending on the type of model.

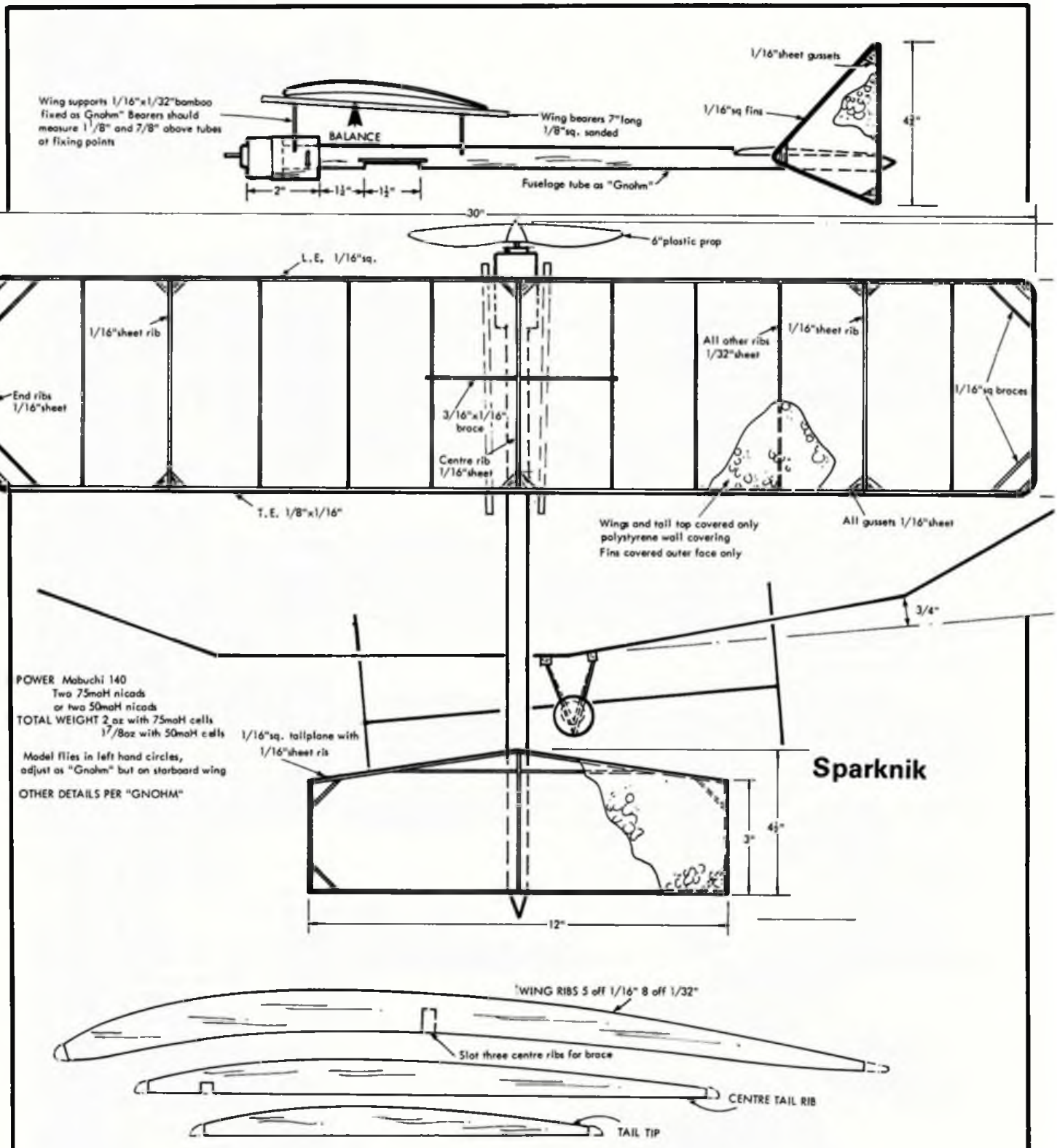
A start is made by fixing the pinion or driving gear (I used one with ten teeth) to the shaft. If the hole in this gear is too large it can be bushed by a ball-pen tip suitably cut, which I found to be a light hammer fit on the 1.5mm shaft. It is fixed by a drop of cyano. The prop shaft is made up using 16g wire as per sketch. Again the 27-tooth gear can be bushed if the hole is too large or may be drilled 1/16in if too small; again fixing with cyano. The shaft bearers are then cut from 1/16in nylon or plastic and are drilled to take the prop shaft. They are then held in position on the motor and the gear clearance noted. Correct fit if obtained by filing the bases until the gears mesh nicely; that is, not too tight or too loose but so that play is just discernable. Next, fix the bearers to the motor with cyano, then push the shaft through the holes using two plain washers as thrust bearings. A soldered cup washer stops the shaft from pulling out (the amount of play again should be just evident). A strip cut from an aluminium or tin plate drink can and fixed with cyano then completes the unit. The only soldering required is the fixing of the cup washer at the rear. A good method of ensuring the right amount of play between the washer and the rear bearer is to make an intermediate washer from paper which can be cut away when the soldering is completed. The best prop for this unit is a standard 4. 3/4 in plastic one but this of course depends on the model. The batteries used are two 50 maH nicads.

Larger motors

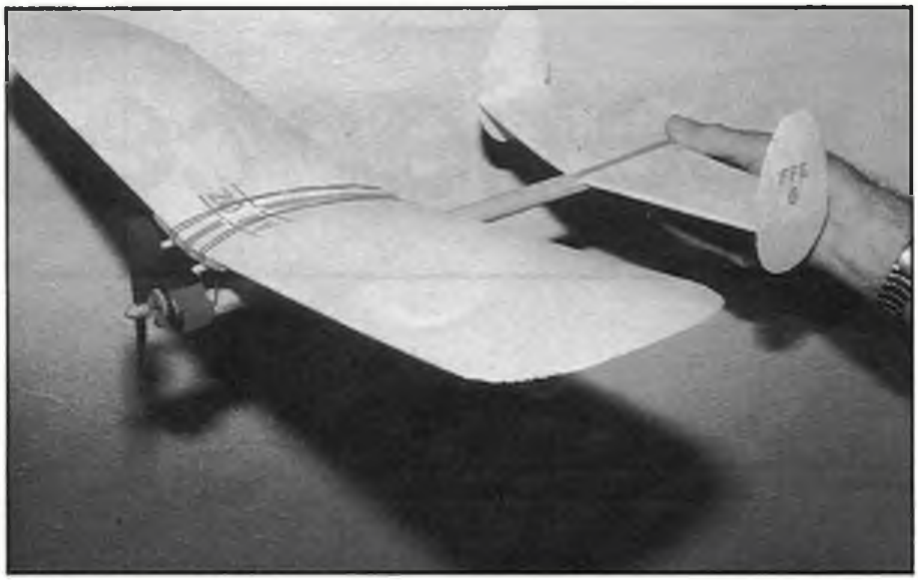
For the larger motors, the 140, 260 and 280, a modification was needed to maintain strength, simplicity and efficiency. The same method of fixing the



flying Experiences



Motor details at left show simple gearboxes for the 'four-for-a-pound' Mabuchi and the larger 280 motor. A Mabuchi 140 powers Sparknik, above; compare with Gnohm featured last month. Heading photo shows Watto, also featured in January's Aeromodeller.



pinions to the shaft is used but this time the gears themselves were brass ones from old clocks, the driven gears of nylon manufacture being obtained from my local model shop. Care must be taken to see that gears from different sources mesh perfectly. The shaft size of these three larger motors is 2mm so the pinion needs to be drilled 5/64in. In this case prop shaft is 3/32in. steel rod.

After fixing the pinion to the drive shaft (and the driven gear to the propshaft) with a grub screw and cyano, packing is cut from 1/16in aluminium sheet to the same length as the motor and about 1/4in wide (see sketch). The propshaft is then placed in an 1/8in O.D. brass tube which is used as the bearing and which is held in position on the packing which in turn is mounted on top of the motor. The amount of packing is then increased (or filed away) until the gears mesh as previously described. When the fit is satisfactory a drop or two of cyano on the packing and brass tube will ensure that it is held in position; the next step being to epoxy the whole affair which is left to dry overnight. Next, two flat washers are used as thrust bearings and a cup washer is soldered at the rear end of the propshaft as on the previous gearbox. The unit is finished by a strip of aluminium sheeting fixed with cyano, as before. This method has been successfully used on motors from the 140 up to and including the 380, with various gear ratios from 2.7 to 1 up to 5 to 1. The sketch is of a 280 system. With a reduction ratio of 4 to 1 it will turn a 7 × 5 or 7 × 6 prop when driven by four 150 maH nicads. A 260 with a 5 to 1 ratio box of the same construction will turn an 8.1/2in standard plastic prop (normally used for rubber

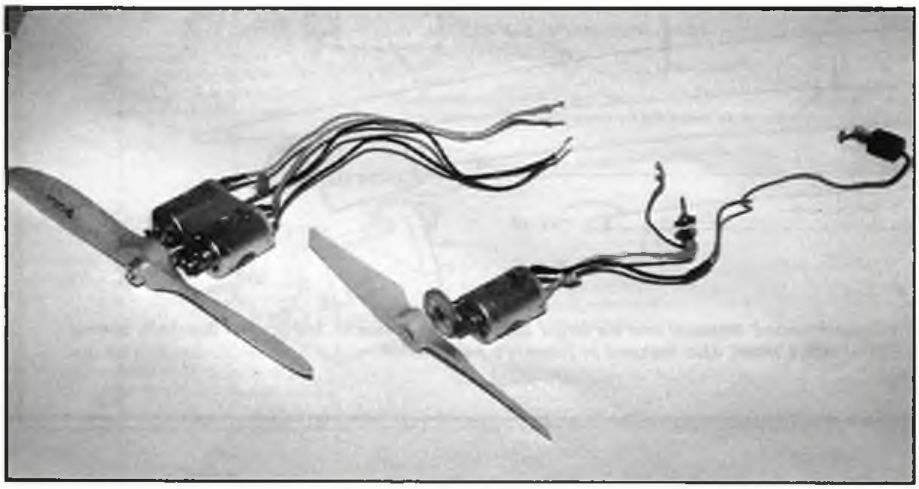
Above: All-foam Anoz (that's what it weighs) is powered by a geared Mabuchi 140. Below: Larger geared motors. Note the experimental twin-motor unit at left.

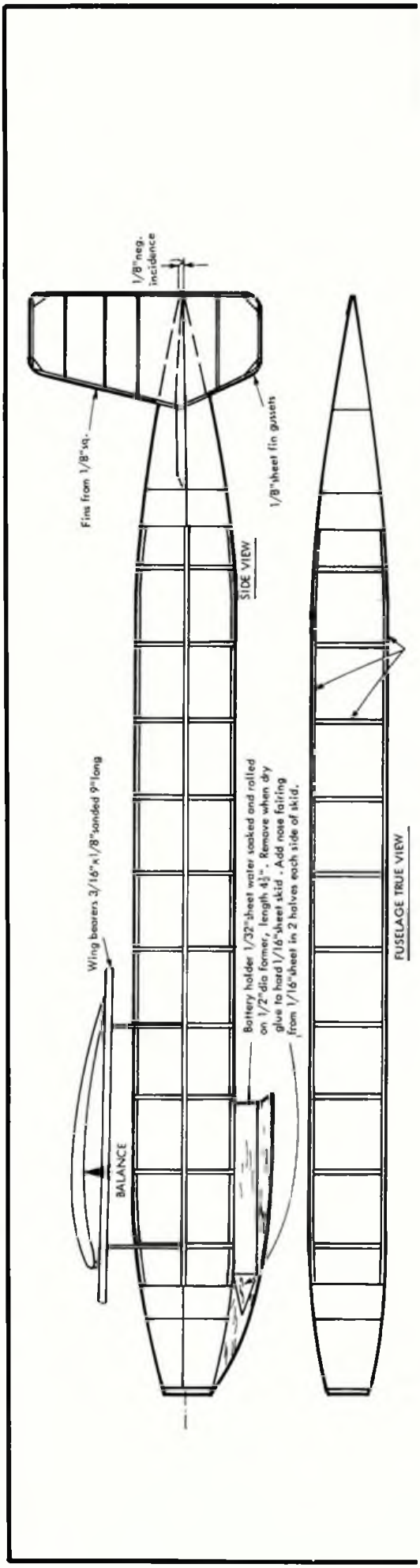
power) with three 150 maH nicads. These gear units are of the open variety as I prefer to be able to get at the cogs in order to oil and maintain them, this being quite a simple job. Should a scale installation be required, the gearbox could be placed farther back in the fuselage with the prop shaft lengthened slightly to compensate. I have made a unit completely enclosed with bearings front and rear but the degree of difficulty in manufacture is much greater and accuracy must be spot on. Apart from looking neater the performance of this unit was no better than that of the gearboxes already described. The tools required? I use a hand held vice, hand drill and bits, junior hacksaw, pliers, soldering iron, small hammer and a few small files. These are the kind of tools found in most modellers' workshops. Although elaborate tools are nice to use they are not strictly necessary to do a good job.

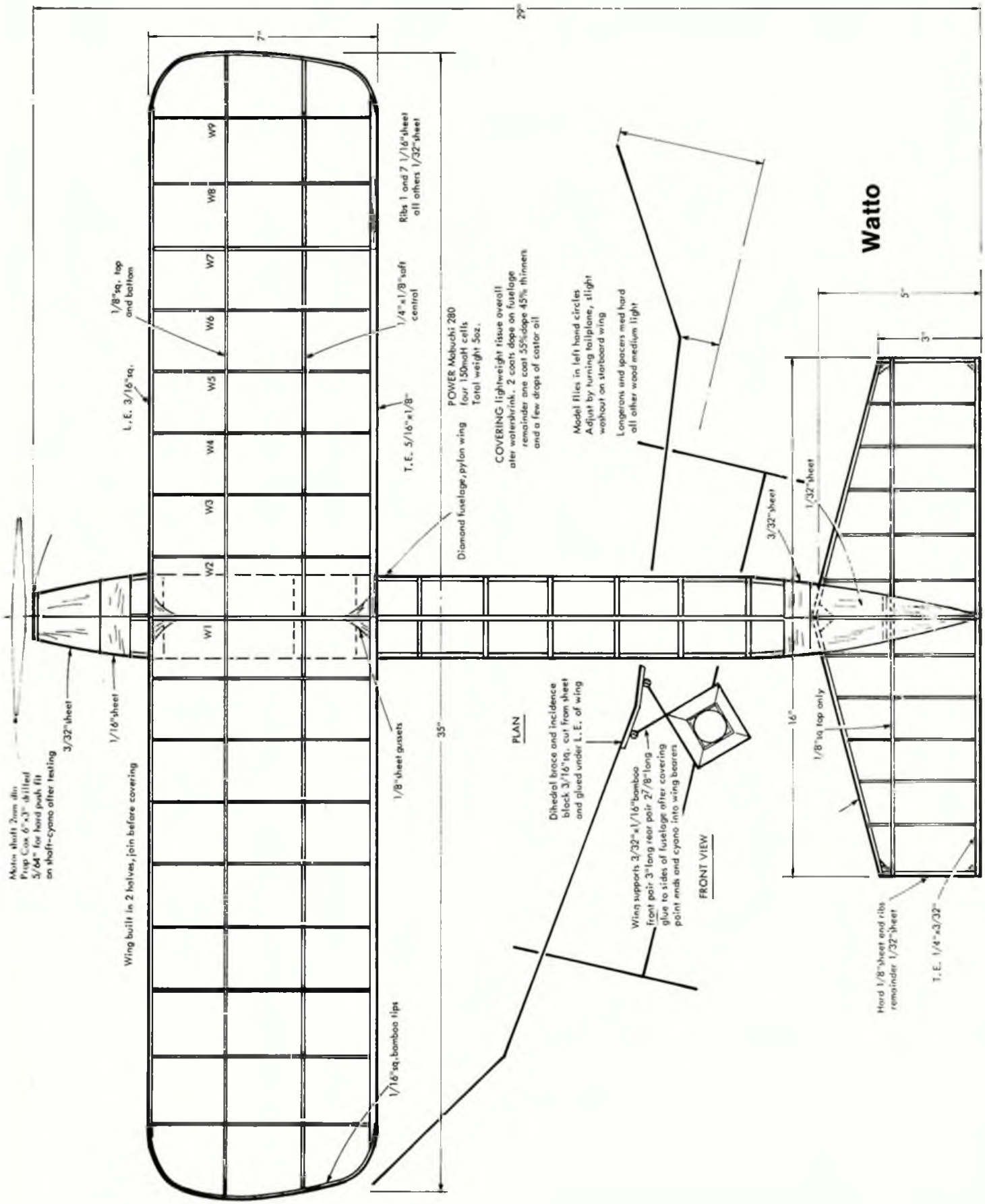
Don't restrict your choice of driving pinion to one with ten teeth. A wider variety of ratios can be obtained by using gears with eight, nine, eleven and twelve teeth. The eight-tooth pinion is rather small in diameter and great care is needed to ensure an accurate mesh.

Gears need to be a light hammer fit on shafts, so a drill which is slightly smaller than the shaft diam is required, as below:
(a) for 16g shafts use 1/16in drill
(b) for 2mm shafts use 1/16in drill
(c) for 3/32in shafts use a No. 42 drill.

Go ahead - gear down those motors and experiment!



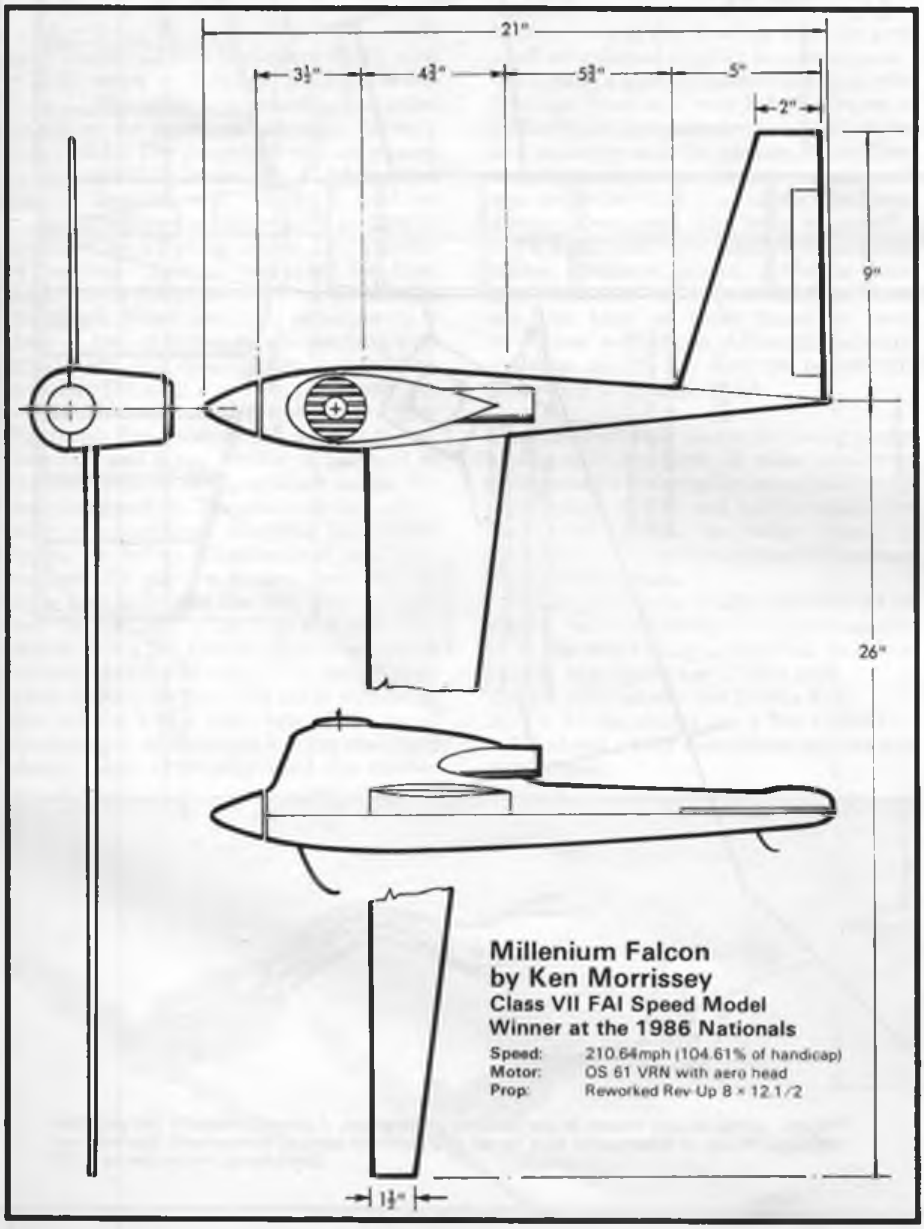




Watto, above, is also shown in our heading photograph. A geared Mabuchi 280 provides the urge. Plenty of information here for all you potential electric enthusiasts! See also our Electrifying Postscript on p.77!

FASTEST IN THE UK!

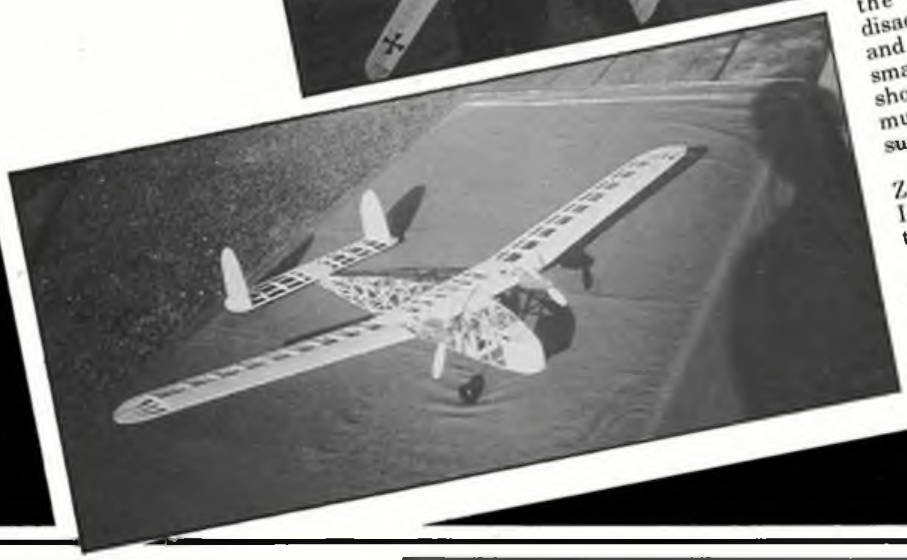
Ken Morrissey's Millenium Falcon hits 210mph — Dick McGladdery tells all



THIS IS THE MODEL with which Ken Morrissey scored a runaway win at the '86 Nationals, scooping the Class VII (10cc) and the Handicap at a thunderous 210.64 mph/104.61% - appropriately the most memorable flight of the meeting for both velocity and spectacle. A 10cc speed model is usually flown on the monoline control system, but Ken opted for the alternative two-line system, which offers a substantial performance advantage. However, you have to be mighty strong to handle a 10cc 2-liner at speed; they pull like trains, to the extent that the average human wrist may get locked straight - the geometry is all against it.

The basic design philosophy of the model is 'lightness through simplicity', and with a bin full of burnt-out liner/piston sets and CFS of dubious efficacy, Ken elected this time to follow the US recipe of minipipe exhaust/bladder fuel system/hot fuel instead of the more seductive tuned pipe option. The model layout is pure asymmetric with the motor upright, the wing spanning 28 × 4.3/4 root/1.3/4in. tip chord. Construction is superficially elementary, but several parts had to be fabricated several times before a satisfactory balance of weight/strength was obtained. The fuselage consists principally of an OPS magnesium full-length speed pan and a lightweight carbon/kevlar/epoxy resin shell moulding to streamline the upper half. The wing is made from L72 aluminium alloy sheet 0.010in thick, folded along the leading edge and glued along the trailing edge, attached to the pan via a stub spar about 225mm long cut out of HE 15 alloy bar and a sub-bracket which locates the wing about 15mm above the thrustline; the whole lot is secured with substantial bolts to the pan, and incorporates the bellcrank mount. The tailplane is very sturdy, consisting of balsa covered with 1/64 in. ply on an L72 core, again bolted to the pan. In all, a very rugged structure, but turning the scale at just under 35oz, which under SMAE rules allows the use of two 0.018in./

Electric flying P.S.



FIRSTLY, I'D LIKE to think our magazine very much for bringing electric power to the attention of the masses. I, too, am very interested in this form of power due to its extreme ease of use and its reliability; also the fact that the prevailing weather conditions have no effect on the length or quality or motor run. The resulting models seem to be about the right size for general flying too!

I have been interested in electric power for about twelve months and I have used the Mabuchi A-1 unit. The only disadvantages of this motor are its weight and the time needed to charge up the two small nicads. I sincerely hope that the short series of articles by Roy Ashby will mushroom into more interest in this superb field of aeromodelling.

The photographs I enclose are of the Zweiflei twin which was designed by Mr Ian James of the Walsall MFC. I believe this to be an excellent design. The performance is excellent and I have had no trouble with asymmetric thrust because of the reliability and general trouble-free running of the Mabuchi.

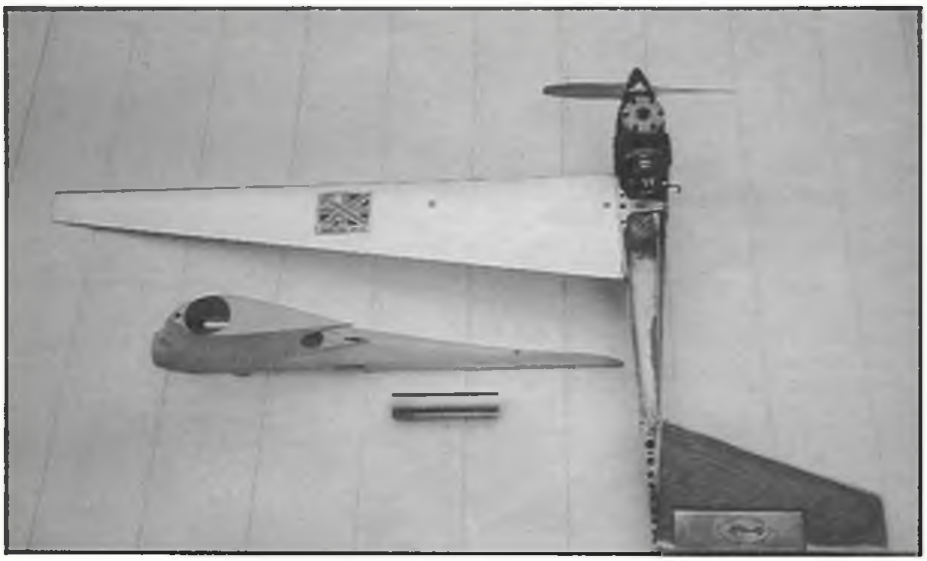
Adrian Culf
Saxmundham, Suffolk

Continued from opposite page

0.45mm dia wires; however, to date, 0.020in. wires have been used, grouped by means of no less than ninety 6mm lengths of stainless steel hypodermic tube threaded onto the back wire with the front wire sellotaped to each at intervals of 6ins. from the wing tip inwards (satisfactory adhesion to the wire is more of a problem then the tubes; hence the tube is better placed at the back).

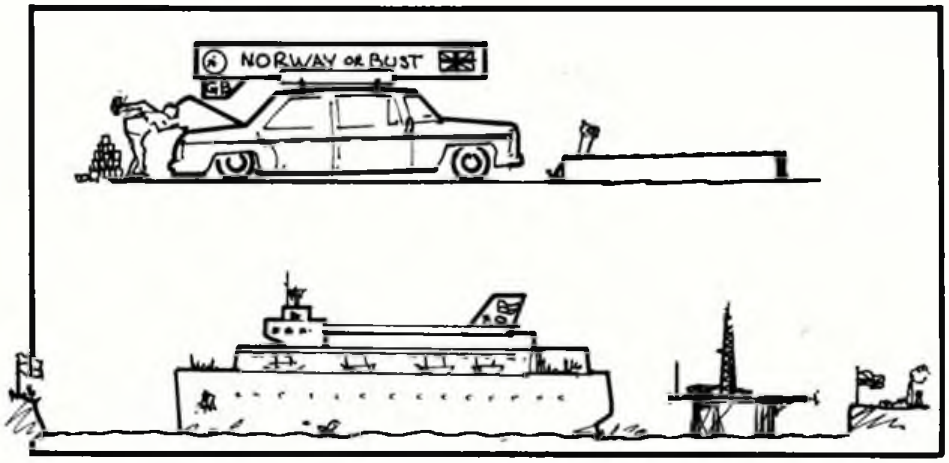
The motor is an OS 61 VRN (marine) fitted with a head from the aircraft version. The liner and piston are windowed *a la* Dooling and the exhuast port is machined to give a period of 168 degrees. The minipipe is 1in. internal dia and 6in. long; and on a mixture of 68% nitromethane, 8% methanol, 20% oil and 4% propylene oxide which is fixed by a Rossi No. 7 plug, a reworked Rev-Up 8 × 12.1/2 (cut down from 9in. dia) is turned at 18,800rpm static. The motor starts and sets very easily; and Ken has a special liner/piston set from the US which turns even faster...

Rumour has it that Ken was spotted packing an FAI-pattern pylon yoke into his car, probably with a view to making a suitably beefy crowbar-type handle to transfer the 100lbs pull to the pylon, and thus give his overworked wrist a chance to get on with controlling instead of simply hanging onto the brute. With a bit more wing area (to comply with the wing loading rule) thinner wires and the faster L/P set, the model should be capable of taking the FAI World 10cc speed record - how about it Ken? GB might then be able to boast this as well as the World 5cc record. A claim of 194mph by Peter Halman is now in process for this.



Top: Millenium Falcon dismantled, Robust and necessarily accurate construction is evident. Note the crispness of the fuselage top. Below: On the dolly and ready to go... Arrow-headed wing insignia is that of the Sharston Speed Club. More achievements from that source due this year, we're certain!

NORWAY O



IN MARCH OF THIS YEAR Chris had a phone call to say that he was included in the control line Scale team to represent Great Britain at the ninth World Championships in Oslo. I thought to myself, 'I can't let him loose in a foreign country with all those beautiful, blue eyed blondes,' so I decided to forgo my new carpet (again!!!) and accompany him.

We made a deal with the boys, i.e. 'You save £25 each and you can come too'. Extra house points from school at 20p each soon filled their piggy banks. It was hard work raising the extra cash not only to cover our travel but also for the two weeks of work. For a more comfortable journey, bearing in mind the distance, we decided on building a model box. When it had been three-quarters made we discovered it was too high so it had to be scaled down by half. Lastly, a quick trip to Waitrose for sixty cans of beer and we were ready.

So it was that on Saturday, 12th July we left a wet Great Britain for Oslo via Hirtshals in Denmark. The ferry was very well equipped - two dance floors with live music, sauna, swimming pool, two play rooms, tropical lounge, and plenty of seating room. We docked in Oslo on Monday morning having spent forty-one hours at sea.

Our party of seventeen people in eight cars set off for the hotel. The first big advert to catch our eyes was 'Keep AIDS to yourself!' with some very appropriate drawings. You definitely knew you were not in the UK. A short journey and we had arrived. A lot of other competitors had already turned up during the weekend and had made their way to the airfield.

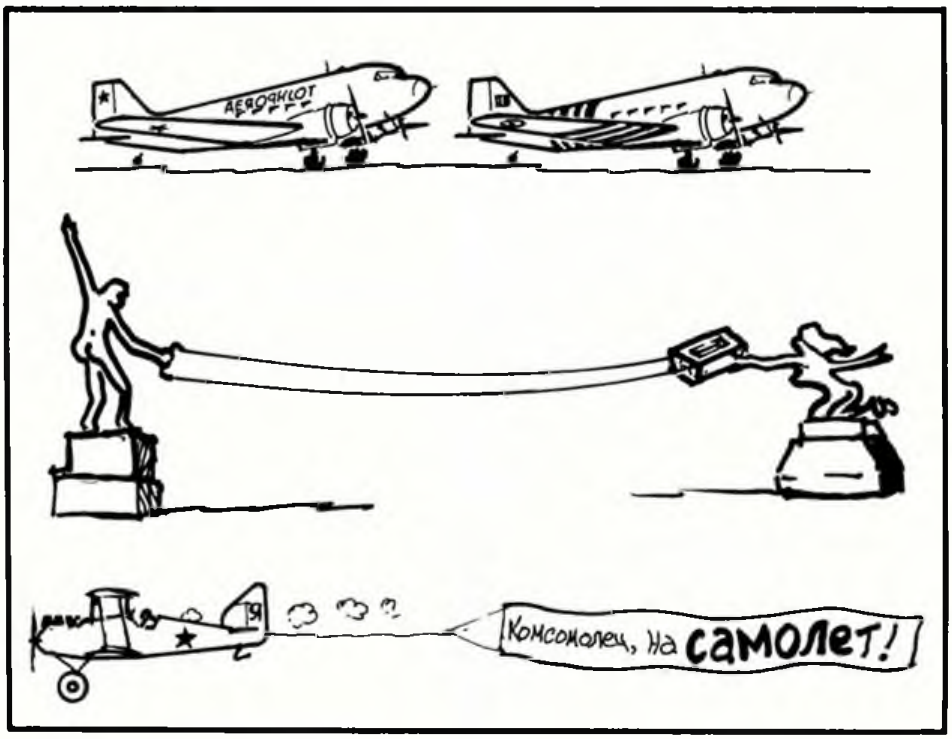
The rest of the day was spent unpacking, preparing the model and of course indulging in the usual chat. It was great to meet old friends from Le Bourget and to see new faces.

Tuesday was the first day of competition. This followed the opening ceremony of flag raising (our flag went up so quickly I couldn't get the camera organised in time to get a photo of the team and the Union Jack).

The judging commenced. This is a daunting task. I spent a lot of time listening to the comments of the judges - they agree to disagree. One judge in particular was very harsh; it appeared from his comments that if he didn't like the look of your model, hard cheese. He caused a lot of upset amongst the various teams. All C/L models were judged in one day. Chris was unfortunate to be judged straight after the Russian LI-2 (a Soviet copy of the Dakota) and not surprisingly it showed up various faults on our DC3.

Static judging completed, we were left with a free day on Wednesday. Having gone all that way I just couldn't come back to Marlborough without seeing some of the sights other than the flying field, so after breakfast the Reeves clan and we Bradfords set off for Oslo. This is a very clean city and the Norwegians clearly take great pride in their culture; everywhere we went there were statues of varying sizes and design, fountains, and flower borders. We found things very expensive, so purses stayed closed for most of the day. For example: 1lb of cherries for £3.50! We suddenly decided that we didn't like them. It was a very relaxing day; Mick and Chris were discussing the 'ologies' of the world and decided that they were definitely BRICKONASTRINGOLOGISTS! At the Forsvarsmuseet we also saw the most original Spitfire we had ever seen, namely MH350, a Mk IX complete with bomb racks and cannons. That evening also saw the finish of the Radio Control static judging.

Thursday and we were back at the flying site, at which two rounds were completed. It was nice that both Gordon and Karl were allowed to assist Chris on the start line. That afternoon saw the British summer returning when the skies opened shortly after Chris took off on his second flight. As he had called an attempt earlier he had to keep going; he put in a very good flight but on taxi one engine cut out and as the runway was too waterlogged for the other engine to pull the model around he had to forgo his taxi points. By mid-day on Friday the C/L flying had finished, leaving Great Britain in third place, just 200 points in front of the USA and 500 points behind the USSR. The next couple of hours were spent in a more relaxed way with competitors from the five nations



R BUST

The Bradford family went mob-handed to the C/L Scale World Champs. Kay Bradford tells us about it...

chattering amongst themselves - albeit mainly in sign language - exchanging addresses and taking photographs. We have a lovely picture of the Russian team and their banner - but we never did find out the translation. We were now free to watch the radio control section.

The R/C boys produced some very impressive flying. Best in my eyes was the De Havilland 88 Comet racer flown by Hansrudi Zeller of Switzerland; it earned him a well deserved second place. The Austrian team were very unlucky, having lost one aircraft and two cars in a road accident; then Andreas Wirth caught a wingtip in a very low roll and his Saab J-29 was relegated to the dustbin. Have you had that feeling before?

With so many attempts being called on the two previous days, flying on Saturday went on till late afternoon. The prizegiving ceremony was performed on the airfield. This was followed by a great scramble to get the models packed and back to the hotel for the banquet.

Our evenings were spent, would you believe, chattering into the small hours of the morning. With only two hours of darkness it was difficult to tell if you were going to bed with the sunset or sunrise. We had a very enjoyable evening with the Italian team. Only Carlo Mapelli spoke English at all. Another evening was hosted by the Swedish team; this was a party with plenty of Vodka for the men and Strga for the ladies - pretty strong stuff! On Thursday night the Norwegian Aero Club had organised a visit to the Royal Norwegian Air Force Museum at Gardermoen. They had some very rare planes there, so this was an interesting and worthwhile trip.

After a lazy start on Sunday we were free to do some more sightseeing. The hotel was incredibly quiet that evening as most people had now departed. Although the pubs are open on Sundays they are not allowed to serve alcohol; just as well I guess with a pint of beer costing £4.00! Everyone was digging deeper into their pockets as the week on. Our £20.00 in Waitrose had been well spent.

On Monday the remainder of the British team (some had driven north into the mountains for another week) drove south to Kristansand to catch the ferry home. We opted for the coast road which took us through several forests and over many fjords. In a country larger than Great Britain and with a population of only five million there is plenty of room for trees - miles and miles of them.

On the ferry home we had time to relax and to ponder the previous week. What is it all about; what drives competitors to World Championship level; why why do we Brits take it all so serously? Noticeably,

most of our team were missing from the evening gatherings; we were asked why by several other teams.

For myself, I enjoyed it very much despite spending most of the time on the flying field. I would have been very disappointed if I had stayed at home with my new carpet. We took an awful lot of photographs and met a lot of interesting people. In time to come we can sit and reminisce on our journey to Norway and back...if you get the chance to travel abroad to support a British team, my message is - go!

Right: The intrepid voyagers - la famille Bradford plus Dakota. No truth in the rumour that the stylish headgear is to be compulsory wear for future UK team members.

VINTAGE CORNER

Alex Imrie's old-time miscellany concentrates on correspondence this month

Mauboussin Hemiptere 40

Jim Alaback of San Diego is becoming a regular contributor to this column! He recently built a Mauboussin Tandem; a French lightplane from 1936 that was designed by Herb Weiss and was described in the May 1938 issue of Model Airplane News. He built one when it first appeared in print, and never forgot its distinctive appearance, its excellent flying ability and its simple, fast construction; so it was high on his priority list 'second time around'. Jim, who is Editor of the San Diego Aeroneer's Aero News has related some additional facts about his little model which are reproduced here, courtesy of Aero News and SAM 41.

'Herb Weiss recently provided some interesting background on his design of this model. In response to my question about his scale reference sources, he wrote as follows: "Usually I did my models by eye from photos, sometimes a single picture. Since you located a Mauboussin picture in a 1936 issue of Air Trails, that may be the one I used. I don't remember why I decided to do the Mauboussin article, except that I had been turning out longer articles each with plans running to six pages, and decided to dash one off before starting a longer job. Charlie Grant at Model Airplane News liked the Mauboussin and the one-page idea, and suggested a series to be called "Minute Models."'

'Not shown on the plan, the front wing dihedral is one inch under each tip (no dihedral for the rear wing). The wheels should be balsa or celluloid, and the prop may be a commercial five-inch diameter, although a prop block is given for those who wish to carve their own. I built my model like the plan except for using a one-piece wing and a few very minor things like substituting an aluminium tube for the rear motor attachment to permit using a winding stooge and substituting three very fine bamboo fairing stringers for the single 1/16in. sq. stringer shown top and bottom on the fuselage. Also, the correct colour is white with bright red trim, rather than black trim as shown on the plan. The rear wing should not have triangular cut-outs at the rear corners (the original model that I made and the Weiss model did not have these either).

'My model weighs 7.3 grams (1/4 oz.) without the motor and 8.6 grams (0.3 oz.$ with a seven-inch loop of 3/32 FAI rubber and a little tail ballast, required to bring the balance point to 80% of the chord of the front wing. A 1/4in. shim is required on my model under the trailing edge of the rear wing with that balance point.'

Jim's model averaged 35 seconds at the local Scale Staffel Annual Meeting in 1986, and it won third place in the Peanut Scale Event. May we look forward to seeing models of this ilk at Old Warden this year?

The Glider Box

Bob Brown of Newbury, Berks is a staunch vintage modeller who has appeared in this column before. He now relates this interesting story of his workshop. 'Toward the end of World War II there became available in this district a number of very large packing cases in which the American Forces had transported to the UK the troop carrying gliders which were used for the invasion of Europe. I, as a schoolboy, managed to acquire a case six feet by six feet by twenty-five feet long, which had once contained the rear fuselage section of a Waco Hadrian CG4a; this information being clearly stencilled on the side for all to see. The large container was quickly fitted with a door and window to make a very useful workshop, rather short on headroom for one of my stature I must admit, and was dubbed "The Glider Box" for obvious reasons. The sturdiness of the structure can be judged from the fact that it still stands today! In what seemed no time at all the new workshop was furnished with a bench, shelves, lighting and lots of models. Taking my 616 Box Brownie, I recorded the scene for posterity; and now wonder how many models of the period can be identified?' Bob signs himself 'Unidentified Enthusiast' since when I published his photo holding his AM Cabin Duration Model in the July 1986 Vintage Corner I failed to name him!

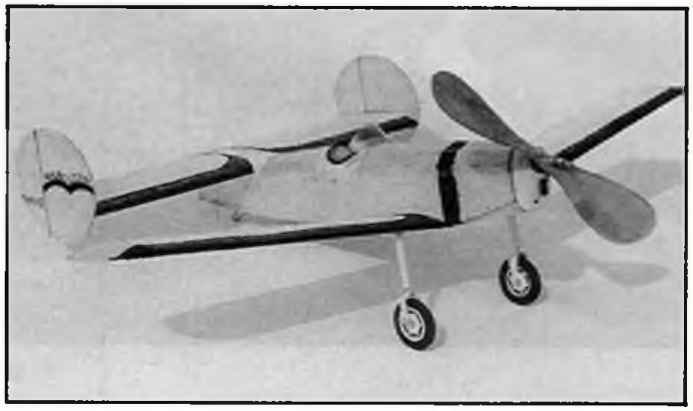
Keelbild plans

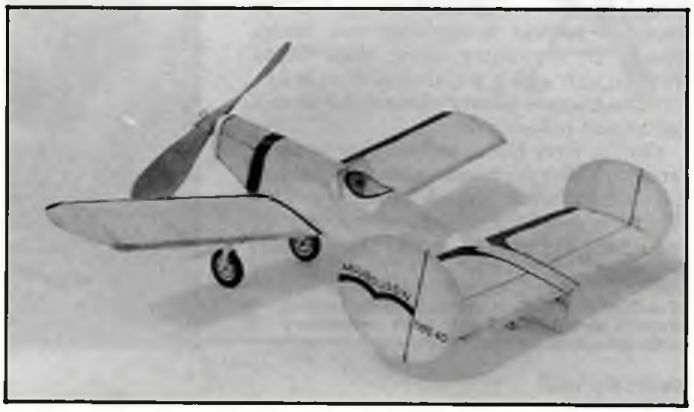
As mentioned in the December issue my request for old plans on behalf of The Model Shop bore fruit; and that institution advises that the following are now available (and will be included in their vintage list):

Hawker Hurricane	20 inch span	£2.00
Miles Magister	17 inch span	£2.00
Flying Flea	21 inch span	£2.50
Arrow Active	24 inch span	£3.00
Lockheed Vega	36 inch span	£3.00

Still sought are plans for the Pfalz D XII, Hercules Air Liner and the Gloster Gladiator. Any readers loaning these would be doing The Model Shop a great favour. As the oldest surviving model business in the country they are trying to complete their early range of models; also, of course, such a gesture would be providing a service to all vintage modellers. If you can help please write in the first instance to the writer at 66 Tuffnells Way, Harpenden, Herts AL5 3HG. Material loaned will be taken care of

Below: Two views of Jim Alaback's twelve-and-a-half-inch Mauboussin Hemiptere 40 referred to in our first story this month. Model was built from herb Weiss' article in the May 1938 Model Airplane News, but is updated to incorporate correct colour scheme, slotted wheel discs and full-open elevator. Reduced scale plan shown at right, courtesy of MAN.



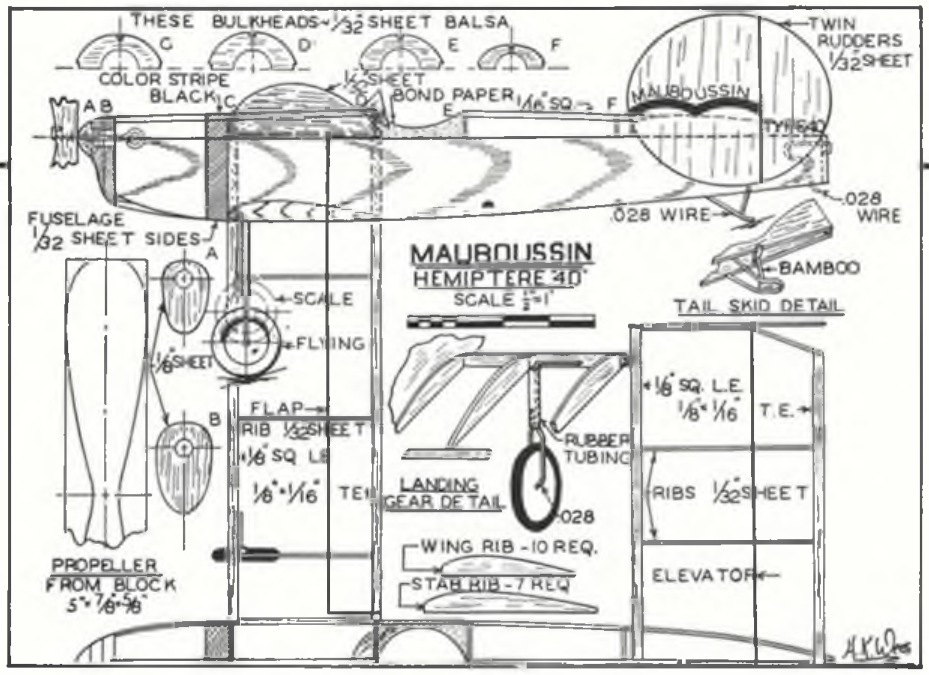


Above: The interior of the Waco Hadrian rear fuselage packing case put to such good use by Bob Brown (see text). How many models can you identify? Right: Keith Harris sent in this photo with the query 'Is this the first British model aeroplane?' Any news would be welcome. Pic came from a glass negative found some years ago in Brighton; others in the pile were dated 1909.

and will be returned by registered mail as soon as possible.

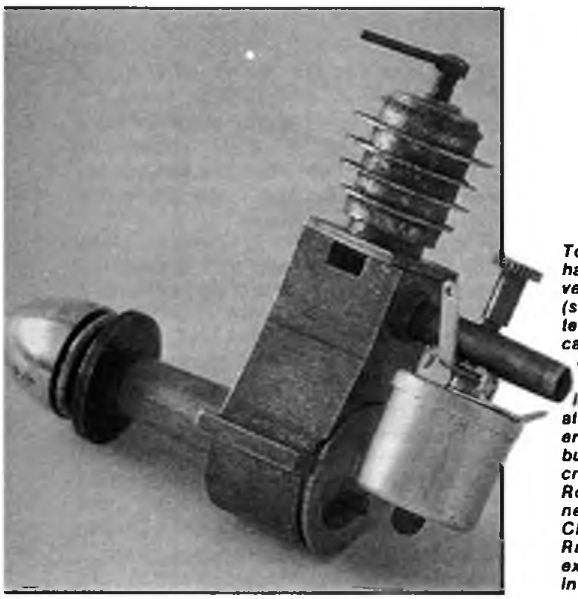
In the meantime The Model Shop, whose story was told in the June 1986 Vintage Corner, have stated that following that coverage they have had requests for their plans from South Africa, Australia and New Zealand as well as from places closer to Newcastle-upon-Tyne. Doug McHard kindly made the Vega plan available, feeling that this is some recompense for all the enjoyment that he has had with his Hawker Demon (and lately with his recently completed Hawker Fury). Doug's immaculate examples are indeed a joy to behold, and really make those old Keelbild adverts come to life.

The Hurricane and Magister plans came from Peter L Norman of Newhaven to whom we tender our thanks. He tells how he obtained them: '...in 1983 I was browsing in an antiques market in Eastbourne and came across a Keelbild kit box. It contained the two plans loaned plus some others and an assortment of balsa strip, bamboo, sewing thread and some pre-war tissue in various colours including camouflage tints and aluminium (there is little of the latter two, maybe enough to cover a Peanut!) There were also two bottles of MS banana oil, with corks intact and some contents still in the bottles!... It struck me that the original owner may not have returned from the war and I felt embarrassed poking about in the box, but subsequently it came to me that the box had probably been in that state for some forty years; also the owner, whoever he was, would probably be pleased that his selection of plans and materials would give others some pleasure.'



Finally, the donor of the Active and the Flea plans, Mr J G Scott of Northampton relates 'I began modelling in 1935 with a "Homebuild" kit of the SE5 - I was unable to wait until I could obtain a razor blade, and the parts were cut from the balsa sheet with scissors! The resulting standard of construction can best be imagined! Flying performance was nil, as was the survival factor, but nothing daunted, I persisted, graduating through many of the Keelbild range, with their superior quality, to the point where flying performance began to be more rewarding. In between times, I turned to solids; these certainly did develop the qualities of finish necessary for a reasonably successful flying model, but were only part of the scene.

'Service in the RAF between 1942 and 1947 centred my interests mainly on full-size aircraft *(Mr Scott served as a pilot, and there is no doubt that his air-mindedness came from his association with aeromodelling. AI)* but I continued modelling afterwards, a lone hand as ever... I purchased the two plans from Mr Lutman Senior, at the Ridley Place shop in 1946 when I was on leave from the RAF, as replacements for the originals that I had owned before the war. Mr Lutman said at the time that he had been unable to locate any printed wood for either model. I do hope that the plans can be of some service



Top: Red Zephyr unsticking! Charles O'Donnell has had ninety flights from his PAW 29 powered version of the famous Herbert Greenberg design (see text). That exhaust extension is from a television aerial - from the days before cable TV came to town! Above: A twin-plug Super Cyclone powers this KK Falcon built by K.L. Roy who won the Gold Trophy in the R/C event in the sixth annual All-India Model Aircraft Rally at Calcutta in January 1955. Left: Can any engine buff identify this one? It's very Mills-like but there is no lettering or numerals on the crankcase. Ron Magill of 4207 Great North Road, Glen Eden, would welcome any info (and news of Mills history). Opposite page, top: Charles O'Donnell's Taylorcraft doing its stuff. Rare mixture of civil and military markings is explained in text. Full-size machine is pictured in Juptner's books on US Civil Aircraft.

to the firm which set me firmly on the road to an absorbing and rewarding hobby so many years ago. My modelling activities are now not very intense, but I still enjoy my monthly "fix" of sight and scene via the *Aeromodeller*...' Hopefully Mr Scott will 'intensify' his aeromodelling participation; we are doing our best to get him to cut balsa again with one of these new fangled modelling knives (they are so much better than scissors!) and we look forward to hearing that his Arrow Active is ready for flight. Our thanks once again to these three gentlemen who have helped preserve a little part of our aermodelling heritage.

SAM 35 Swapmeet

It is planned to hold a get-together at the same venue used for the recent AGM of the society. The Sports Association Hall, Henlow Village, Bedfordshire, on Sunday 25th January 1987, starting at 2:00 pm. This will be what you make it; nothing is organised except an excellent warm roomy hall with refreshments available, so bring some models if you wish to show them, and be prepared for a real 'bull' session. The emphasis is on swopping and/or selling, so now is the time to look out all those old magazines, books, plans, engines, kits and other odds and ends that you have no real use for, thus to provide others of our kind with a chance to enjoy those items that have been gathering dust in your attic or workshop for the last few years, generally impeding your modelling progress. Non-SAM 35 members are welcome as long as they have a genuine interest in vintage... we might even persuade you to join!

Readers write

Charles V O'Donnell of Bloomington, Illinois is a keen follower of this column, and he mentions that it might appear odd that he, born and bred in New Jersey, should be such a keen follower of British old-time modelling. He remembers how when at high school in 1945 he frequently visited Polk's Hobby Shop; and he has vivid memories of big, old kits of pre-war design like the Custom Cavalier and Buccaneer lining the walls. These models always remained in his mind and were the subjects that he modelled when he took up the hobby in earnest some twelve years ago. I gather that he has yet to make one of our models, but doubtless he will get down to a Junior 60 or something similar, of British origin, one of these days. He tells us about two of his present models:

'The Red Zephyr was built from Model Builder plans and is a radio-assisted bird. The purist in you will wince, but, as a practical matter, I have made the wings, tail, and landing gear bolt-on. The covering, though, is heavyweight Silkspan, the trim is dope, and the wheels are Trexlers. The radio is a Tower Gold Series on rudder, elevator (one side), and throttle. The engine is a PAW 29 R/C and my hat is off to the Eifflaenders; it's a sweetheart. I've used many a diesel in U/C and free-flight, but none larger than .15 and none with a throttle, until now. I'd been confident that I'd have no trouble getting a diesel to cut at low throttle - everybody knows that they don't throttle worth a damn. In point of fact, I have a devil of a time trying to cut it at altitude and usually have to settle for it burbling around quietly at throttle-low trim. Prop is a 12×6 Topflite and the tank is a one-ounce brass affair I soldered up to fit under the engine. By the way, the fuselage has a spruce frame, except for balsa uprights, crosspieces, and diagonals aft of the wing. The wing has an extra spar of spruce sunk below the surface. The model had about 90 flights on it when the picture was taken.

'The rubber job is an Earl Stahl Taylorcraft Tandem built from plans on a book I bought (probably at Polk's) in 1945 *(maybe Air Age Flying Scale Models, a keenly sought after publication these days. Al)*. Yes, I "improved" it. Again, in the interest of practicality, I made the wings, struts, and noseblock removeable, the last-named so that I could use a winding tube. And a damned good thing! I broke a motor at 600 turns last summer. Using eight strands of 1/8 and 500/600 turns (as the mood strikes me) the Taylorcraft cruises around the R/C field, not getting much higher than 40 feet. Nice lazy aeroplane for a lazy afternoon or evening. Wingtips and tail outlines are laminated bass. Balsa is too precious to

carve into props, so I carved a foam block to the top camber and laminated prop blades over it. The peculiar combination of military insignia and civil registration on the wings comes from California (a land of surpassingly peculiar combinations) early in the war. They grounded all civil aircraft there right after Pearl Harbour, but when somebody informed them, gently one hopes, that a hell of a lot of those machines were training Army fliers in the Civil Pilot Training Programme, the planes were let back in the air as long as they carried the millitary markings on the wing opposite the civil registration. It doesn't show up in the picture, but there is a big "US" on the fuselage side as well.'

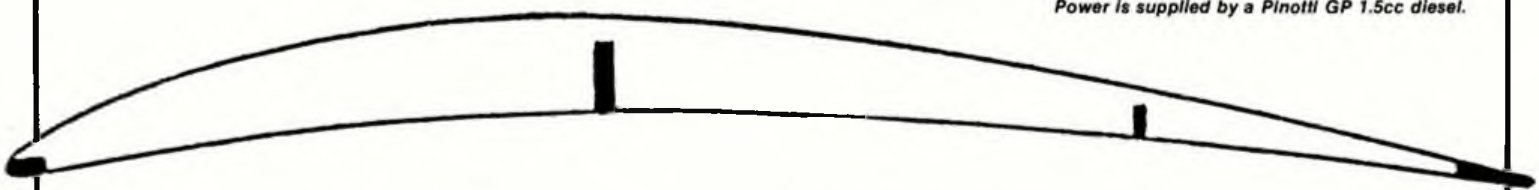
Expatriate Jim Newman of Hobart, Indiana liked our column on Ray Malmstrom in last May's issue. He wonders when Ye Olde Editor will reprint some of the Malmstrom gems, and writes: '...I am weary of the never-ending procession of square-winged, swept-finned clones of Piper and Cessna. For me, the Athene, and his twin engined fighter would be the ultimate in vintage contentment... I do remember the characteristic rolled balsa nacelles and four cannon. Was it the Merlin, I wonder? *(Yes it was, published in Aeromodeller, February 1945, AI).* Since you have whetted the appetite - where can I also obtain a copy of Mr Knight's Kamlet, my first successful Low-winger? *(This Aeromodeller design is probably still on that X-list or if it is not, it should be! AI).*

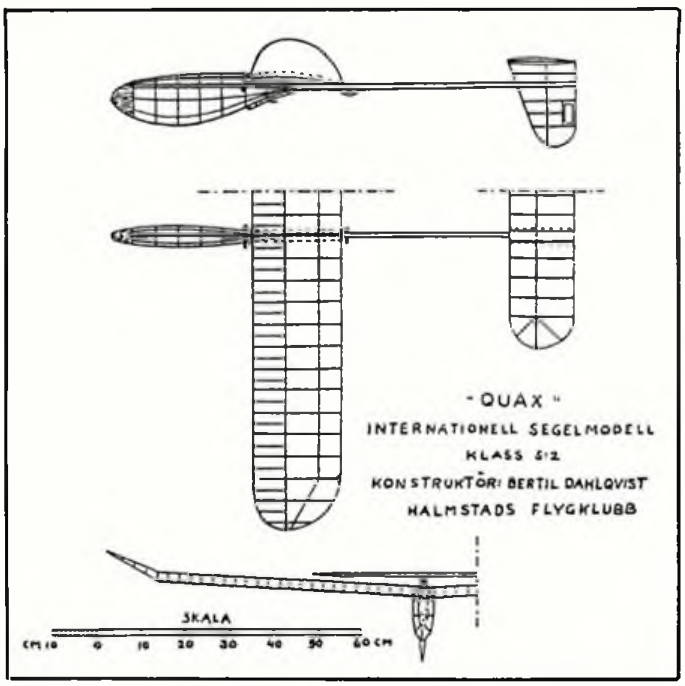
Back in the early '50s, before entering the RAF I was an avid member of the Swindon MAC; and that fine club endured many a minor gale to fly up on the hill at RAF Wroughton. During my visit to that hallowed turf and runways, in September 1985, I made a discovery - the wind had not abated one knot! After being invalided out of the RAF, I came to the USA to take up employment as designer/draftsman with Carl Goldberg and later Midwest Products. Today I am self-employed with many of the big companies as clients. In addition I am a columnist for Model Airplane News. I was not entirely disconnected from *Aeromodeller* though, since many of my cartoons graced its pages - and those of RCME - at first under the pen name BOT and in later times under my own name.'

Pacific Ace

Back again to the active pen of Jim Alaback: 'The San Diego Aeroneers held a one-design contest last year and selected for it a 25in. wingspan version of the Modelcraft (1936) Pacific Ace, whose original wingspan had been 30 inches. I built one in a short period of time for the first contest in June last, and my model took the blue ribbon with an average flight time of only 65 seconds. Due to the shortage of time I used a commercially-available plastic propeller, but since then have carved a couple of balsa props, the best of which enabled me to get thermal flights of up to about ten minutes. Now I have to add a dethermaliser to this model before the next contest! I really dislike dethermalisers, they are so ugly and add weight and complexity, plus of course, they are not original for our old-timers; but it seems that we all are getting better flights from those oldies than we ever did some 50 years ago. This model weighs 1.09 ounces ready to fly, including a braided four-strand 1/8in. motor about fifteen inches long. The best balsa prop is 8 1/2 inches diameter, 11 1/2 inches pitch with about 5.6 square inches of blade area (7% of the 81 square inches of wing area).

Drawing below left comes from the Swedish 'Old Timer' magazine. The Quax sailplane of 1943 design by Bertil Dahlqvist of Holland is 134cm span (chord is 20cm) and 105cm long. Full-size wing rib at top. The cover of Old Timer magazine, at right, shows Georg Derantz and Thore Haglund with an interesting F/F pylon model at Halmstad in 1945. Power is supplied by a Pinotti GP 1.5cc diesel.



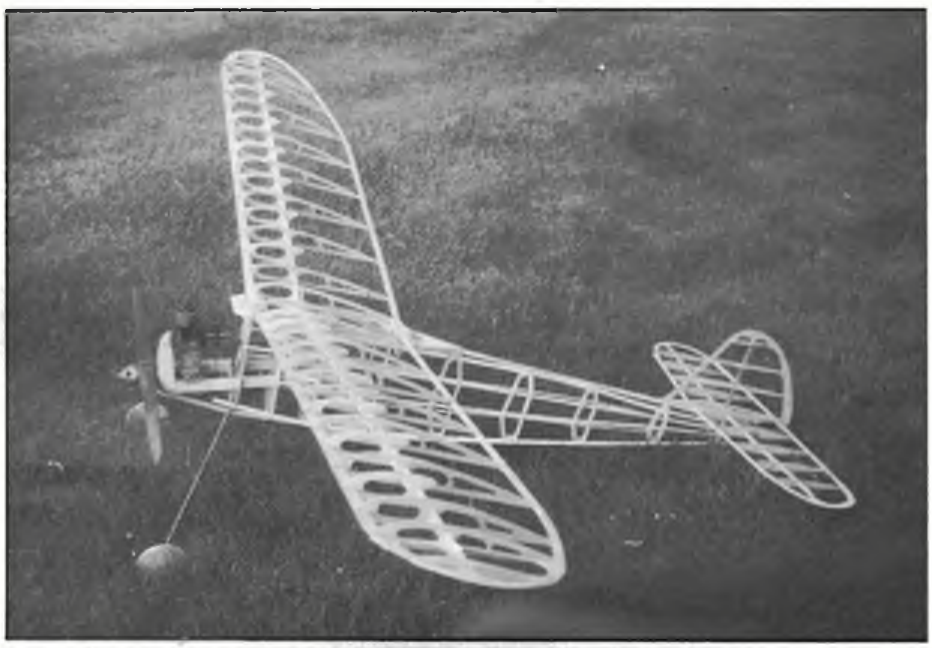


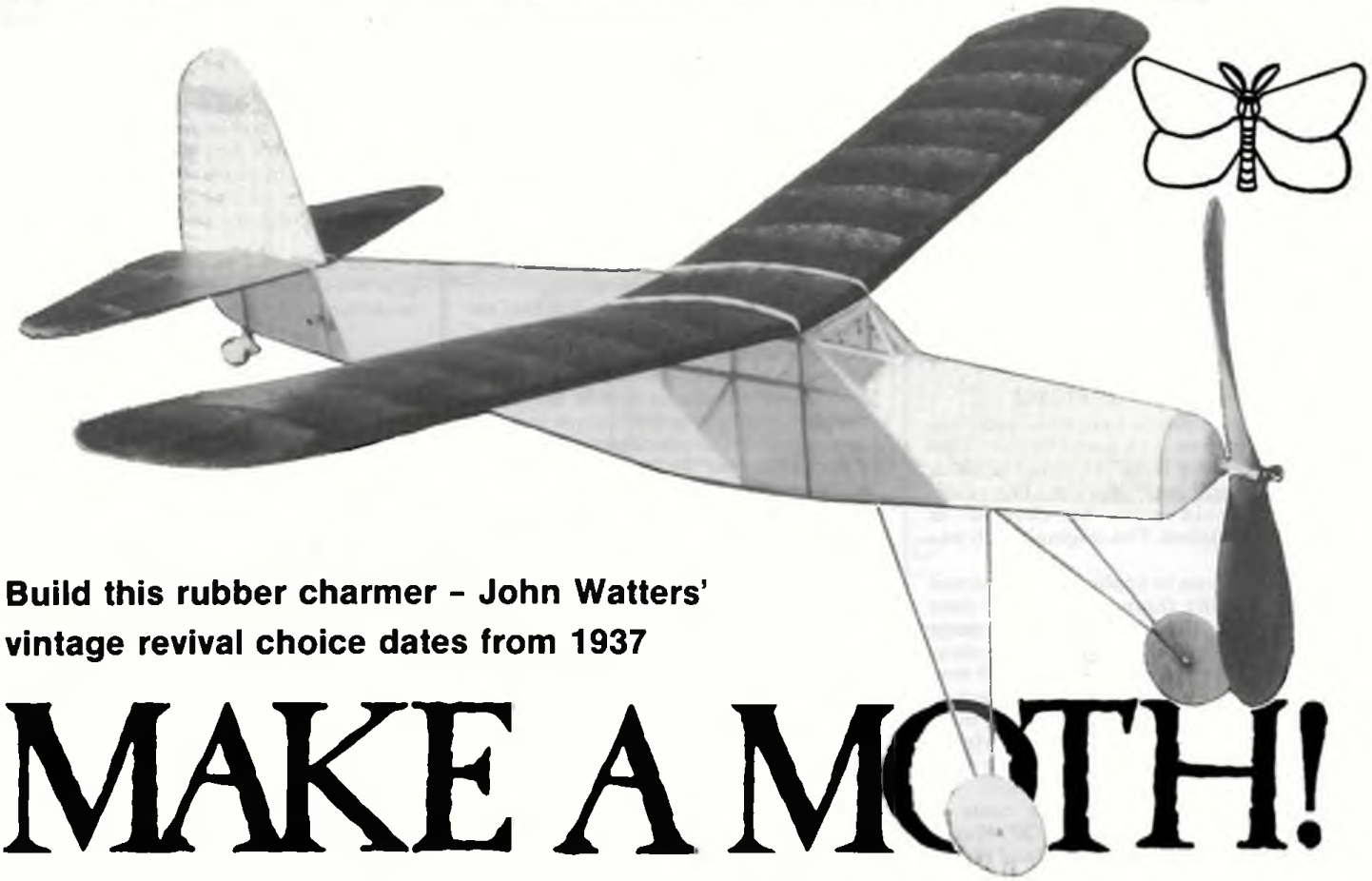
'A note on model colours: I have never liked the colour blue very well on models. However, in the interest of authenticity, I did use blue tissue on the wings and empennage of my Jimmie Allen Blue Bird. I found that the blue colour was a great aid in finding the model in the fields of spring, summer or fall colours. The blue seems to jump out from the natural earth colours. Accordingly, I chose blue flying surfaces for the Pacific Ace in combination with a red fuselage. Its a rather funky-cute job in these colours, but more to the point, the visibility remained excellent on its recent ten-minute thermal flight. As the model became little more than a speck in the sky, the blue became black. The red of the fuselage was a good contrast at lower altitudes. On the ground, again the blue jumped out when I went looking for the model (it having passed out of sight behind some ridges as it descended). Imagine, I spent over fifty years building flying models in combinations of red, orange and yellow as a result of personal preference and Anthony Fokker's early observation that orange was the most visible colour from the air!'

Postscript

As you will observe from the amount of material used from across the Atlantic this month, Vintage Corner is rapidly becoming a US column, so come on you Limeys, lets hear from you too - we can't print your experiences unless you tell us of them, so please keep us informed of your doings. Remember, these do not have to be success stories. Sometimes failures are more interesting anyway; so if you feel like getting into print, don't be bashful, put pen (or pencil) to paper. No need to worry about style or spelling, the Editor will knock any submission into shape; that's what he gets paid for anyway!

Top: Isle of Man trio. Left to right are Charlie Staples with a Dart special powered Aspis, Peter 'Performance Kits' Fisher with his Huppe gull-wing biplane which is equipped with a 0.375cc Saxby Nipper, and John Kemp who is holding a Humming Bird (Giles 0.3cc power) and a Dart-powered Aspis. In the foreground stands the PK Buzzard, fitted with power pod and two-function radio. Location is Jurby aerodrome; date, last August. Centre: Ten-minute flier! Jim Alaback's 24in. span Pacific Ace reposes in the Californian sunshine. Below: Robert Munger of Switzerland built this 51in. Jacob Klemenz design and has fitted his forty-year old Dyno. He remembers the red silk covered Dyno-powered original. Left: Stan Horne at Old Warden with his Airds Master - one of thirty Wakefields in the popular Mass Launch.





Build this rubber charmer – John Watters' vintage revival choice dates from 1937

MAKE A MOTH!

THE ONE THING that can be said about 'real' ie. insect-type moths, is that they do not survive for very long, but this cannot be true for this model Moth which first appeared in the August 1937 issue of Flying Aces.

This model is so simple and quick to build, it's almost one for a wet weekend, and it isn't going to cost you a fortune in wood either.

As an introductory model for anyone wanting a small, simple vintage rubber type, the Moth is ideal. As the editor's note said about the original design – 'thousands of models have been built, throughout the United States and Canada, and it has been responsible in getting many aero enthusiasts to become model builders'.

I have included in this design all of the original features but I have added some small changes to ease construction for the beginner. Purists may ignore these.

Fuselage

Lay out the plan flat on your building board and cover it with a piece of thin polythene sheet. This will prevent any of the parts from sticking to the plan during building.

Select the longerons from medium hard 3/32in sq. balsa, and pin them down over the plan. Position the pins on each side of the longerons, not through them. The uprights and diagonal pieces can be made from either medium hard 1/16in sq. or 1/16 × 3/32in. balsa. Remember if using 1/16in sq. that the spacers need to be on the outside faces of both side frames. Cut each piece in turn and using PVA glue position each piece to complete one fuselage side. At this stage it will be best to make up your mind which version of this model you are going to build, the true vintage or the modified model – not that there is a lot between either, but the rear motor anchorage points are different.

Having completed one side, build up the second side directly over the first. Remove them from your board and carefully separate by running a modelling knife between them. Re-glue any joints that may have become loose.

As no fuselage formers are used in this model, building up the fuselage box is probably best carried out using dummy formers which can be removed later. These can be made from either balsa or card, and should be only tack glued into place. Build up the fuselage by gluing the two sides together at the tail and fixing the top and bottom spacers at the nose. When all has set, add the remaining top and bottom spacers, checking all the time to see that the fuselage is true. Formers F1 to F4 can now be added followed by the 1/16in. sq. stringers on top of the nose, along with the two windshield pieces. The original model did not make any provision for locating the nose block, so I included a 1/32in. ply nose former. The nose block itself can be made up either from a piece of medium balsa block, or from pieces of 1/8in. sheet laminated together. A piece of aluminium or brass tubing, or a bush of some kind for the 20swg. piano wire propeller shaft to run in can then be epoxied in place. This completes the fuselage which should now be given a light sanding all over.

The two undercarriage legs are made from 20swg wire, bent to the shapes shown on the plan. Nothing complicated here; simply bind each leg to its bottom spacer using strong thread and cement. Although not specified on the original model, it is probably best to make these two spacers from hard 3/32in sq. balsa with small gussets added. The ends of both legs can either be bound with thread and cemented, or lightly soldered together.

The wheels I used were from discs of 1/32in. plywood faced on each side with 1/16in. balsa with a piece of 20swg aluminium tubing epoxied in for the hub.

Tail and fin next

The tailplane is straightforward to build from pieces of 1/16 × 1/8in. medium to soft balsa and 1/16in. soft sheet. Pin down the main spar and then position and glue the outline pieces into place. The ribs are then made up by gluing in pieces of 1/16 × 1/8in. balsa. When the structure has set it should be lightly sanded to the shape as shown in section 'x-x' on the plan. The construction of the fin is again quite simple, the components being cut from 1/16in. sheet.

I have added small pieces of 1/16in. sq. balsa to the leading edge of the tailplane to locate the leading edge of the fin which, only being attached at the rear, was a bit weak. You may remodel the fin to sit on top of the tailplane, gluing them together after covering.

And now - the wing

The wing is another very simple structure, although some care should be taken to avoid building in warps. The wing is built as one piece and formed to the dihedral angle later.

First position the 1/16 × 3/16in. trailing edge piece in place over the plan. Next pin down the 3/16 × 1/4in. leading edge piece with the taller side vertical, and glue the tip pieces in place. Now add all the 1/16in. wing ribs (which are best cut out using the sandwich method) and allow the whole thing to set. Do not remove the wing from your board, but pin down the centre section and saw through the leading and trailing edges sufficiently to crack them up to the dihedral height of 1.1/2in. at each tip. The cut in the leading edge will have to be made at an angle; see plan. With both tips propped-up and the cracked joints smeared with glue, add the 1/16in. sheet gussets. These were not shown on the original but I think they make for a stronger joint; they are not really out of place.

Remove the wing from your building board and add the bottom spar in three pieces. Make sure that you do not get a twist in the panels. It is probably best to pin down each wing panel flat on your board whilst allowing the spar to set. That completes the wing, apart from the obligatory sanding, of course. For anyone who is not happy to construct the wing as described above, you can always incorporate a dihedral brace, from say 1/16in. hard balsa.

Covering and finishing

First cover the cockpit area with thin acetate sheet as shown on the plan. This can be doped or balsa cemented in place; or, better still use Evo-Stik. The whole model should then be covered in lightweight tissue. The original Moth was all yellow.

The tissue can be applied to the structure with a slightly thinned mixture of clear dope, or even ordinary wallpaper paste mixed quite thick and applied in the same manner. If you use paste, remember that this will have more of a wetting effect on the tissue, and it may therefore tear more easily when pulled taut. You will also need to leave the paste to dry out before final doping.

Give the whole model two coats of thinned clear dope, about '50/50'. Watch out for any warps in the wings (and tail for that matter). Pin the surfaces flat if need be. Any twists present after the dope has dried can be removed by holding the offending item in the steam from a boiling kettle and allowing the tissue to go slack. Holding on an opposite twist let it become taut again; repeat until you are satisfied. DO BE CAREFUL. Protect your hands with either gloves or a towel.

Your model can now be decorated with doped-on coloured tissue or transfers, but remember this is basically a lightweight model, so watch the weight, and if you do use any coloured dope or paint make sure it is thinned.

Assembly - and to the flying field...

If you are using a wooden propeller then some type of free wheeling device needs to be fitted. A simple one is shown on the plan, although there are many others. This also goes for anyone using a commercial plastic propeller, although a simple wire bending job usually suffices for these. By the way, I used a Peck Polymer 8 1/2in. plastic propeller on my model. You can tell I'm not a purist - it works very well though.

Before assembling the propeller make sure that you place some sort of bearing between the nose block and the rear of the propeller. Cup washers will do the job, and very light oiling also helps. If you are using a wooden propeller, then you will have already balanced it out during its manufacture, but don't forget to check out the balance of any plastic propeller you may choose.

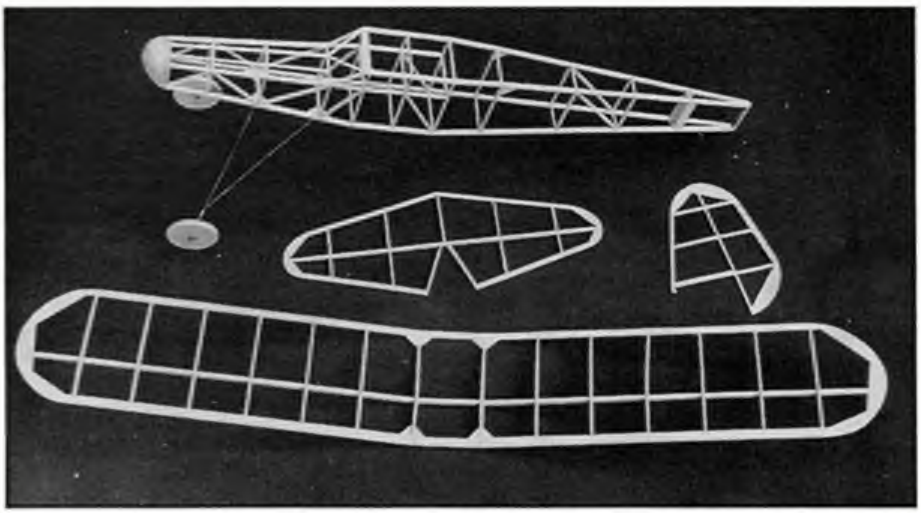
The original model used four to six strands of 1/8in. flat rubber for power, pre-tensioned. No clue to the actual length of this motor is given. As a general guide line I use a motor length of about 1 1/2 times the length from propeller hook to rear anchorage point. You will have to experiment to find the motor combination that suits the type of performance you want.

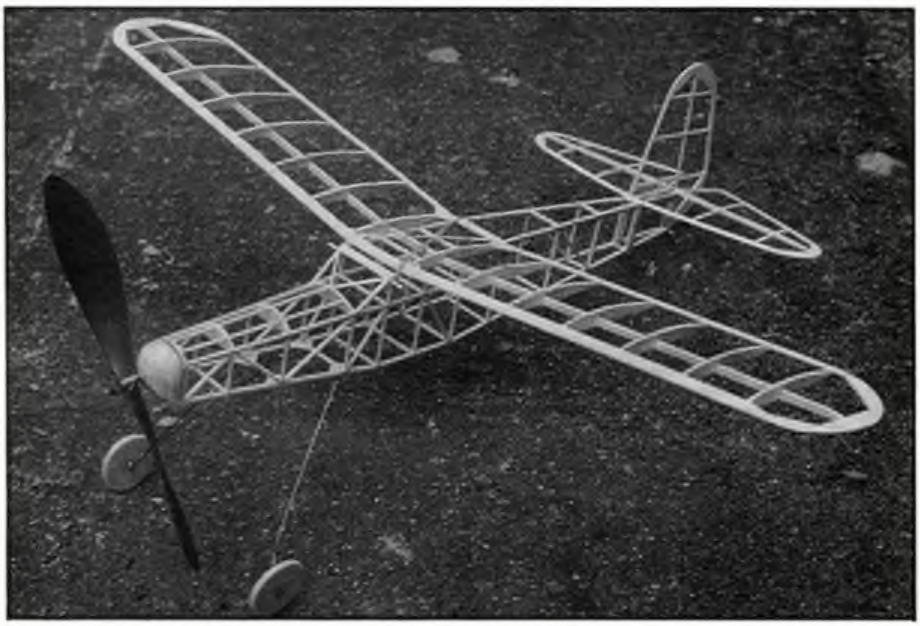
With the model assembled with elastic bands, and all the flying surfaces square and true, the first thing to check is the balance. This is done by placing a finger tip under each wing just in front of the main spar. The fuselage should then lie horizontal. If it does not, add weight to either the tail or nose as necessary. My model needed some tail weight.

First test glides and powered flights are as always best carried out over a patch of long grass or clump of weeds and in reasonably calm conditions. From shoulder height gently launch the model forwards, noting whether it dives or stalls. Cure any diving by placing small amounts of packing under the trailing edge of the tailplane, and any stalling by packing up the leading edge. All that remains is to put on some turns and let her go. Build up the power gradually. Any sharp turning to the left as you increase the power is best countered by adding small amounts of packing behind the left hand side of the nose block.

Built light and true this model should give the novice and the more experienced modeller good all-round performance.

Top: Structure of Moth is quite simple, but take care to ensure accurate alignment. Centre: Completed but uncovered. Wing dowel arrangement has been superceded by 'bands round the fuselage', as per original. Bottom: Philip Watters holds the finished model. Peck 8.1/2in. prop guarantees good performance - but why not carve your own?





Fancy mini-Vintage?

FLYING STICK

Build Mike Whittard's fun-flier!

THIS YEAR'S VISIT to Old Warden Scale Day reinforced my growing suspicions that my R/C flying there was likely to be several curtailed, and that I should arm myself with a suitable free-flight model ready for Vintage Weekend later in the year. As I am rather prone to rush into these things, I obtained a Telco Turbo 6000 at Woodvale which left all of a fortnight before the event - plenty of time to sort out and build a model...After a week, I still had not settled on anything, and time was now running out. What I wanted was something simple, very quick to build - and Vintage. Whilst checking some other details in the 1937 Zaic Yearbook, my eye was taken by the Ehling Flying Stick. What a delightfully, attractively ugly beast! Then the penny dropped; here was my subject for CO_2. Reduce it to half size and away we go - or so I thought.

A few preliminary and tentative pokes at the calculator next day suggested that 45% was about as big as I could make the model to avoid it being underpowered, so the lunch-hour was occupied with marking up a Xerox copy of the plan with the various dimensions. I couldn't waste time working overtime that night - it was now Monday 11th August, with just six days to go! The plans were very roughly drawn (on the back of an instruction sheet - no envelope big enough!) and construction started. By the time the midnight oil ran low, the fuselage was standing on its undercarriage on the bench. Second night saw the completion of the airframe; third night had it covered.

A tale of trimming

The night of Thursday 14th brought poor weather, but the Gods were kind on Friday and out we went for test flights... The previous evening I had spent some time fashioning an ounce of lead to fit in the nose to bring the CG to where I thought it should be. The first handlaunch resulted in a dive for Mother Earth that would have done credit to the second half of a ballistic missile's flight, so out with the lead. This time the glide angle improved considerably; it almost reached 45 degrees! Several more hand-glides proved that *(a)* Frank had definitely put the wheels in the right place and *(b)* the tail required some packing - this with the CG at 75% to 80% of the chord! Now I know that *Aeromodeller* readers are going to laugh at this R/C intruder trespassing into the magic realm of free flight, and tripping up in the process, but I had made these gadgets work in the dim and distant past, so I was well equipped with bits of 1/32in. sheet, and in my case, my workshop was only through the gate; nice to have a field so handy! The slices of packing were inserted one at a time, and by the time I had 3/32ins. under the tail trailing edge I was beginning to think that the lemon-yellow tissue was an appropriate choice! More packing was inserted - this time under the wing leading edge and by now it did begin to show signs of behaving like an aeroplane instead of a misguided missile!

The field I fly in has a steep rise of some forty or fifty feet, so up to the top I went to try some gas charges. All these did was to very slightly extend the glide, so I now started to crank up the Telco's power. Finally, in sheer desperation, I wound the Telco up to full power, gave it a liquid charge and flipped the prop. Utter astonishment - she rose in a steep climb, daintily dipped the left wing in the merest hint of a stall - then continued in a gentle and steady climb, gradually levelling out into a cruise which almost took it out of the field. The tail was then re-adjusted to give a tight right turn; liquid charge and away again. This time the power-stall was almost non-existent and the flight was a joy to watch, confirming the dragonfly appearance as it quickly purred round in the calm evening air.

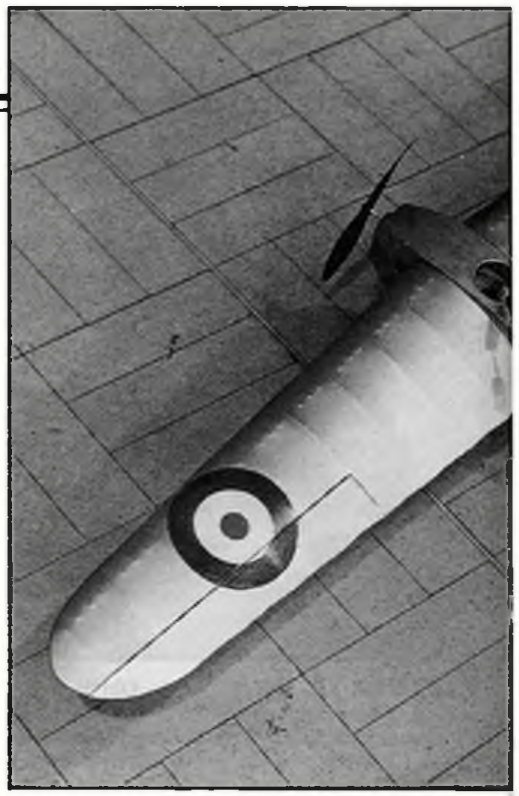
Good to see these R/C flyers indulging in free-flight! Heading photo shows quick-build lines of this miniature; full-size craft dates from 1937. Cheeky model - note decoration - is all set to go in photo below. Pipe enthusiasts will need no reminding that Mike is smoking a Falcon...

Building hints

Now, I don't need to tell you how to build a model like this but do keep it light. My first one weighed four ounces, which is heavy. By the time you read this, I shall have built another, aiming to get the weight down to no more than three ounces. Use Jap tissue with just one coat of dope. The fuselage booms should be given two coats of dope, sanding after each coat *before* building the fuselage. I have departed from the original design by incorporating the rigging angles into the pod and the tail-seat of the boom. I have also halved the number of ribs in the wing and tailplane. The wingtips require a degree of explanation. The spar ends should be prepared as shown. The sheet tip rib and underside sheet are glued in place with packing between sheeting and board. The tips can then be laminated directly to the sheeting after all the ribs, leading edge and trailing edge are in place. If you use cyano, you can complete the tips within a very short space of time by soaking the 1/32in. strips in hot water - I run them under the hot tap - and cyanoing in place whilst still hot and wet (the strips, that is). Run around the tips with a heatshrink iron when you lift them from the board to dry them out and sand to shape - ten minutes is all it takes.

You will find that due to the long tail moment trimming is easy - quite large adjustments can be made without getting into trouble. Ensure the CG is at not less than 70% of the wing-chord and you should be OK. I'm very pleased with mine and intend to build the full-size version and stuff two mini-servos into it; thinks; what about a twice-size version? Where's that calculator!

SCALE MATTERS



Bill Dennis reports on an enjoyable Indoor meeting and we look at a selection of models seen during the year

Indoor meeting at Alumwell, Walsall, 2nd November

Whenever I attend one of these meetings, I always seem to find myself frantically scribbling a report the same evening in order to catch the *Aeromodeller* deadline. This time is no exception, although a slight twist is that I am sitting in my car on the hard shoulder of the M5, engulfed in clouds of steam and waiting for the AA to arrive!

This meeting was new to the calendar, and so the organisers were not sure what the response would be. However, after a slow start the hall filled rapidly and the number of entries in all classes reached respectable figures. Given that there were many new and interesting models, and that the meeting was financially 'in the black', I think all present would agree that it was a great success.

I had the job I enjoy most, that of flying judge. The first event to command attention was Open Rubber, in which the outstanding performances were by Richard Grainger's well known Microplane Veloz, and by a new model from Ray Johnson - a Curtiss Seagull. This large aircraft, finished in an opaque blue scheme, had been found to be only just inside the weight limit of 85g, which had precluded the addition of many details; but because the wing loading was low, the Seagull's speed in flight was very realistic.

Everyone was disappointed that Reg Boor's Argosy did not qualify, but it seemed short on power and was slightly unstable in its left-turning flight trim. Open Rubber was one of those contests where it was impossible to guess in advance whom the winner would be, since none of the models excelled in both flying and static sections - the message being, happily, that this event remains wide open. Paul Briggs' Peanut-sized Bleriot came out on top, thanks to a high static score which more than compensated for a rather unconvincing flying pattern!

Next up was the Peanut event, although I did not see much of this. However, one model to attract my attention was Lindsey Smith's canard Voisin floatplane which was very impressive; it was to finish second in the placings.

For the first time CO_2/Electric was run to the new fiftenn-second qualifying time, and this did seem to reduce the numbers of models just failing to score. Nevertheless, we still had the puzzling spectacle of many CO_2 motors (even replacement ones) icing-up and behaving badly while others performed faultlessly throughout. It must be very aggravating to produce a model of quality, only to find that the powerplant has let you down.

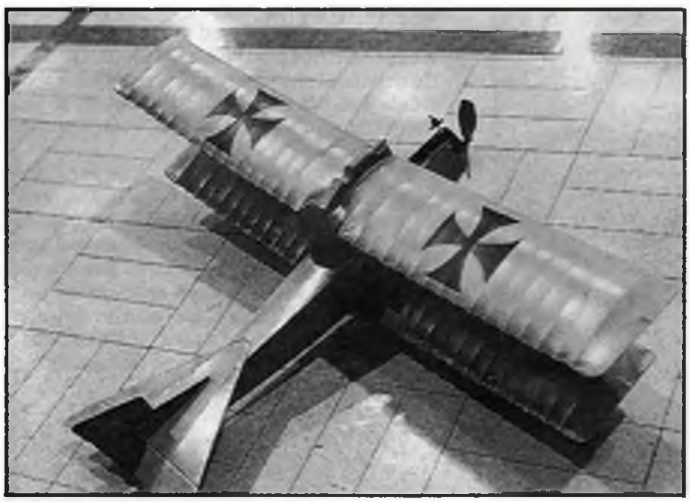
The most adventurous model present was a very nice Dunne tailless by Martin Clift, although it could not be induced to turn without sideslipping in. I noticed there that it was equipped with several ailerons and flaperons so perhaps it just needs more experimentation to find the right combination of tweaks.

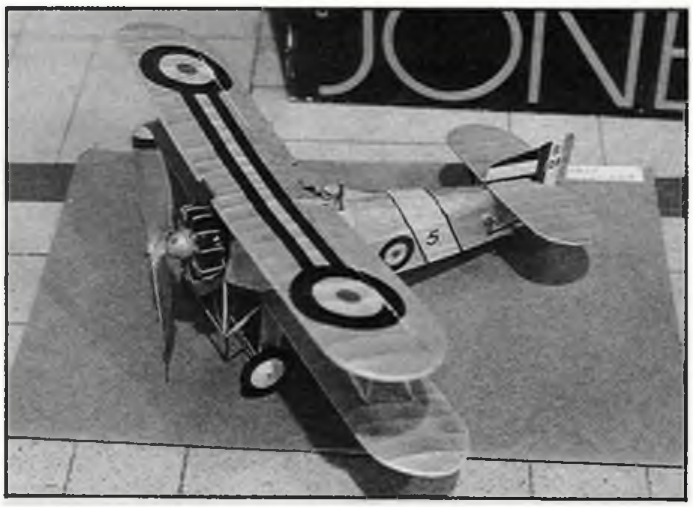
Peter Hall produced a Fokker Triplane and spent all day trimming it, to be rewarded by a round of applause when it was finally sorted out. Even in nose-heavy trim and with lots of down elevator, it kept putting its nose up in the air, but it surprisingly recovered well each time it fell out of a stall. When the final scores were posted, it had placed a deserved second.

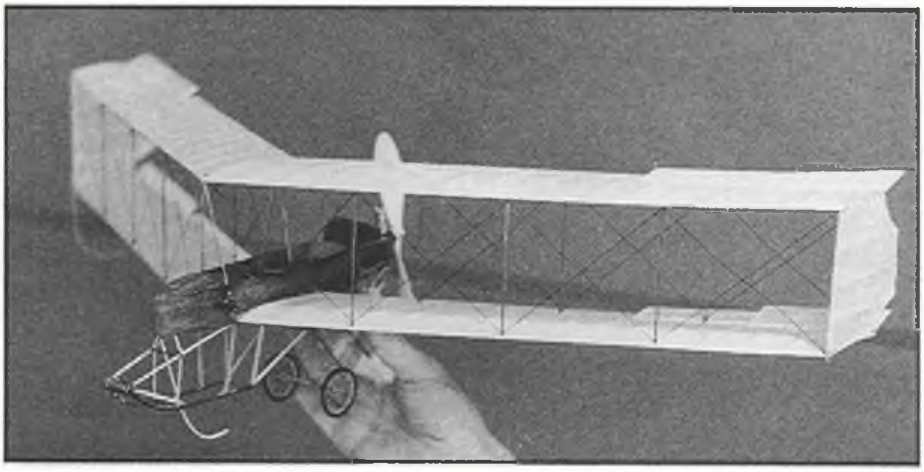
The last event was a mass launch for Keil Kraft and Veron scale kit models, a similar spectacle to that held at Old Warden. Seven models were entered, including three SE5a, and all were very nicely finished. Contestants stood at the centre of the hall and launched together. The first round saw the elimination of Barry Pursglove's Chilton DW1 (crashed) and Ray Johnson's Piper Family Cruiser (which hit a wall). The Family Cruiser is enormous when compared to all the others in the range, and it will no doubt be unbeatable when someone sorts one out - perhaps it should be banned?!

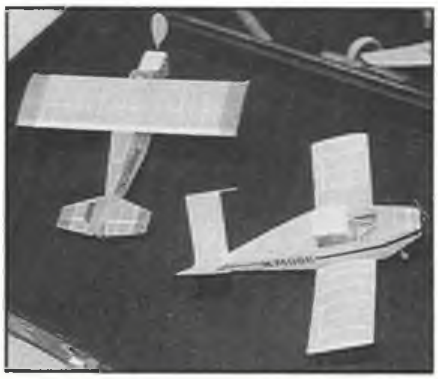
Eventually we were down to Butch Hadland's Piper Super Cruiser, and a duo of SE5s by Reg Boor and Lindsey Smith. The Piper was very light and had to be ballasted to the 25g minimum; the biplanes weighed around 40g but had greater wing area, of course. As it turned out all were very well matched. First to touch down after about twenty seconds

Heading shot: Prospects look bright for Indoor electric power. Arch-exponent of this form of propulsion, Derek Knight, brought along to the Alumwell meeting this very attractive Avro 558 - as yet untried. Below: Indoor at Alumwell were, from left to right, Martin Leach's Brandenburg C1 and CO_2; Barry Pursglove's Peanut scale Fairey Flycatcher; this all-sheet Zlin by Chris Coote and this most unusual A6M2-N 'Rufe'.









This page, top: Martin Cliff's Dunne Tailless - note the numerous trimming devices. Above left: Who else but Richard Grainger, with his pal the Mosquito - see text! Above right: a duo of Pistachios by Butch Hadland - his Lacey and Davis DA-2.

was Reg Boor's SE; next was Lindsey Smith's, which was followed just two or three seconds later by Butch's Piper.

Although I saw many impressive models at this meeting, the most memorable was Richard Grainger's Mosquito, finished in black and yellow stripes. However, this mosquito had four wings and six legs! It was built (if that is the word) from foam, wire and cling-film around a Telco Turbotank unit. From an ROG, the mosquito hurtled across the hall, completing two or three perfect rolls before striking the wall at about 30 mph! After this it never really recovered because of lack of power; the feed pipe had been squashed on impact. Amazing!

Indoor Scale meeting, Alumwell, Walsall
Results

			Static	Flight	Total
Rubber					
1	Paul Briggs	Bleriot	952	779	1731
2	Ray Johnson	Curtiss	573	1105	1678
3	Richard Grainger	Microplane Veloz	485	1130	1615
CO_2/Electric					
1	Barry Hetherington	Bellanca	940	1000	1944
2	Peter Hall	Fokker DR1	1179	719	1898
3	Geoff Spencer	Fox Moth	1193	677	1870
Peanut					
1	Butch Hadland	Morane	2	3	5
2	Lindsey Smith	Voisin	1	7	8
3	Chris Coote	Wot	8	1	9
Kit Scale					
1	Butch Hadland	Piper Super Cruiser			
2	Lindsey Smith	SE5a			
3	Reg Boor	SE5a			

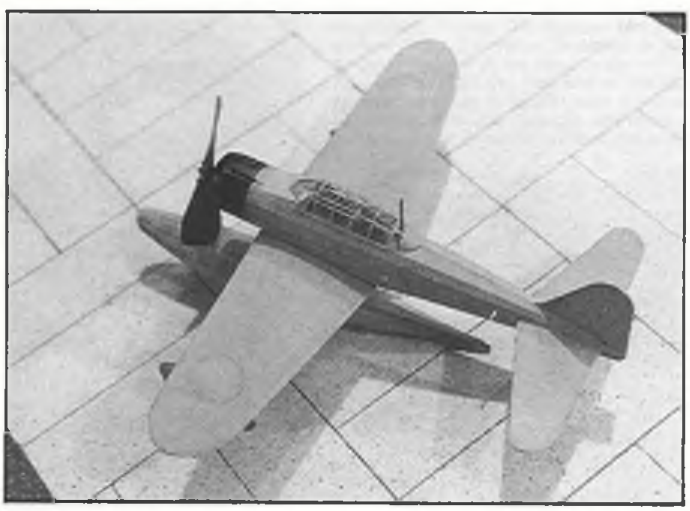
Outdoor F/F Scale Nationals, 1987

From January 1987, F/F models will no longer be permitted to fly at RAF Barkston Heath. This has been brought about, I understand, by duration models landing in the 'compound', and is a state of affair which obviously has implications for scale enthusiasts as we have held our F/F Scale Nationals there, as part of the August Nats, for many years.

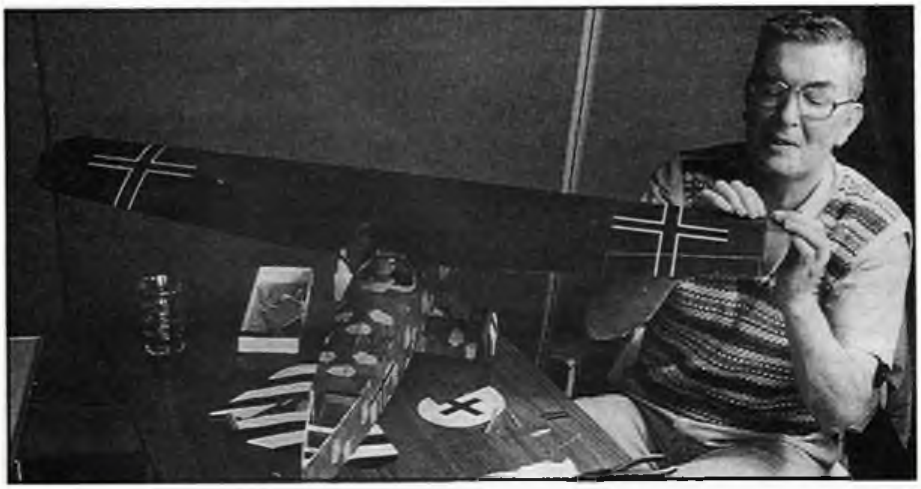
The SMAE is attempting to negotiate an exemption in our case, but this may mpt be fruitful: Obviously the Scale Committee has to make contingency plans, and at the moment we are thinking along the lines of transferring to the SMAE meeting held at Abingdon in July, with static judging to be held on the Saturday.

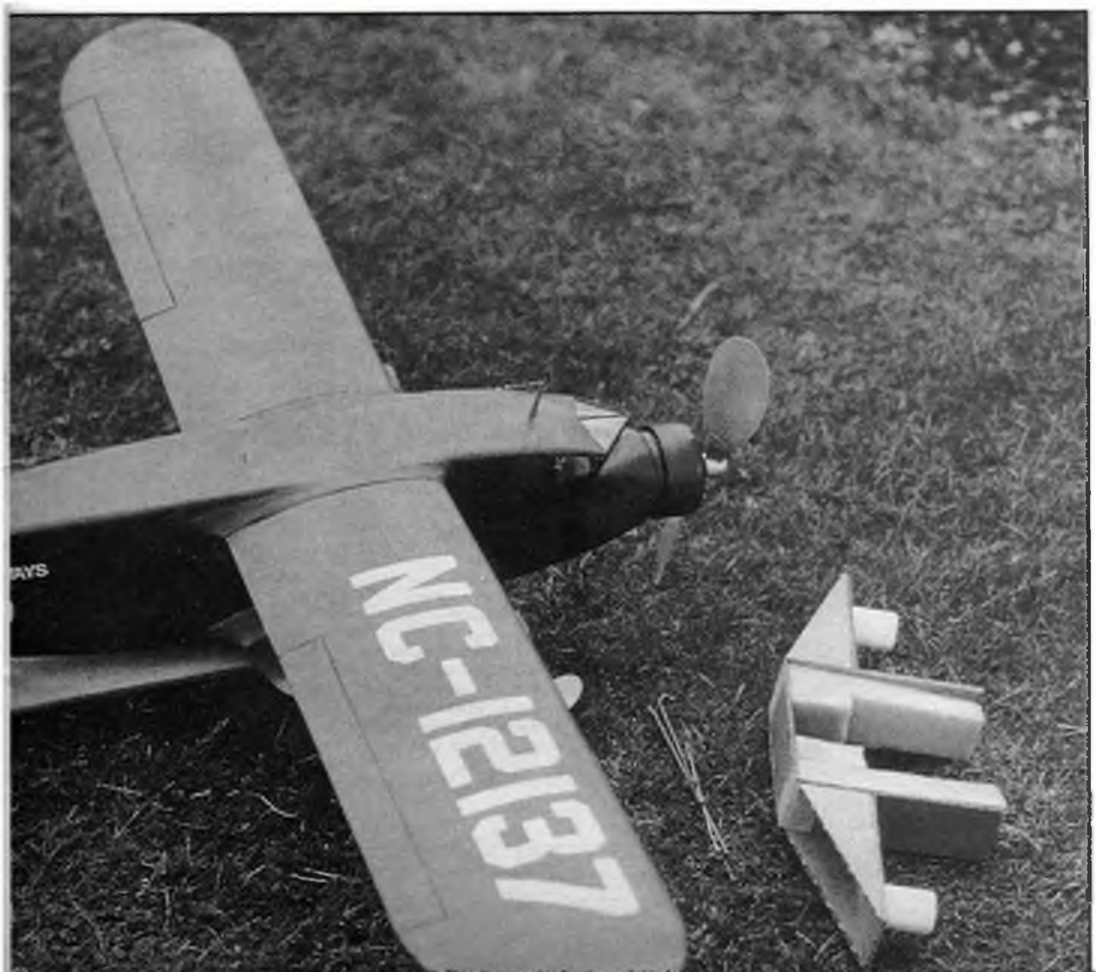
It is early days yet, but those of you who plan your building schedule such that the dope is drying on the morning of the Nats may like to make a note . . .

(For latest news on the availability of RAF Barkston Heath see this month's Hangar Doors. GC).



SCALE MATTERS
PHOTO PAGES





Left-hand column, top: Ian Harwood's attractive DH 53 Humming Bird, Telco Turbotank powered, was seen at Vintage Weekend. There's an interesting tale to tell about DH 53 tailplanes - one day we will! Centre: A spot of work at the Nats - Mike Hetherington and his remarkable rubber-powered Fokker D8. Surely that's not an alcoholic beverage on the table? Bottom: Robin James with a lovely twin CO2 Beaufighter. All-foam construction. Where else but Old Warden - look at that windsock... Above left: Paul Briggs displays his fine Bleriot, winner of the Model Flyer Trophy at the Nationals. Above right: The missing models - here are the Stearman and ABC Robin built by Mike Holloway two Scale Weekend craft which were captioned, sans picture, in our Scale Weekend report! Dart and dieselized Pee Wee powered respectively. Middle left: A familiar team - Mick and Margaret Staples with Avro Avian Monoplane. Middle right: DH Moth - in Metal Moth yellow and black scheme - is from a DB Models kit; seen at Old Warden last year. Main picture: Superb Stinson Tri-Motor in American Airways colours is the work of Barry Hetherington. Model flew well at the Nationals and was unlucky to collide with a car, causing damage and resultant hectic overnight repair work before a splendid second-place flight in Rubber Scale.

FREE FLIGHT SCENE

with Dave Hipperson

Eurostile F1B by Ivan Taylor

A few years ago Ivan became very successful with the high aspect ratio, thrustline-through-the-CG, 'Pig' layout favoured by the French. It was such designs that placed him a very respectable 11th at his first World Champs visit in '83 (that was the one in Australia) and got him to the top of the Trials in '85, and hence to Livno. However, before that Championships he changed his approach somewhat, adopting the layout featured here, so Yugoslavia was early days for the model. Happily, some of the style of those original French designs still exists. The model is flown right/left with no auto-rudder so a great deal of right thrust is necessary for the power turn. A safe trim emerges but Ivan's experiments have shown an even better one if the usual pattern of warps is reversed. Hence these models sport washout on the right hand tip (starboard) - indeed, an early mark of the series, the subject of this drawing, uses 1mm wash-in on the port tip as well! Incidentally, this model is also the heaviest with a wing of 87 grams and an AUW well over the 'necessary' but it climbs the best of all - particularly during those first few very important seconds. Ivan plans to tinker with the other models to see if he can get them to produce a similar pattern.

CGs have been shifted about during development with little effect on handling or performance when using anything between 55% and 70%. Remember that VIT is always there to compensate on the first part of the climb so it is possible to experiment without looping all over the sky. The CG position could be expected more to effect glide stability.

The wing construction is unusual but very straightforward. Medium weight quarter grained balsa (not super light) is used - essential with such a very thin section, and the four planks are chamfered slightly as they are cut. With care this chamfering can be so arranged that the planks follow the undercamber curve when glued edge to edge. This saves considerable work. As balsa cement is used as the adhesive the panels are clamped and pinned securely while drying so that they don't warp; Ivan reckons to leave them a week to dry properly despite the quite modest contact areas involved.

When dry the work to do on the bottom surface is minimal - it is just sanded with a suitably contoured template. The top side is razor planed down and finished in the same manner, again with careful reference to the template for correct final section thicknesses and shape. When first embarking upon this method Ivan was lucky enough to be able to use some very high quality balsa obtained for him by his flying mate Ian Allen who was well connected with Doc Mathews in the States. Doc sent over some very good Sig balsa; but Ivan is quick to point out that suitable wood is usually available in the UK - it is just a case of searching the shops or being prepared to wait for some time if ordering by post.

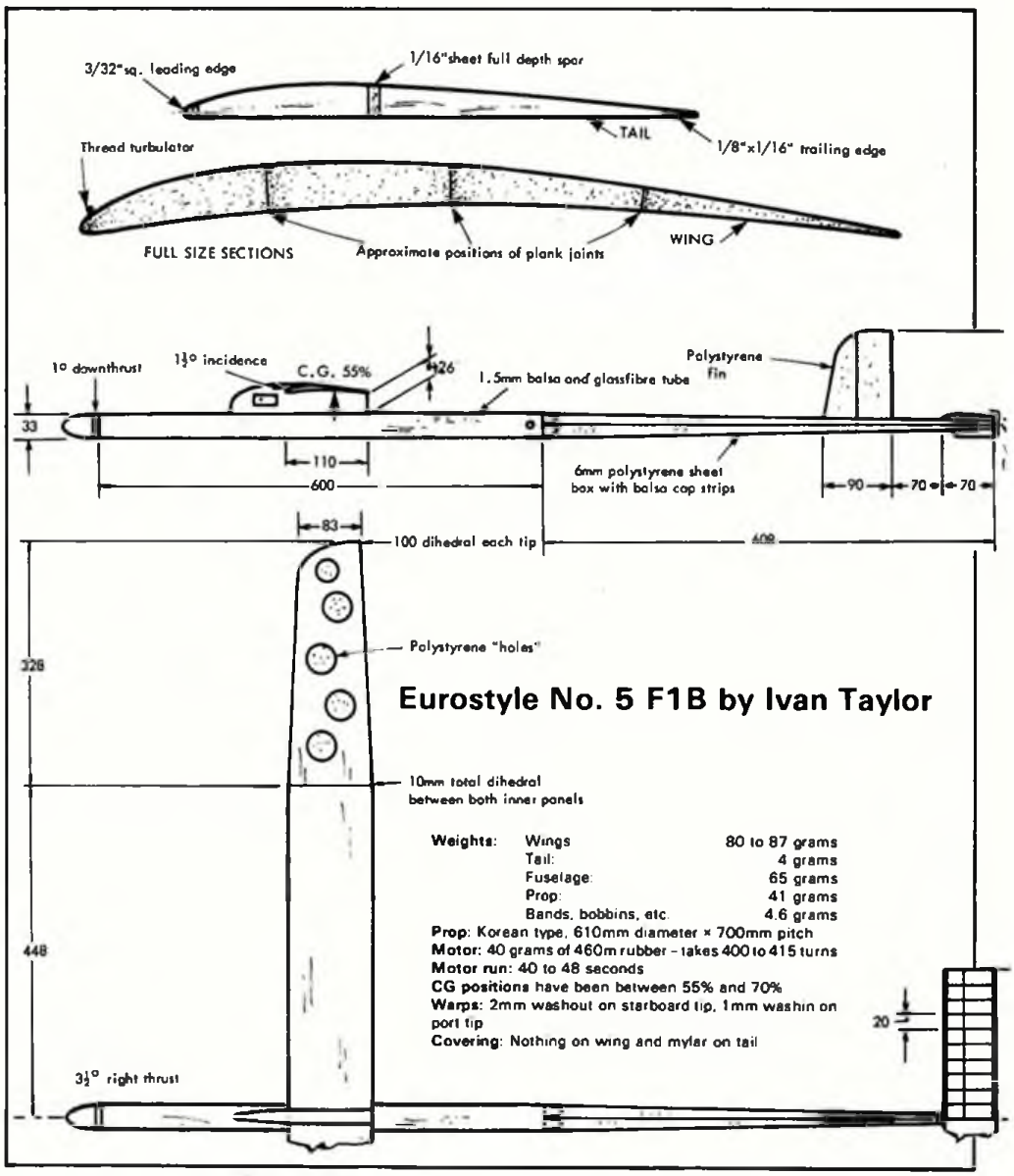
The polystyrene-filled holes in the tips, which are for lightening purposes are of course cut after the section is finished. The polystyrene can then be carved down after it has been stuck in. The finished wings are painted with Tufkote - they are never doped or tissued as dope will inevitably warp them. He has plans to experiment with all-polystyrene tips but as the models already glide very well at wing weights of 80 grams and more, this may actually prove counter-productive. He believes that the inertia of the wing, which tends to counter yaw forces, might be a positive *advantage* to glide stability. Doubtless this will upset the theorists who have always maintained that it is beneficial to have a light wing.

For the future an ultra-short-nose variant is being experimented with. The theory here is to reduce pitching moments of inertia. That light prop and tail help to achieve this but some problems of unreliability have been encountered on the way. The blades foul the wing on folding - when they don't, it glides very well. Ivan is also trying an instant start prop release but is wary of too much complication as such things can give trouble. From a class where performance is very close-matched, Ivan is emerging as someone positively that little bit ahead of the pack. His recent Trials place and then his win the following weekend would point to his steady development work beginning to pay off.

SMAE 6th Area Event: 28th September

The last in the series of Area contests can be quite an eventful occasion if the weather is kind. The Plugge Cup being finally decided on the individual performances in Open Rubber it only takes a calm day to bring the models out in large numbers. This year was one such with nearly a month of Indian Summer blessing both this and the other events reported in this issue.

Having been privy to Bristol & West's very fine club newsheet throughout the year I have been able to see just how much effort has been put in behind the scenes culminating in their exceptional Plugge score so far. I thought they had 'peaked' with their field of no less than a dozen power fliers at the 5th Area meeting where they narrow missed lifting the Keil



Trophy itself but did their points tally the world of good actually moving farther ahead of Birmingham who would usually have been expected to dominate the day. However, their trump card seems to have been kept for this 6th meeting. Another twelve from the club flew in Open Rubber and most of them reached the flyoff - that's when the fun started. A moderately calm, day at Merryfield dropped to dead still as the qualifiers launched into one gigantic standing thermal. No one used a fuse. Chris Chapman's winning flight left the drome and wasn't recovered until the next day but most other models - all of which glided off in different directions - were recovered. Bernard Aslett's actually returned half-way though the flight to land only 3/4 mile from the launch point. All this culminated in the sort of clean sweep that I can't remember ever having seen before; not just incredible times but the top five places, the Farrow Shield and Plugge Cup all in one shot. A very deserving finale for a genuine Free Flight 'club' rather than a collection of fliers with no geographical connection brought together solely for the gathering of Plugge points, which is more common nowadays.

The helpful weather allowed Audley, who was also at Merryfield and was let off Rubber duties, to take the SMAE Cup flying A/2 with a realistic flyoff, beating the two other qualifiers at Beaulieu where it was similarly calm but less thermally.

The pattern of weather on this day - which was quite obvious in advance too if one had looked at a barometric chart gave the three Southern venues excellent conditions but the rest of the country, although warm and dry, was very breezy. The Chilton versus Buskell ½A flyoff took place at Beaulieu, whereas those that would normally have been expected to have a good chance at Barkston were rather at odds with the wind as were the many that flew-off there in Rubber.

SMAE 6th Area Event

FIA Glider for SMAE (39 flew)

1	R. Audley	Bristol & West	12:30 + 5:53
2	M. Warren	Richmond	12:30 + 3:46
3	G. Madelin	Crookham	12:30 + 3:32

Open Rubber — No trophy (74 flew)

1	C. Chapman	Bristol & West	7:30 + 18.04
2	B. Aslett	Bristol & West	7:30 + 14:32
3	D. Greaves	Bristol & West	7:30 + 13:24
4	D. Wain	Bristol & West	7:30 + 11:01
5	A. Moorhouse	Bristol & West	7:30 + 9:19

1/2 A Power — No trophy (20 Flew)

1	A. Chilton	Crookham	10:00 + 3:23
2	P. Buskell	Crookham	10:00 + 2:42
3	H. Hutchins	East Grinstead	9:57

Team Rubber for Farrow Shield

1	Bristol & West	Chapman, Aslett, Wain	22:30 + 43.37
2	East Grinstead	Lee, Howick, Richardson	22:30 + 16:36
3	Anglia	Wells, Pavely, Neil	22:30 + 15:07

Final Plugge positions

1	Bristol & West	1407 points
2	Anglia	1296
3	Birmingham	1244
4	Biggles	1130
5	Vikings	775
6	Crookham	741
7	North Yorks	521
8	Falcons	509
9	Morley	482
10	East Grinstead	475

Top: Ivan Taylor holds a Eurostile variant without wingtip lightening holes. Below left: The Ted Evans winner this time around was John O'Donnell. Here Tony Cordes holds John's model in the fly-off. Below right: A worthy second in the same event was Peter Michel's beautiful Spirit of '36. Mike Kemp looks justifiably concerned at the lack of winding tube!

Midland Fly For Fun Day, Barkston Heath, 12th October

With rather more formally-run events than its title might suggest this day offered a welcome day's flying for those no longer in contention in the Trials. Seemingly never really warm, despite the generally settled pattern of weather all over the country, Barkston lived up to its reputation and stayed misty and quite chilly for the first few hours before a muggy, occasionally sunny and quite calm afternoon developed into a cool, overcast evening.

Glider fliers were conspicuous by their absence - presumably more of them thought they were still in with a chance at Sculthorpe. John Cutherbert's A/1 flying and his young daughter's training flights gave much help to the Coupe d'Hiver flyers who in the calm could jump the clearly marked thermals with ease; but this didn't help sufficiently to save both the eventual top two in Vintage from having to re-enter their Lanzos after their first flights; erratic glide stalls seemed to be the main problem. Certainly the advertised 'fun' element seemed to attract quite a number of SAM 35 fliers for a day's sport, and of course this swelled the Vintage entries as well.

Activity in Coupe d'Hiver was brisk all day with regular showers of models launched into the clearly marked lift. Those involved in other classes had a tougher time when they tried to fly these smaller events in the much cooler air of later. Davitt and Hipperson delayed their starts until nearly too late but managed to max out whereas Strachan dropped, as did Dave Yates in A/1. However the smooth and nearly liftless conditions towards the end were still good enough for Dave's total to place.

Flyoffs were necessary in everything and by this time it was chilly overcast and blowing around 10mph from the East - quite an unusual direction for this venue. First Vintage and A/1 were run off together. Peers' Lanzo was quickly followed by Hipperson's similar model. Both appeared to have had their earlier glide stalls trimmed out somewhat over enthusiastically. Neither model climbed nor glided as well as usual but their flights were enough to beat O'Donnell's Challenger - but not by much. There was a contretemps over the glider result when a protest concerning Bird's tow-line length was upheld and his scores were struck from the results after he had qualified for the flyoff. This let Dave Yates in to third place.

The other flyoff period concerned CDH and Slow Open Power. This latter class attracted as many entries as in any other category that day, thanks to all those keen supporters from the North. We certainly seem to have got the rules right. Phil Ball, who seems to be taking to power of late, got his PAW 19 model right in the groove after some meticulous trimming.

in the fog earlier in the day. His flyoff win was thanks to this approach to the fine trimming of the pattern - a beautiful flight from a simple model.

In Cd'H Dixon launched first, his fast-climbing model suggesting lift that probably wasn't there. Davitt and Carter were prompted to launch as well but it was only John's model that held on the glide. Hipperson flew much later in neutral air but with the advantage of a more freshly wound motor. Altogether these flyoffs were a good finale and a close test under the heavy overcast. The organisation then topped a good day with trophies, plaques and bottles of wine for the winners. Fun indeed, but a contest too.

Barkston Heath, 12th October
Midland Fly For Fun Event:

Results

A/1 Glider (8 flew)

1	J. Cuthbert	10.00 + 2.30	
2	J. Foster	10.00 + 1.48	
3	D. Yates	9.40	

Coupe d'Hiver (14 flew)

1	J. Carter	10.00 + 2.32	
2	D. Hipperson	10.00 + 2.10	
3	S. Dixon	10.00 + 2.08	
4	I. Davitt	10.00 + 2.06	

Vintage (13 flew)

1	R. Peers	9.00 + 4.30	Lanzo Stick
2	D. Hipperson	9.00 + 4.26	Lanzo Stick
3	J. O'Donnell	9.00 + 4.20	Challenger
4	C. Strachan	9.00 + 3.41	Lanzo Stick

Slow Open Power (14 flew)

1	P. Ball	9.00 + 4.24
2	L. Rogers	9.00 + 4.02
3	T. Hall	9.00 + 3.22

The modern F1B approach is illustrated here by Steve Marriot. The delay prop deploys after a hard throw. Ron Pollard's model, visible in the background, is away in good air.

Ted Evans Trophy Day, Barkston Heath, 1st November

Partially back in the capable hands of Bob Wells and Jessica Nash this year's event had the benefit of Chris Hawke's organisational help as well! The weather ran true to form - this was the only really flyable Sunday for a month either side - although there was a chilly breeze to start with. This died away quickly but gave enough cause for concern to set a 2:30 max which wasn't nearly enough for the modern FIBs, so rather too many qualified for the flyoff.

In Vintage it was easy to weed some out on the last of their three rounds (FIB was flown to four rounds) when it had become almost flat calm, allowing the max to be stepped up to 3:30. Those that got away early on this flight - two of the three pre-'51 rule own designs and numerous others - had positive help in the air. Thereafter the round was flat calm and very dead. Strachan suffered dropped flights in both Vintage classes as did Michel and Hipperson with their lightweight Lanzos. The latters flight was most mysterious, the model positively diving on the glide after a very flat climb. Hardly symptomatic of what could have only been the lightest of sink. The reason was discovered days later when on routine repairs Hipperson discovered that he had been using the wrong fuselage - all day! The check flight and the first two 'officials' had been in strong enough lift to counter the effects of the gross under-elevation! Meanwhile J.O'D, after a D/T failure on his Tomy equipped model (he didn't wind it up

enough because of a distraction whilst preparing) returned late in the round and had to fly in the dead air. His model was behaving itself impecably this time and the 3½ minutes looked a mere formality.

As the flyoffs approached the drift could be just felt again but at some 180 degrees reversed. After a control move the fun began again, providing much entertainment for the large gallery. No one had qualified in 4oz Wakefield and the three in Pre '51 were all own designs. Of these Peter Michel's was closest to the spirit of the event. He must be commended for his fine display of return gear perfection on his very neat yellow Spirit of '36. So unlucky last year, Peter was away first this time and looked most impressive. Almost immediately O'Donnell followed; he must have outclimbed Pete by a staggering thirty per cent. All this was in a cool (40°F) almost dead calm evening under a clear sky, the only obstruction to the sun being the hangar on the South side of the drome. Phil Ball's flight was very similar to that of last year - the model stalling as it came into wind this first time and never really regaining its climb speed. O'Donnell's and Michel's models could clearly be seen at fair altitude. It was nearly eight minutes before John's was down.

What should have been a single flight formality in FIB became rather different. Ivan Taylor's launch early on must have found some of O'Donnells good air as the glide went on and on, beating Pollard's flight, taken a few minutes later, by four seconds. Third place was still open. Peers had an early flight that had looked respectable but was down at a little over three minutes. George Foster on the other hand had picked better air but bad rubber. He risked it but he was down in little over three minutes as well. They tied at 3:13. A refly was necessary. Launching fairly well apart and not even at exactly the same moment the models were away again. Now Peers acquired something of a name for mid-air collisions at the London Gala, managing two when it benefited him. It was incredible that he was to have the same thing happen again. In no way could we have been blamed as Foster's model climbed up into his circle; they collided and locked together like a couple of Indoor models. This bundle then descended, still under power and gently enough for them to be useable for yet another refly! It was now getting decidedly late, nearly dark and very cold.

Peers flew quickly - this was all in the same fifteen-minute flyoff period of course, so time was very tight. Peers' flight didn't look very encouraging so Foster had only a couple of minutes to beat and not much more than that in which to get ready. He was running short of motors, presumably having not fully recovered from his Trials victory of the previous week. After some frantic activity he launched just before the hooter. What we then witnessed was a perfect illustration of how impossible it is to *ever* talk about still air. After a cold day when any lift had been light at best (even during the warmest part of the day) Foster's model was now flying only moments before dark. It was appreciably assisted on the climb and then held on the glide to clock an astonishing 4:42. This surely made up for gaining only third place; it will certainly be the flight that everyone remembers from the finale. It left Chris Hawke, back in the hot seat for the prizegiving, sounding as if he was about to award Foster a special prize for the longest official flight! Once again this event had provided great variety and much excitement - I can remember no other that is regularly so well run nor so well received. Long may it continue.

Top: Laurie Burrows assists Brian Horsley with his Vansteed at the Ted Evans Memorial Day. Bottom: Gerry Pink takes a break from encouraging his clubmates (for a change) and gets down to flying his F1B.

Ted Evans Trophy Results

Pre '37 (4oz Wakefields): 7 flew

1	C. Strachan	7:50	(Copland)
2	D. Hipperson	7:49	(Lanzo)
3	P. Michel	7:45	(Lanzo)

Pre '51 (8oz Wakefields) and Own Designs: 20 flew

1	J. O'Donnell	8:30 + 7:41	(O/D)
2	P. Michel	8:30 + 5:19	(O/D)
3	P. Ball	8:30 + 4:01	(O/D)

F1B Wakefield: 25 flew

1	I. Taylor	10:00 + 4:02
2	R. Pollard	10:00 + 3:58
3	G. Foster	10:00 + 3:13 + 4:42
4	R. Peers	10:00 + 3:13 + 2:03
5	B. Martin	10:00 + 2:59
6	D. Neil	10:00 + 2:48
7	N. Lee	10:00 + 2:34

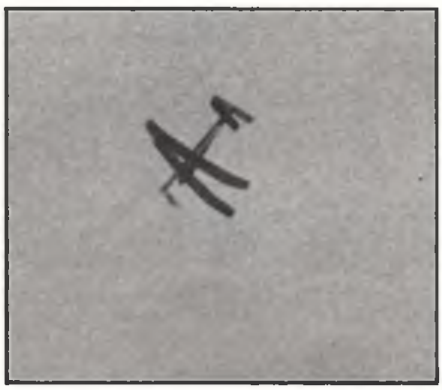
The best contest of '86

You won't catch us admitting this too often but just occasionally pieces appearing in print, which inevitably have involved some time and thought it their production and are eagerly expected to initiate all manner of feedback, fall flat on their face. You may recall a provocative piece of mine in Viewpoint way back in the September '85 issue! Alongside my expressed concern over the future of domestic Free Flight contests I offered a prize for contest organisation. I earmarked my share of that year's Team Travel fund to the director of the best SMAE contest day of '86, plus the award of two tickets to the SMAE prizegiving. We were totally underwhelmed with correspondence; no one rang - in fact there was dead silence. Since then only a handful of people have mentioned the offer, even in passing conversation. I thought I might at least get a bit of leg pulling. Are you serious? You idiot! That sort of thing; but nothing. I don't think it had them exactly queuing for a chance to run a contest either - I thought it might have helped the FFTC recruit volunteers, but no.

Of course, my aim was to improve the quality of SMAE contests for the year by introducing some incentive to CDs to do a better job than usual. Apart from two outstanding cases, which I will come to later, as far as raising the standard is concerned I am sad to say we saw no sign of it. If anything there was a further general slackening. It seems incredible with all those contest flyers out there, and there are still one heck of a number of them, more can't turn their 'competitive' hands to making a really good job of running a contest just once a year and *not* flying in it. Our sport will eventually be just as good to us as we are to it. If it fades away it will be because *you* let it. If contests don't excite you like they used to it's because *you* don't want them to anymore. Too many of you are sitting back letting the competitive side slide downhill, moaning only when the results of your apathy actually inconvenience you at a contest. That's too late.

This having been said, there was a winner and a very worthy one too. It was only a pity that there were not more to run him close. The winner of the Contest Director prize (by quite a margin) was John Hook for his handling of the first day of the Trials at Beaulieu. Of course he was CD for the second day too but the competition was judgegd on any one day (perhaps by rights he should have been judged first and second). The effort and planning he had put into the event was strikingly evident. Score boards and leader boards were always up to date; there were clear signals and timings and moves of control were positive when they became necessary. What with free drinks on such a stiflingly hot day and calm control during the difficulties with the cramped site under the added stress that always seems to accompany Trials events, it was a fine achievement. John directed the contest - a rare quality and one which we should all thank him for if we ever want him to do it again.

Before we leave the subject it would be unfair not to mention the clear runner-up; Dave Greaves, for his running of the FAI Day at the SMAE Easter Meeting on Salisbury Plain. He too had his share of awkward moments but at no time was there any dithering. His scoop of course was to have borrowed the three appropriate SMAE trophies which could then be shown and awarded at the end of the day. A unique finishing touch to a well-run contest.



Also from the Ted Evans Memorial meeting is this rare shot of colliding F1Bs - Peers' model locked into Foster's on the second flyoff re-fly. Both descended without damage and were reflown spectacularly.

Rubber supply - we could be in trouble...

It is now a well known part of aeromodelling history that the changing techniques of the wine growers of France and Italy led to the demise of our much loved Pirelli rubber strip. Now the story is repeating itself although this time we are to suffer the fringe effects of a change in technology in another sport. What we know as FAI rubber strip (or to be completely accurate, the sheet from which it is cut) is manufactured almost exclusively for cutting up into 1mm square thread used for winding golf-balls. Incidentally, Champion, FAI and Sig rubber all come from the same factory. When one considers that there are probably more golf clubs in Britain alone than there are aeromodellers in Europe who fly rubber models one begins to realise how their quantities shadow our demands into insignificance. This hasn't been a problem up until now but some bright spark in the USA discovered not so long ago that golf balls could be made more easily, and would perform better, if constructed from solid rather than wound rubber. This has caught on worldwide and now the vast majority of golf balls are of the solid type. The demand for the rubber thread has nosedived.

Now I got into a bit of trouble for enthusing so positively a year or so ago that all FAI Supplies rubber was of a very consistant quality. Some rogue batches got through and those unlucky enough to purchase some let me know very quickly how bad it was. To be fair, examples were very few and far between. Now, sadly, they are likely to be rather more common. The rubber currently coming into the country is actually different. At its best it's as good as the old stuff - although a completely different colour - but at its worst it is absolutely terrible. The reasons are all tied up with the golf ball business.

Ed Dolby of FAI Model Supply in America has sent over a press release intended to explain the situation and to allay some of the nervousness. It must be said that it was thanks to our UK suppliers contacting him with stories of bad batches of rubber that he was motivated to do this. The material the rubber is made from - almost entirely synthetic - has changed. Because of the solid golf balls, demand for the rubber sheet has reduced by so much that the manufactuers are having to buy their raw materials in much smaller quantities from different suppliers. By chance these different sources are also supplying slightly different compounds. They don't suit us so well but they are no problem for the other uses of the rubber sheet. To make matters worse the curing process is now being done in micro-wave ovens, so as the sheet is cured in rolled-up form the curing varies a little with depth through the roll. At certain depths it cures perfectly for our application; elsewhere it doesn't. Hence the product is further worsened by patchy curing.

My testing over the past few months has revealed massive variations in quality. Even the tone of the rubber varies but this isn't a very good guide to quality either - I wish it was. The worst I have come across was some 35% down on energy return compared to the consistent, nearly black rubber of earlier times. The best I have tested is close to the old quality but is certainly no better. Very useable though. These variations seem to fall into line with Ed Dolby's own tests although he makes a suggestion that we can improve matters by re-arranging the prop/power combination, which I am afraid isn't very scientific. Good rubber is good rubber and bad is bad - it doesn't matter what shape you make it! That aside, Ed does point out that we aren't ageing our rubber anymore; a process that used to be popular. He suggests that this might improve it but he doesn't say by how much or for how long, which would suggest he hasn't actually tried it and doesn't know! However, if microwave curing at the factory is a problem then one wonders if a domestic appliance might be useful for fast curing small batches. There could be room for experimentation here but for goodness sake be careful. Small quantities and short durations first! Heaven knows how long it would take to remove the smell or burnt rubber from your kitchen appliance if you

New Season Quiz

Here are some teasers to give your brain and memory some exercise before the new season. Although many of the answers can be found by rummaging through back copies of *Aeromodeller*, that may take you longer than you think after you have been side-tracked by pieces you had forgotten. A year's subscription to this magazine will be given to the first five names drawn out with all-correct answers. What is more likely is that we will have to choose the five with the highest score as some of these questions are not easy.

Points to be awarded appear in brackets.

1 a) On which year was an FAI Free Flight event first incorporated in the British Nationals? (2)
b) What class was it for? (2)
c) On which aerodrome was it run? (2)
d) Who gave the award? (It wasn't an official SMAE event). (2)
e) Who won it? (2)

2 Who was the first Free Flight Technical Committee Chairman? (5)

3 Name five other chairmen since (2 each)

4 Who is this? See photo 1 (5)

5 Name six previous *Aeromodeller* Editors *in order*. (2 each)

6 Only three people have ever won the SMAE Senior Championship Trophy more than once; Phil Ball this year and in '83.
a) Who are the other two? (2 each)
b) How many times do their names appear on the Trophy? (10)

7 What are the two trophies awarded annually by the SMAE for 1/2A Power? (2 each)

Your quiz photos: above is Photo 1, with photo 2 at right (see questions 4 and 11 respectively). An Aeromodeller subscription awaits the winner - best of luck!

8 What is the SMAE rule governing glider towline crosses? (5)

9 a) Who were the last British fliers to win their respective World Championship classes: Glider, Rubber, Power? (2 each)
b) In what years did they win? (2 each)

10 Which rubber motor would give the flattest unwinding torque curve - a short fat one or a long thin one? (5)

11 Who is this? See photo 2. (5)

12 When was the first World Champs for Indoor Microfilm models held? (5)

13 To whom does the SMAE award the Bill Rockall Memorial Trophy? (5)

All answers to be received at the editorial office by first post on February 9th 1987. Editorial decisions regarding scoring will be final - and no ASP staff will be allowed to enter!

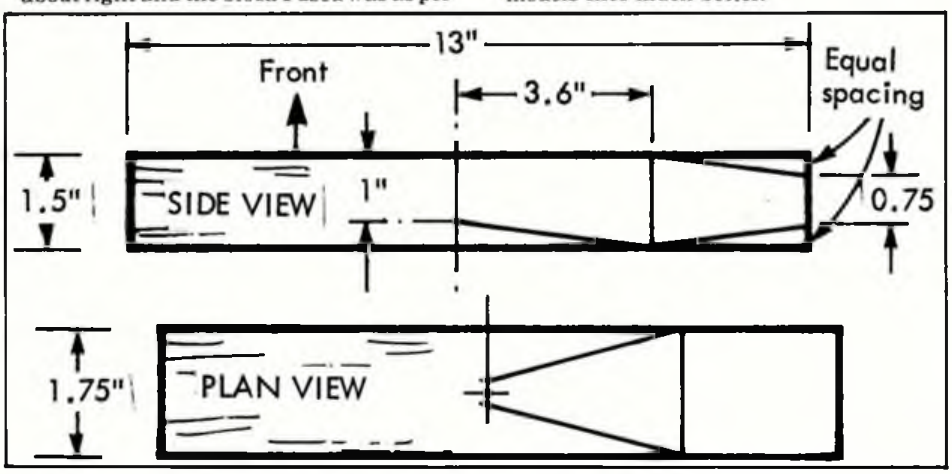
overdid it (I hope you're not letting your wives read this).

As for age curing - the traditional way - the problem isn't so acute for the Americans where the rubber is cheaper and incomes much higher. Who in this country could possibly afford to 'lay down' enough now and every year to cater for his needs in five to ten years time, especially when the stuff might still be dreadful when eventually it is used. A big gamble. That brings me on to the current UK supply situation. The rubber we get from now on is going to be variable. The UK importers are well aware of the problems this will inevitably bring.

They too would like to be able to guarantee the quality but obviously they can't. Your best bet is to be very cautious. Buy one box at a time - test it as soon as you receive it and if it is OK try to buy from the same batch. Also remember that even though the current crisis may pass - Ed Dolby assures us that he is looking for other suppliers and is trying to get the current one to adjust his formula - it may actually worsen. This may not only be the best rubber we are likely to get, it might actually be the last. Encouraging, isn't it!

Senator prop block

One of the items causing the most correspondence over the past year was the mere publication in this column of a picture of my Senator. Many have since asked for the prop block dimensions. On the original plan the side view of the blades is shown and of course the diameter, thirteen inches is known from this. No other information is given. My assumption was that 20in. pitch would be about right and the block I used was as per the illustration. This arrangement fades the pitch slightly to the tip and the centre as per both modern day thinking and, incidentally, old fashioned practice! While on the subject, all potential builders should be reminded that if they make a very light prop assembly they will require an incredibly light tail and rear fuselage. If you are ever going to go a little bit overweight on the prop on any model then this is the one - with a nice forward CG the models flies much better.



MIND THE LINES

with Ron Prentice

Heroes and villains?

Some months ago I wrote a piece about the amazing Jim Walker and the incredible feats he performed with his Fireball - the first real control line model (or so I thought). I wrote in good faith, believing that as Walker had taken out his famous patent in December 1940, he alone was responsible for the 'U' control method now almost universal today. But it seems I was quite wrong! During my years away from the aeromodelling scene things had happened about which I was not aware.

I have been taken to task on the subject by John Berryman of Bristol, who sent me a letter pointing out that in the mid 1950s, the U.S. District Court, District of California, Central Division, ruled that all Jim Walker's patents were void and invalid. The judge declared that the father of control line flying was Oba St. Clair of Oregon, from whom Walker stole the ideas! In the course of the hearing it was also declared by the Court that St. Clair had pioneered single-line flying (with a fishing rod) in 1936. Victor Stanzel, whom I also mentioned in the article, does not appear to have been referred to. Both the AMA and the Smithsonian Institute accept the validity of the Court's ruling

Thanks John, for your informative letter; I stand corrected. However, in my opinion there are no villains in the story. Jim Walker is certainly a hero in my eyes and I'm sure that most control line enthusiasts feel the same. Whether Jim did or didn't use Oba St. Clair's idea for controlling models is really not that important. The good things Jim did for the hobby, the design and development work, the showmanship and so on make Jim Walker a hero.

As a matter of fact, Oba St. Clair is alive and well, as far as I know, and is resident in Eugene, Oregon. Another of his inventions is a control handle that allows the aircraft to do spins! The handle is a converted 'U-Reely' that automatically winds in when the line tension decreases. St. Clair loops the aeroplane until it stalls overhead. He holds 'up' control as the reel automatically winds in the lines and the plane then does a flat spin. When the model gets close to the ground, he gives a little 'down', the plane levels off and picks up speed. Oba designed the handle in 1949 and claims it has saved him at least a thousand crashes.

That man again...

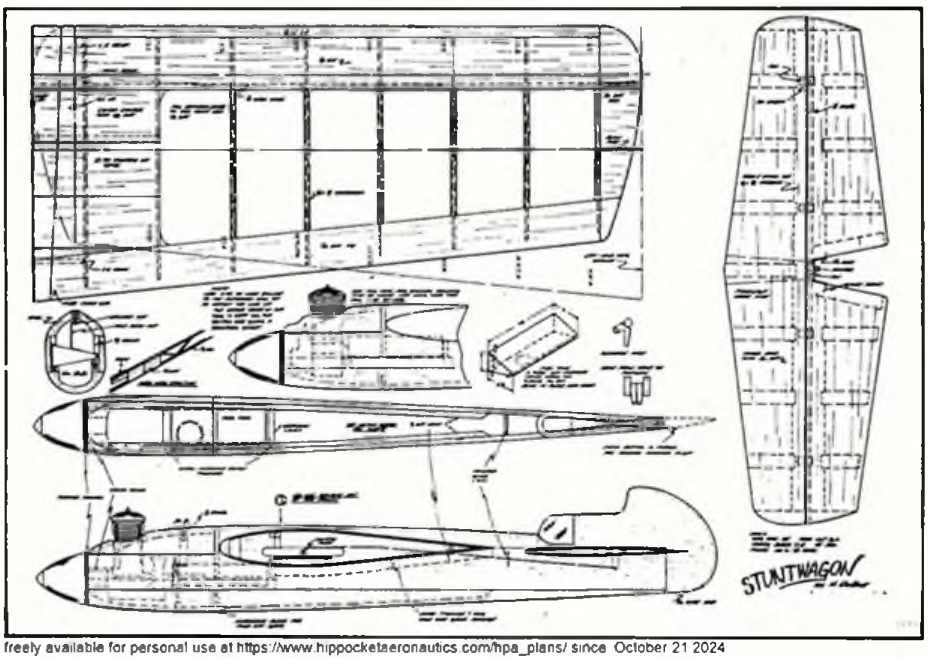
Those readers who are SAM 35 members will by now be aware that I have relinquished the post of Control Line Competition secretary and that the job has been taken over by John Perry. John is a long time control line flyer and is also a member of the Three Kings Club as well as SAM 35. He is a large-model enthusiast and likes to fly his 1949-designed Taurus on 100ft lines when he can find the space. He was pictured with me on the front cover of the November issue of *Aeromodeller*, holding his Henry J. Nicholls designed Senior Monitor powered by a Fox 45, which was last month's Plans Service offering. John does on occasion make 'normal' size models, a fine example being his Fran McElwee Defender shown in the photograph. This 41in. stunter, which appeared in the 1949 Model Aviation Magazine was originally deigned for the 5cc Drone diesel, but John uses a PAW 29. The model is a good performer, but the fuel tank is not big enough to allow the whole of the vintage stunt schedule to be flown.

de Bolted?

Some months ago I mentioned that I was hoping to feature Harold de Bolt, who was one of the early pioneers of control line flying in the States. Unfortunately my letters to him have been returned as 'not known at this address' and in spite of sending another c/o Model Builder Magazine, for whom he writes, I still have not been able to make contact with him. However, I do know that he was born in 1919 and started modelling at the very young age of ten years. In '40 and '41 he was the New York State Flight Champion before serving for 2 1/2 years in the Navy Air Force. Much of his early C/L flying was carried out at the Patuxent Naval Air Test Centre in Maryland, where the flight circles were right outside the barracks door. When the war ended he started the de Bolt Model Engineering Company (DMECO) and began manufacturing kits which were to be famous for many years.

One of the first, produced in 1945, was the Bipe. The original Bipe was 22 1/2in. span, had a wing area of 200sq. ins. and a flat-bottomed airfoil section. In 1948 an updated version of the Bipe was introduced. This featured symmetrical aerofoils and was capable of inverted flight and some other manoevures. Later the same year the Super Bipe was produced. This was an enlarged, improved version and the ultimate in the Biplane line; with side mounted engine and symmetrical sections it was capable of most of the stunt schedule. This is the Bipe which Henry J. Nicholls kitted under licence and which I am producing in my range of vintage control line models.

In 1948 DMECO also brought out what was one of the first 'pure' stunt models to be manufactured - the Stuntwagon. This airplane was a fast, fine flyer. I made one in 1948, having obtained both kit and the Attwood Champion engine I powered it with from a pen friend in exchange for two British diesels. I have never forgotten the



thrill of flying this formidable machine. To watch a Stuntwagon flight was an exhilarating experience, difficult to describe in this day and age. From the moment of take off - the drop-off undercarriage falling away almost instantly - you knew it was no normal model. On 70ft lines it was obviously really moving around the circle. The loads on the 58in. wing must have been terrific bearing in mind the speed of 100 mph plus, and the model's 'end to end' turning radius. It certainly sounded that way, as the wing covering roared with vibration.

Later the basic Stuntwagon evolved into two other kits, the Stuntwagon 30 for 19-35 size motors and the tiny Infantwagon, specially designed for the K&B .02 glow motor.

Even today, when I fly my present Stuntwagon which is powered by a Merco 61, I get the same thrill as I used to when I was sixteen years old. And when the motor stops and you glide the model down to a floating touchdown, I still get the same pumping heart, my right arm quivering with the pull of the stunter.

Other kits produced around this time were the Grumman FM-1 Super Wildcat - a near scale stunter, All American Senior and Junior Stunters (1950), Sportwing (1949), DMECO Special Speed model, Speedstar (1/2A T/R), Continental (Goodyear type stunter) and, of course, the famous Speedwagon range of record breaking speed models. We owe a great deal to this corn-cob-pipe-smoking designer and flyer! If anyone would like to build any of the aircraft mentioned above, full size plans can be obtained from: Mr. Fran Ptaszkiewicz, 23 Marlee Drive, Tonawanda, New York 14150, USA.

Next time

Veco Chief, Warrior, Thunderbird, Mars, Pow-Wow, Hi-Boy, Skyscraper - if these models are familiar to you, then you must know of their designer, Bob Palmer. Over the last twelve months or so, I have been corresponding with this famous pioneer control line flyer to whom we are indebted for the invention of wing flaps.

At my request Bob has given me details of his start in aeromodelling and his beginnings in control line. In his letter he mentions other well known names, such as J.C. (Madman) Yates and his star pupil Dave Slagle who won the U.S. Nationals Championships in 1947 at the age of twelve years.

You can read all about Bob's modelling career in my next column.

Andy Brough adds:

During the (see last month's column) Rubery Hill do on the Eastern seaboard of the USA, there was a Midge Comp in progress, the results of which were to be assessed with ours at Rubery - the world's first postal speed competition. This state of affairs was engineered by Don Burgess

Heading photo: John Perry's PAW 29 powered Defender (see 'That man again'). This page, top: A very attractive biplane designed and built by Gordon Rae in 1947. Cooling fins of the Mills 1.3 appear to have been reworked; note also the Tekni-flo hydulignum prop. Centre: 'The Devil Bug?' you asked, after we mentioned it recently. Here's Laurie Glover with his Bug and better-known Devil Bat at Vintage Weekend. Both designs date from 1950. Above: Also at Old Warden was 'Mr Fireball Trophy' himself. Mike Beach holds his Rick's Box Car Chief, Super Cyclone and all. Most stirring in flight...

Free-Flight Team Trials: from p.71

F1A			
1	Chris Edge	Crookham	2412
2	Gary Madelin	Crookham	2395
3	Bill Colledge	Birmingham	2389
Reserve			
	Mike Fantham	Richmond	2355
F1B			
1	George Foster	RAFMAA	2456
2	Ron Pollard	Tynemouth	2442
3	Ivan Taylor	Falcons	2429
Reserve:			
	Bernard Aslett	Swindon	2403
F1C			
1	Stafford Screen	Birmingham	2515
2	Roger Baggott	Birmingham	2505
3	Ray Monks	Birmingham	2490
Reserve:			
	Ken Faux	Freebird	2476

Footnote

A free-flight team at a World Championship is a highly visible site for company logos; track suits, tee-shirts and even model wings are all potentially good positions to get your product name in front of a lot of people; not only in competition free-flight, which has a significantly high proportion of technical professionals taking part, but also via the worldwide press coverage that arises from a major international event like this. If the possibility of sponsoring the 1987 British team, with its high degree of expertise and highly photogenic launches, interests you, write to the F/F Team Manager, SMAE, Kimberley House, Vaughan Way, Leicester LE1 4SE.

Pin your F1C hopes on Roger Baggott, Stafford Screen and Ray Monks, Birmingham MAC members all. Photos: Mike Fantham.

Top: A splendid period shot of Henry J. Nicholls' original Mercury Magnette. This stunt trainer from 1947 was powered by an ED Comp Special. Unfamiliar wing badges bear the legend 'SMAE Security'. Below: A nicely made Frog Vandiver, complete with manufacturer's insignia and Frog 180 diesel – the handiwork of Ray Gordon. How about a Frog prop instead of that Top Flite?

who is actually a member of the New Jersey Club although he lives in the Midlands (club trips are a bit expensive I'll bet!). Seriously though, Don had challenged our cousins to have a go at Midge speed, smalley diesels and all. The Americans, always ready to have a go, agreed, so at a school campus in Collingwood New Jersey the deed was done...

Stateside Midge Speed event

1	Blair Monagle	Webra Record	81.1mpg
2	Don Myers	Super Tigre 33	78.3
3	Jim Smith	AM 15	76.3
4	John Austin	PAW 1.49	63.8

So Blair would have come fifth in the combined results with Don seventh; well done guys! Of interest is the props they used; Grish (Tornado) 6 × 9 and 7 × 8s – all plastic, and in sizes not available in UK. How about bringing some back Don, after one of your club meetings?

Lastly, a phone call to the States also revealed interest in the Arkansas comp as well as notification of the intention of some enthusiasts to visit Old Warden next year. What more can we say...

BIG

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Your Commodore	~~£16.00~~	**£13.00**	☐	~~£21.50~~	**£17.20**	☐
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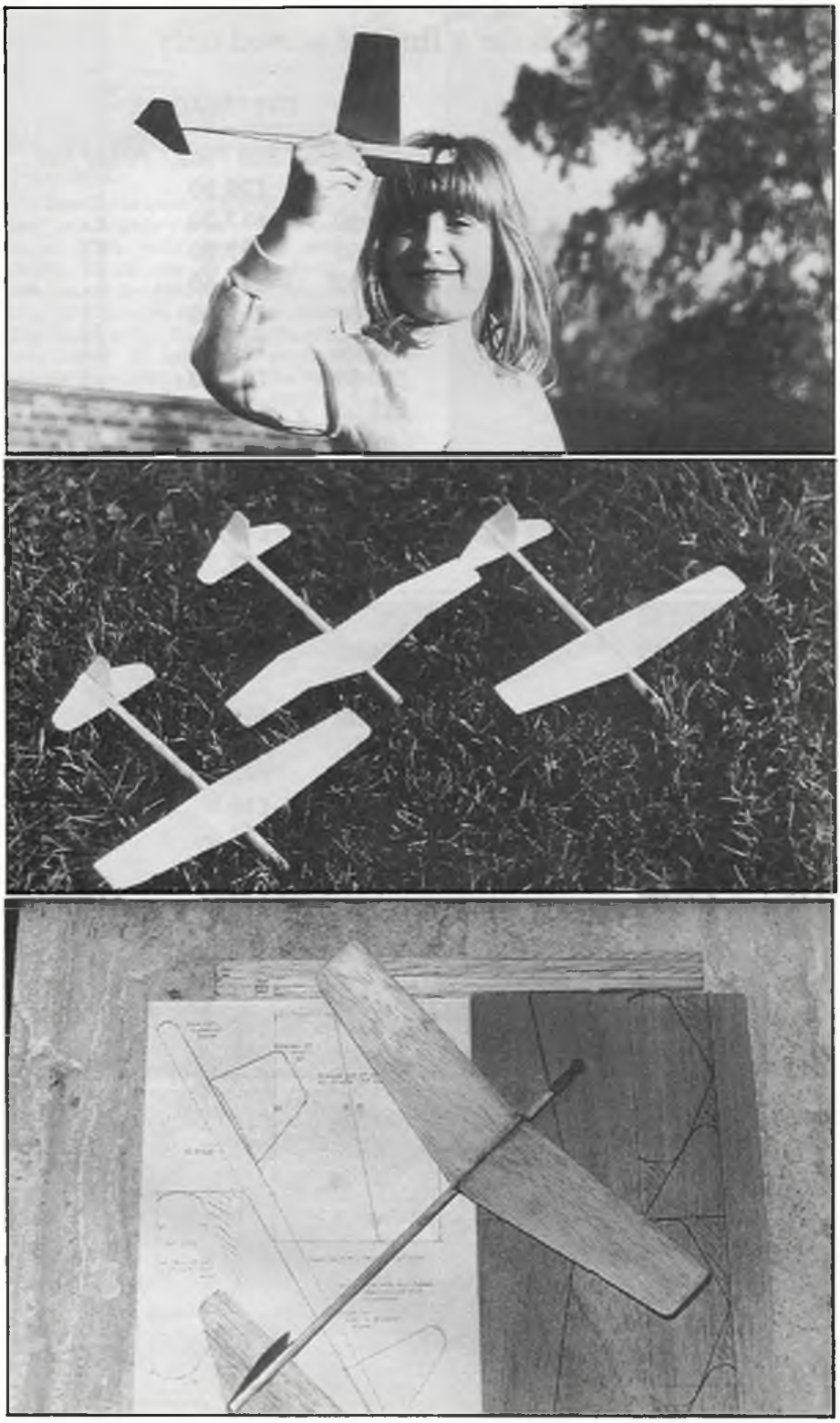
A FAMILY AFFAIR

Youngsters in the family? Looking for a school project? Richard Bail recommends the simple chuck glider



Top: Sarah Bail holds one of the Family Model series. Centre: A group of three, with (middle) an unsuccessful attempt at a gull-wing flier. Experimentation with such basic craft is straightforward, quick and fun. Above: Family Model is posed over original plan and marked-out balsa. Note fin glued to side of fuselage and sensible use of quarter-grain wood for wing and tail.

THE ORIGINAL IDEA was simple – make a chuck glider each for son and daughter. But then the thought 'Well, Simon's friend would like one and probably so would Sarah's and...' made the focus of the project 'how many could be made from the least amount of balsa'.

The result is a layout that enables you to cut six sets of wings from a single 1/8 × 4 × 36in. sheet, six tailplanes and fins from a 1/32 × 2 × 36in. sheet and six fuselages from two 36in. strips of 1/2 × 1/4in. hard balsa. In retrospect a fuselage strip of 1/2 × 1/8in. obechi or spruce bonded together would be better, especially for the younger 'chuckers' whose throws are not always what one expects.

The design uses the standard zero/zero incidence, courtesy of the parallel strip of the fuselage, and it flies OK with a straight LE to wing and tail. However, there is no reason why you can't use the same pieces with the wing changed to swept LE and straight TE; ditto the tailplane and fin. Thus if children want slightly different layouts to distinguish their own models the facility to change them at the building stage is there.

The models fly satisfactorily; that is, flights of fifteen to twenty seconds, with no treatment of the wood needed apart from provision of a simple sanded aerofoil on the wing. Application of sanding sealer, banana oil and so on should give improved performance. Longevity would improve with tissue cover to protect wing LE, and, taking a tip from the experts, reinforcing tail edges with thread (see Mick Page's articles in last September's *Aeromodeller*). For absolutely minimal outlay the scientifically curious flyer could try assorted experiments, such as:

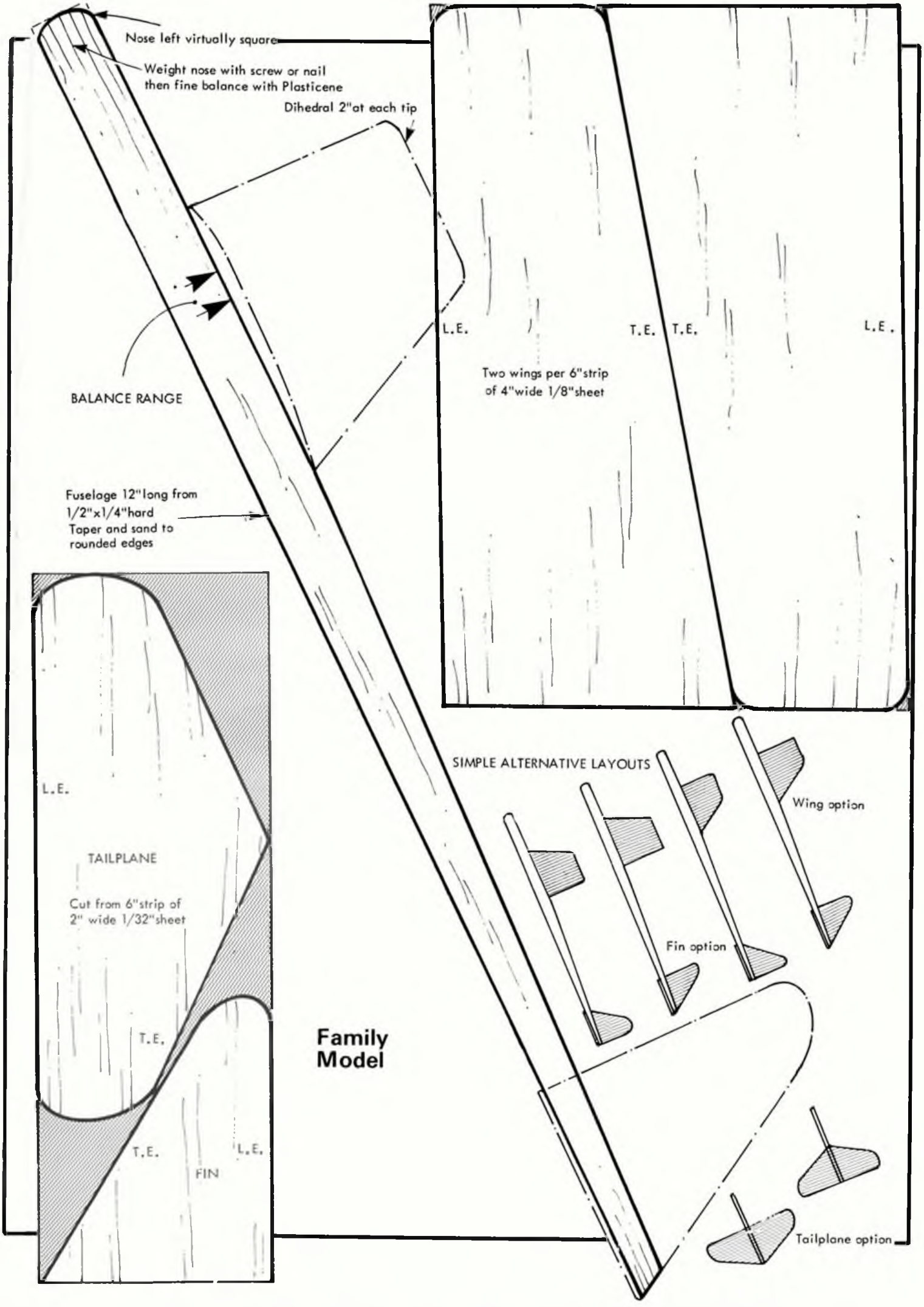
(a) Surface of wings and tail – try (i) sanded wood, (ii) prepared surfaces, using such as banana oil, and (iii) surfaces prepared and polished. What improvements in duration as a result of such efforts?

(b) Overall weight of model – try ballasting the model to see if improved penetration with a heavier model gives greater duration in a breeze. Is ballasting a retrograde step in still air conditions?

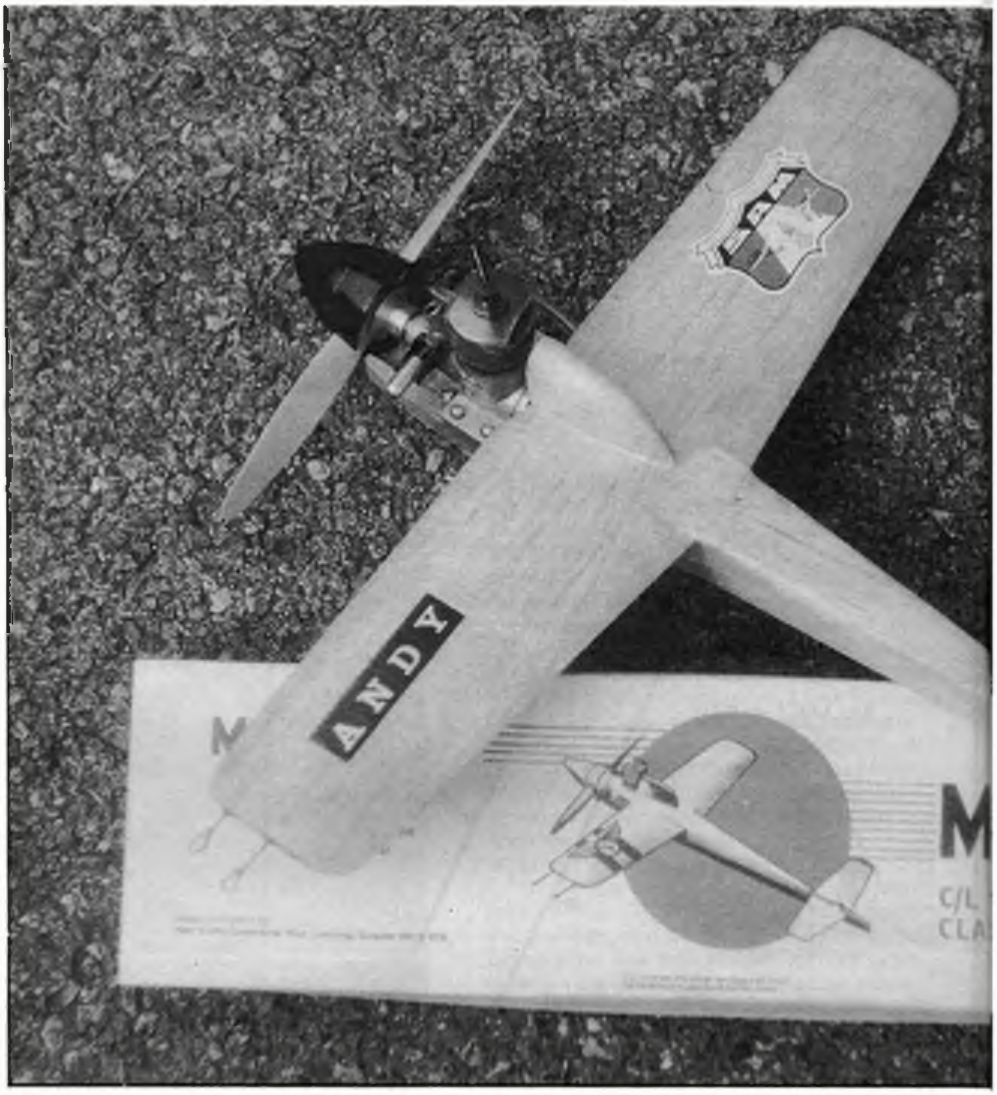
(c) Try two or three variations on dihedral – how little is needed for stability, how much before it becomes detrimental?

A batch built for sale at a school or youth organisation's 'sale of work' (for example) might encourage a few youngsters to try some modelling for themselves. A set of them could even be used for a contest on the park or school playing field along with other fund raising efforts, say 10p for three throwers; best duration by the end of day wins £1.00. Why not try it?

Amazing, the potential from twelve inches of chuck glider, isn't it!



MIND THE LINES KIT REVIEW



Andy Brough picks up the balsa knife and builds this vintage offering from Amerang

MERCURY MI

MY ASSOCIATION WITH the Midge must be well known; indeed, I suppose I may well be responsible for its re-introduction to the market. So it was with much pleasure that I saw this kit in my local model shop, sitting there amongst the usual radio control offerings. The price tag of £6.95 seemed a little steep for the contents as I remembered them, but an inspection revealed that a very welcome addition in the form of a fuel tank had been made, so that clinched the deal. I said 'contents as I remembered', because this was one model I did in my youth; but its date of introduction was 1950, the first advert appearing in the August issue of *Aeromodeller* with a later announcement of the price of 5/6d (27½p).

The kit is packaged in a stout little box with the original picture (from the 1950 adverts) in the centre. Due recognition to the designer, Cyril Shaw, is given, along with Mercury, Keil Kraft and Solarbo - but not the new proprietors, Amerang!

What you get for your £6.95 is the plan, the original Mercury instructions, all the sheet parts cut to shape, a hollowed-out block for the motor pan, sufficient balsa shapes for all the remaining bits, bearers, hardware pack, leadouts, tubes etc, and an original Mercury transfer (which I actually pinched for my Marlin kit as commented upon in my review of that model!).

On laying out the parts on the plan it looked as though the wing was oversize and the fuselage sides were half an inch too long. Out came a ruler, and, guess what - the balsa piece for the wing was 12in. long - exactly as it should be. Lo and behold, the plan measured only 11.1/4in. span! Dear me, we may have undersized Midges (a clipped wing version?) if they are built off a kit plan. A quick note to Amerang resulted in their agreement that the plan seems to have shrunk a little, but they are looking into the matter and will rectify it as soon as possible. As the kit contents are of the correct size, no real problem exists.

Modifications

Of course, one can follow the instructions but I think it's easier to do as I did for the fuselage, and build a pod before adding the sides. That is, bolt your motor to the bearers as far back as possible, stick the block to the bottom of the bearers and add the wing mounting pieces to the top. Remove the motor and sand the pod to the final shape before adding the fuselage sides. Following the instructions makes the shaping of the pod difficult on the completed fuselage. Otherwise it's quite in order to complete the model as instructed.

The recommendation to get the motor as far back as possible is especially true for the more modern types such as PAWs which are heavier than the Javelin originally employed. After all, we need the model to balance as near to the front line as possible.

The tank as supplied was exactly as the drawing, but I modified it to make it of 'uniflow' layout as shown. This will give consistent runs during the flight and prevent fuel from being sucked out.

I must report that I cheated at this point. I bonded some 1/64in. ply to the inside of the fuselage sides. This adds considerable strength for little weight (which is in the right place anyway).

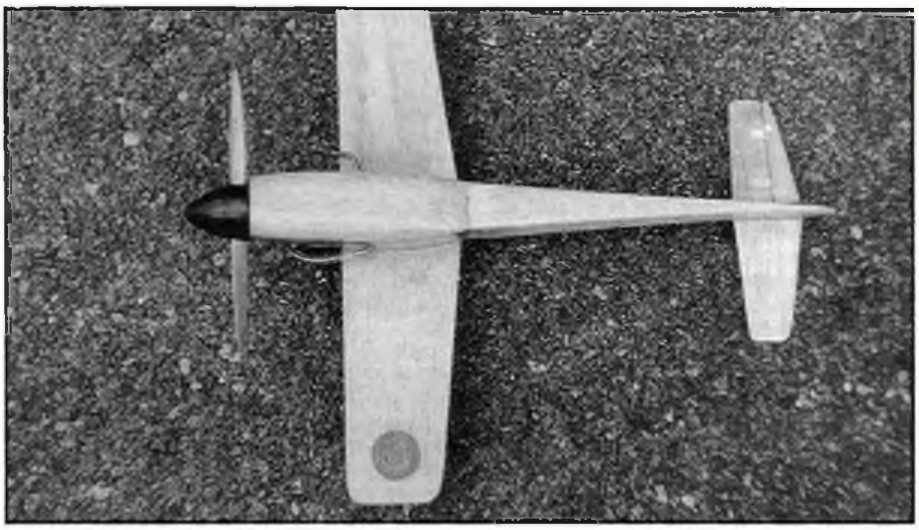
The plan shows the tail and wing incidences at 'zero/zero'. I debated upon this for a while and consulted H.A. Thomas' advice in the May 1949 *Aeromodeller*. There he describes how mushing attitudes can kill speed and how a model 'on the step' is flattened out in what appears to be a nose-down attitude.

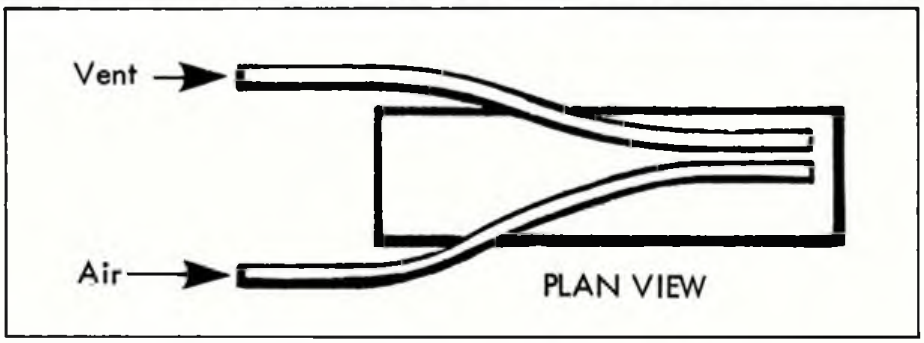
Taking that vintage advice one could add a slight positive tail incidence or set it at zero and sand only the top surface to produce a semi symmetrical (lifting) aerofoil section. I think that all this would do is to prevent the model zooming up as the motor comes on strong (which may cause it to lean out even more). To achieve 'zero/zero' I sat the wing mounting portion of the fuselage on a piece of glass and scribed parallel lines on the tail end using scrap balsa and a knife. This should guarantee a perfect set-up.

What else?

I used the tail as supplied, but with the elevator increased in size to give approxi-

DGE





mately double the area. This is really only a precaution, because if the above recommendations are followed the original is quite adequate.

The plan shows no tip weight but experience says that at launch the torque of the motor will cause the model to tend to roll in on the lines. A small tip weight will just hold the line tension until the speed builds up. The most suitable weight is a coin and I used a 1949 halfpenny (I couldn't find a 1950 one!) to keep it authentic.

I could find no way to use the piece of alloy supplied as a bellcrank so I made one out of 0.020in exactly as that shown on the plan and used wire leadouts, although one can use Laystrate if preferred.

Tissue is not supplied but if the Midge is so covered it adds a good deal of strength as well as easily filling the grain for a nice finish. I used very light glass cloth applied with dope which is easier to apply than tissue and is much, much stronger.

I have used PAWs in previous Midges but I managed to buy a Frog 150 at a Club auction for £4 and found to my delight that it is a whole ounce lighter. So, using all the kit wood, the Frog 150, 1/64in. ply inside the fuselage and with glass cloth covering the all up weight came out at six ounces - 1/4oz heavier than the original. The CG also came out just about on the front line which means lots of elevator shouldn't be needed to maintain level flight, and that the Midge should glide when the motor stops.

I haven't got the motor running right, yet this review model flew better than my previous two Midges; that is to say, it didn't come in on the lines and it had a reasonable glide. Verdict: a good quality kit that builds into a competitive model in a few evenings. Come and join in with the many Class I comps in the year ahead.

Postscript

Selecting the correct prop for your motor may be difficult but a Tornado 7 × 6 cut to 6 × 6 or the Graupner 6 × 6 seem O.K.

Top: A period piece from 1950 - the Midge's achievements are detailed in this snippet from a Mercury advertisement. Above centre: Vintage tip weight on Andy's review Midge is a 1949 halfpenny! Above: Uniflow tank layout was chosen to give consistent fuel feed. Below: Look for this box on your model shop shelves. £6.95 is all you need...

FROM THE HANDLE

Claus Maikis looks at stunt motor matters this month

More Tigre News

If you have read my article about the Super Tigre 60 you will have noticed that this was an altogether continental view. Our editor added a few notes which were very informative, especially to readers on 'the Isle'. This shows again that without the attention of the readers information cannot be complete. I have also received a letter from Mick Wilshere of Tigre Engines. Since Mr Wilshere sells Tigres, he's naturally interested that readers shouldn't get only half the information. I'm glad to say that he told me a few things which until now I didn't know. This news is not only interesting to me, but might be of special interest to you. Let me quote direct from Mr Wilshere's letters:

'...the situation in England is totally different in terms of availability and options made for Super Tigre motors. For instance, I have made in England alternative silencers for the 46 and 60, these being of the cylindrical type about 30mm diameter and 50mm long which go straight on to the side of the crankcase. This means that if the motor is not mounted 'dead vertical' but is rotated so that the transfer port is right against the inside of the cowling then there is often enough room to get the silencer inside the cowl. A rough sketch enclosed shows the basic size and shape.

'Also there has been some change in design of the venturis for the 'Bull Ring' 46 stunt and the ST 60 which are more in line with your own design, i.e. venturi throat diameter is 7mm and the same spraybar used as on the G21/46. This can be thinned at the sides...'

Mr Wilshere added that Super Tigre has been his speciality for 20 years now, and his business is the second largest customer in the world for Super Tigre. He helps provide much of the feedback to the factory. Mr Wilshere also asked me when I am going to try a Bull Ring 46; sorry, sir, no intention. Perhaps one of our readers can give us some information as this motor in practice?

We amended the sketches of silencer and venturi; full details are shown. As I told you, the weight of the original silencer is prohibitive; maybe Mr Wilshere's product will please you more.

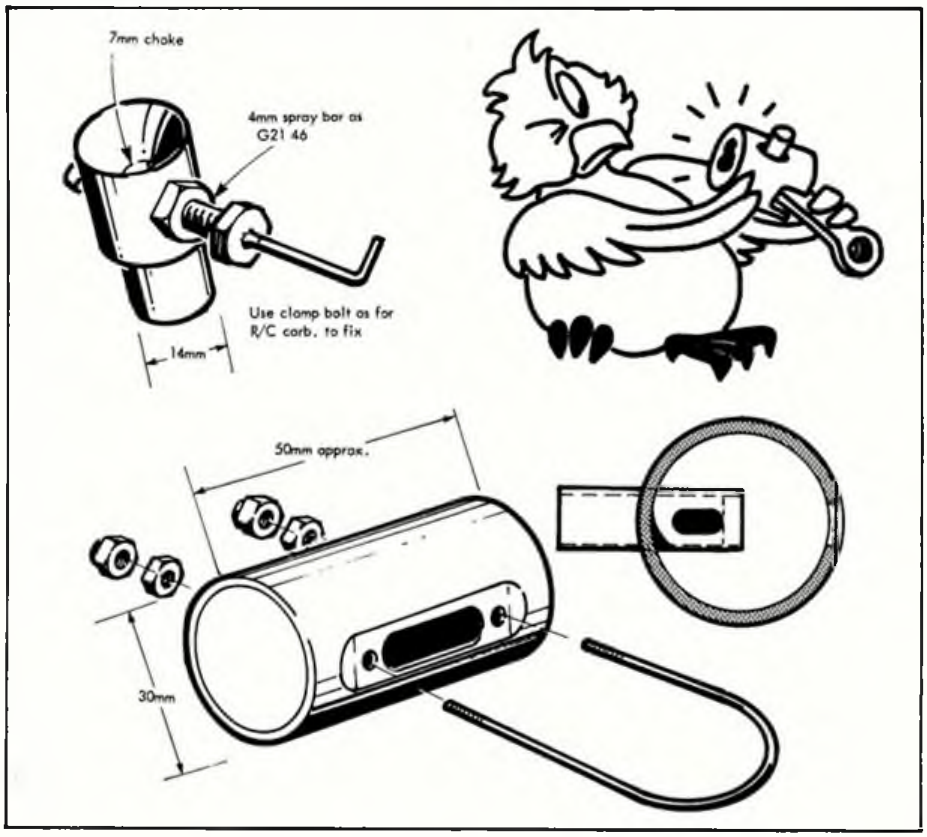
To start with...

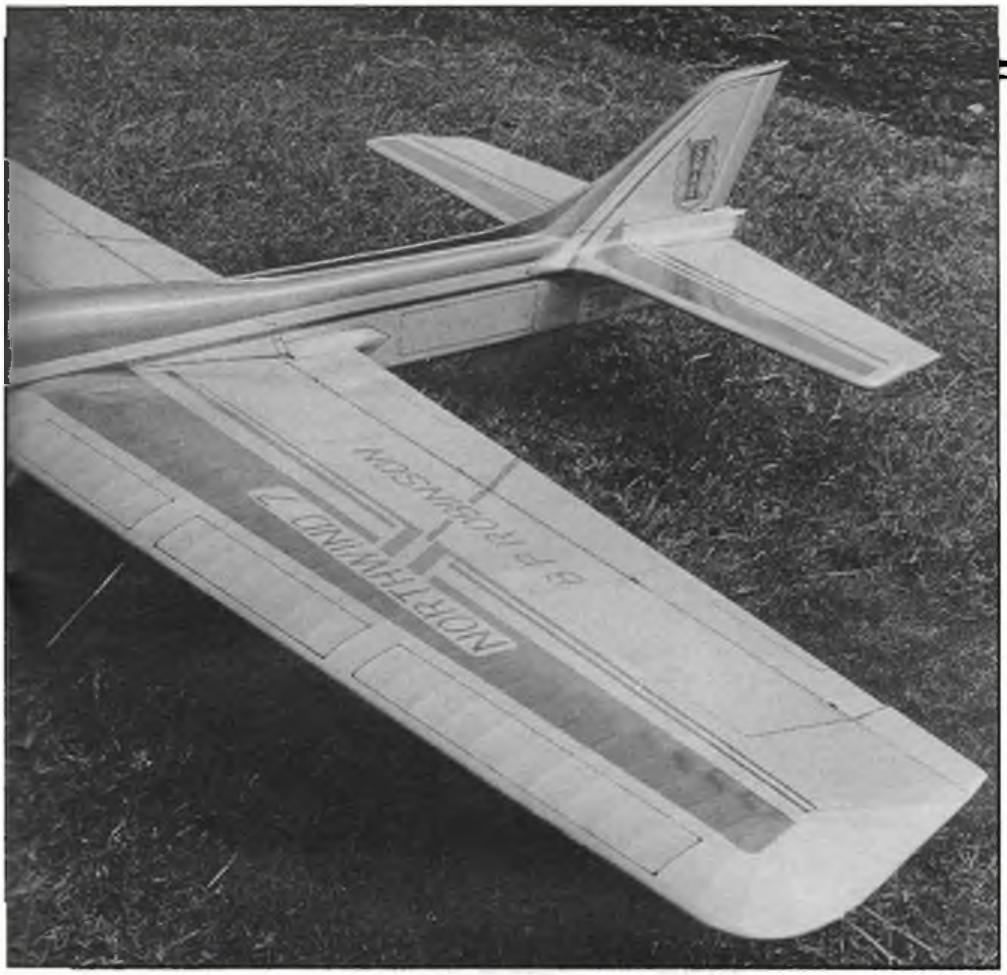
When you're standing at the stunt circle watching the pilots start their engines, you'll see that these people don't seem to have any problems with this procedure. Obviously it has become a case of prestige to be able to start the engine with the first flick, nowadays. While this may have some importance to the contest flyer, it is much less relevant to those who fly for fun. Nevertheless, it can get frustrating to flick for long periods - with aching elbow and bloody fingers - to no avail! I remember my first ever acquaintance with an engine (a diesel!) which took me several days to get it to say anything. With the pleasant exception of Mr PAW himself - Tony Eifflaender - nobody else is flying diesels these days, so I'll look at glow engines only. (Maybe Tony can give us some information about diesel operation; he obviously has the know how...)

Since all engines currently on the market work satisfactorily enough, there's no need to warn you about bad starters. Some makes of engine may be more suitable for our needs than others and some might require slight modifications from stock form, but that's another topic. Let's presuppose the engine is in good condition, too. Leaking backplates and lack of compression are a case for the workshop, not for starting technique. There are a number of things equally responsive for good starting. The most important items are tank, fuel, fuel line, plug, battery and battery leads. These should be checked at home, not on the flying field. Things like a switch in the battery leads or a tachometer are certainly helpful, but not necessary. Oh, I forgot - we're talking about hand starting here. If you use an electric starter, don't read on. This article won't help you - you are past help anyway...

It goes without saying that your starting improves a lot when you get to know your engine. Since every engine has to be run-in on the bench, this is a good opportunity to get used to the particular characteristics of your engine. You'll soon find out what the engine needs for proper starting (and what it hates). The late Emil Rumpel gave me very good advice when we talked about starting problems. He said 'you must give the engine the conditions it likes. Then it will start first flick.' That just about covers it all. Also, you should know some basic things about ports and timing. It certainly helps to know when the exhaust port or the intake (crankshaft) port is open or closed; that means, relative to propeller position. Usually the prop is set with the piston in top or bottom dead centre when the prop is vertical. With the prop horizontal (the average starting position) the intake port is just beginning to open and the exhaust port starts to close. With the prop turned against compression, exhaust is closed and intake is open. Remember this.

There are some criteria which help to ensure quick starting, as follows:





a) the engine should be in optimum running condition (i.e. temperature, and lubrication should be correct).
b) It must have the right amount of fuel.
c) Fuel must fill the fuel line up to the spray bar. *d)* The plug must not be 'drowned'.

To fulfil these conditions a few things should be noticed. When on the flying field, I usually start my engine and set the needle in the pit area. Nothing is more frustrating than a guy who occupies the flying field and doesn't get his engine running. If any problems occur in the pits, they can be solved thoroughly and without haste. After cooling down, the engine is in the best condition for starting: it is not too cold, not too hot, well lubricated, and 'free'. When flicked, the prop should oscillate back and forth a few times quite easily before stopping. While in the pits you will detect how much priming the engine needs on that particular day. In cold weather this can be considerably more than when it is hot. Be sure that the fuel runs right up to your venturi. This can depend on the position of the model's fuselage. For example, if the model rests nose-high on the ground, fuel may run back into the tank, and you might have to find some way of preventing this. To determine the correct amount of fuel which the engine needs for starting is a case of trial and error. Every engine has different requirements. I can't give any concrete advice here. With the above-mentioned optimum conditions, two or three flicks with the finger closing the venturi should usually be enough. I do not prime into the exhaust for several reasons. Many mufflers (including mine) don't provide a means of reaching the exhaust port. Furthermore, I find it extremely difficult to splash just the right amount of fuel into the cylinder. With a normal fuel bottle it's impossible, and I hate to use a syringe (that's another piece which can break or fail; it needs attention; it takes time - all things which I absolutely don't want on my official flight). To keep the plug from being 'drowned' is directly connected with the correct amount of fuel being used. Upright and inverted installed engines are different here - the upright engine is less critical. That's why, years ago, stunt flyers turned their airplanes upside-down for starting. We don't see this very often these days. With a reliable method the inverted engine doesn't give problems; but the method itself has to be found and practised.

Now you are wondering what secret methods I use. First of all - I can't claim it all as my idea. When I met Keith Trostle in America and flew at a contest with him, he used a procedure which seemed quite

Heading: One of the sleekest stunters at the Nationals this year was Barry Robinson's Northwind 7. Very elegant. Photo: Glen Allison. This box: More Nats action. Top left: Simon Groom flicks during FAI T/R warm-up. Left: The OPS 29 set-up used by Sladdin/Campbell in 'B' T/R. Photo: Dave Campbell. Below left, Johnny Hall and assistant Paul Kennard had a great time; here shown with OPS 21 speedster. Below: Also warming-up in FAI are Australians Walton/Wilson and Robin Hearn. Photo: Dave Campbell.

practical to me. Also, on some of my airplanes - the M35 type - aesthetic considerations prevent access to the venturi (!) so I've developed a procedure which I have used for many years now. If the engine doesn't start on the first flick the error is certainly - me!

As mentioned above the engine is run and the needle set about half an hour before the official flight. In rapidly changing weather, or in the early morning or late evening the temperature changes so quickly that more than half-an-hour's delay can produce a wrong needle setting. Half an hour is needed for the engine to cool down, and you have to take into account that the pilots ahead of you may call 'attempt'. I fill the tank, but the model must not be moved around after that to prevent fuel running into the silencer. On the flight line the tank is topped up. Now the overflow is closed. With the prop turned slightly against compression - the intake is open now - fuel is now forced through the tank and venturi into the crankshaft (I must add that my spraybar is mounted with the suction hole downwards, that means: towards the crankshaft port). When I use a fuel bottle I apply a known amount of pressure, for a particular length of time. With an electric fuel pump it's just a case of time. Immediately after this prime the prop is turned back (clockwise) to shut the crankshaft port. The right amount of fuel is now in the crankshaft bore. About four to six flicks will bring it into the crankcase and - hopefully - into the cylinder, or at least, part of it. While flicking the prop I carefully watch the sound of the engine - it should 'smack' a little. Now I try not to waste much time in order to maintain the conditions which I've just produced. I connect the filler pipe to the silencer (I use silencer pressure), connect the battery leads, and turn the prop over to feel whether the engine 'kicks'. If it does - all you can do is cross your fingers!

Sometimes the engine just doesn't kick. Usually the cause is wet or cold weather (in England it's both) or a weak battery. No problem, just repeat the process. But be careful now. Don't prime as much as you did the first time. It's easy to drown the plug now, or to flood the engine altogether.

When the engine is running I keep the battery 'on' for a few moments. The engine has too much fuel now so I play safe and help the plug a little. After removing the battery connection I quickly squeeze the muffler pressure line. In cases where you needed more prime, the engine runs rich for quite some time with this excessive fuel in the crankcase. By squeezing the pressure line, the engine speeds up, uses the additional fuel faster and will - after releasing the pressure line - settle down to the original, intended speed. At the same time I watch how long it takes the engine to change from a two-stroke down to the intended speed, which is usually a fast four-stroke. This 'squeezing' is my last check that the needle setting is correct.

There are a few items which can become helpful during a contest. First of all, I use a stooge. I need one, anyway, since my practice flying is always without help. At the contest site, I can go to the farthest corner of the field to run my engine, and I don't have to ask a favour of that fellow flying who is anxiously awaiting his turn. I also use a tachometer. If you are constantly changing airplanes, engines, and propellers as I do, you're not able to develop an 'ear' for the engine sound which can tell you the right setting. Also, on contest sites with more than one circle a fast team race or a screaming speed engine on the circle nearby will cost me a good deal of concentration and doesn't help me to hear my engine. An optical tachometer - held quickly in front of the propeller disc - is a welcome insurance for a correct setting. As a general guide: at around noon, when the temperature is high, my engine runs about 200-300 rpm faster than in the morning or evening, when it's cool. With a fine pitch prop, the difference can be 400 rpm, depending on temperature difference. Another helpful item is a switch on the battery leads. If you have to repeat the priming process you don't have to disconnect the leads from the engine. Also, an ammeter is a nice thing if you use it constantly and watch it. It can tell you the condition of the plug. Of course, this requires that you use always the same brand. One last word about the now popular 'power' panels: be careful when choosing which to buy. There is the type which automatically changes current according to plug conditions and thus requirements. With the other type you change current manually by turning a knob. I acquired one, and from that day on I couldn't start my engines any more. No way! After removing and checking the plug, I discovered that this power (?) panel couldn't burn the plug dry, even with 'full juice' - with an inverted engine! With an upright or horizontal engine it might work... One additional hint: I never use a chicken stick, or anything like it. I want to feel what the engine is saying. I prefer a rubber finger protector which is kept readily available to slip on. It gives the best 'feel'.

As already mentioned, my particular method of starting the engine is necessary for my model, where I cannot reach the venturi. But even with most other installation there's not enough room between the cowl and the propeller to put your finger on the venturi and choke the engine. So instead of creeping under your airplane, turning it around seven and a half times, and counting the drops of fuel to be put into the venturi - just try my procedure.

Stuart Morris was sixth in Novice Aerobatics with his Irvine 40 powered Europa - a Sandy Sanderson design featured in the January 1986 Aeromodeller. Plan is available - quote AM 1505 - and the price? £3.80 including postage. Glen Allison photo.

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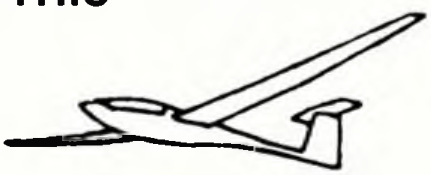

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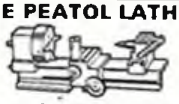

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Our next copy deadlines are
11th Feb April Issue
10th March May Issue

01 - 437 0699

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Name & Address ..... (BLOCK LETTERS PLEASE)

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Appendix - Links to the plans

The issue comes with two free plans (Moth, Flying Stick) printed front/back on a pull out banner of four sheets. The banner is not included in the document.

Lift Off by Chris Coote
Control Line payload endurance a fun event by South Bristol
Document Page: 9

Watto by Roy Ashby
FF electric presented in ELECTRIFLYING EXPERIENCES
Document Page: 14

Sparknik by Roy Ashby
FF electric presented in ELECTRIFLYING EXPERIENCES
Document Page: 13

Millenium Falcon by Ken Morrissey
Dick McGladdery describes Ken Morrissey's Class VII Millenium Falcon hits 200mph. Presented in FASTEST IN THE UK
Document Page: 16

Moth by J.H. Watters
FF Rubber
https://outerzone.co.uk/plan_details.asp?ID=1828 ...
Document Page: 25

Flying Stick by Mike Whittard
FF CO2
https://outerzone.co.uk/plan_details.asp?ID=1829 ...
Document Page: 27

Stuntwagon by H. De Bolt
Vintage Control Line presented in MIND THE LINES
Document Page: 38

A Family Affair (Family Model) by Richard Bail
FF Chuck Glider
Document Page: 43