

Aero modeller

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MAP MODEL MAGAZINE



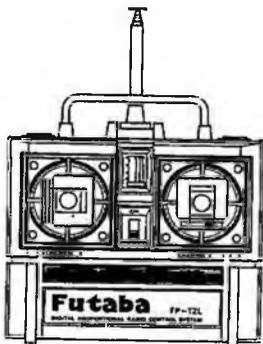
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'Miss 38' Vintage style design for free flight or R.C. assist

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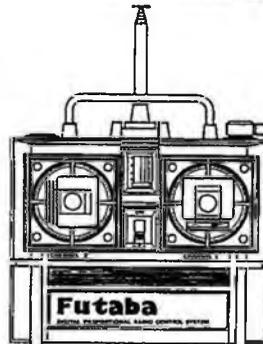
No cutting corners to keep production costs down either. Absolutely no compromise on **QUALITY** with RIPMAX-FUTABA — which is why the 'L' Series Combos shown here are **TREMENDOUS VALUE FOR MONEY**.



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Your best choice for gliders using rudder and elevator control — or smaller powered aircraft on rudder/elevator or rudder/throttle. (Some models fly best on rudder/throttle). Twin sticks with separate trims — just like the more elaborate Transmitters. The same voltage-stabilised circuitry. Quick-access crystal change. Type approved on 35MHz.

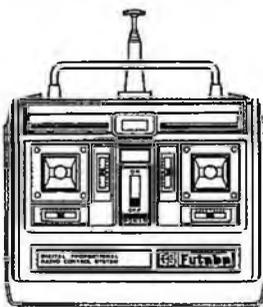
35MHz FM DRYCELL COMBO £43.00
NICAD CONVERSION PACK £32.00



3-CHANNEL

This is certainly the most attractive choice for the R/C glider enthusiast, with independent rudder and elevator controls, plus flaps or spoilers. It's also a perfect match for R/C Trainers, too, normally designed for rudder/elevator/throttle. Receiver features double-tuned front end with interference-rejection circuitry. Type approved on 35MHz.

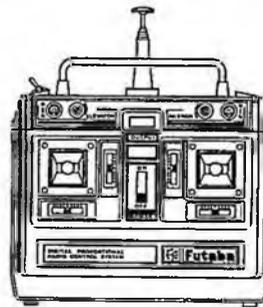
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4-CHANNEL

The 'full house' outfit for aircraft. Rudder, elevator, aileron and throttle controls on twin sticks. (You could use the fourth control for flaps or airbrakes on gliders). This is the most popular outfit for aeromodellers taking up radio control seriously. It can cover the movements of all types of aircraft, from simple gliders to pattern models, type approved on 35MHz.

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5-CHANNEL

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AT ALL GOOD MODEL SHOPS**

Aero modeller

FEBRUARY 1982

Editorial Director TONY DOWDESWELL
EDITOR COLIN RATTRAY
Graphics LORNA CULLEN

MAP MODEL DIVISION MAGAZINE

Advertisement Director M. GRAY
Managing Director RON MOULTON

Comment

OVER THE past year, I have tried to include a range of articles of interest to the specialist and non-specialist aeromodeller. This of course is based on my own personal belief of what is wanted and also on the feed-back I get from letters and meeting people at clubs and competitions.

However, it is still very difficult to see an overall picture. If I was to follow the advice of say, a free flight enthusiast, there would be no space left for anything else. The same

story applies to all the other individual fields within aeromodelling.

There are a couple of areas such as Control Line 'Carrier' that have been neglected. This has been largely due to not receiving any material. This should be corrected in the near future, as I have been promised a design and a series of articles on the subject from competitors that I met at the 1981 Control Line Nationals.

However, to try and see a clearer picture of the overall readership, we shall shortly be publishing a questionnaire. This will ask you to detail for instance, the type of aircraft you wish to see published in 'Aircraft

Described.' Personally I have no interest in modern jet aircraft, so left up to me you will never see them, but for all I know they may be just the types you wish to see published?

Of course all the other areas of aeromodelling have their own particular range of subject matter and inevitably as editor, one leans towards personal choice.

To some extent this will still happen even with a survey, as the quality of the material always has some influence.

So please make the effort to show us your own particular interest, by letter or by filling in the questionnaire next month.

Editor

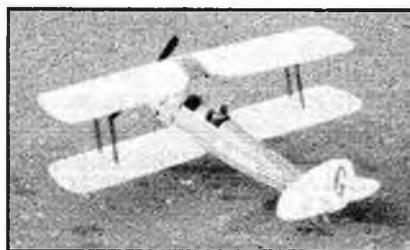
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Cover

Time was when the Keilkraft Junior 60 was 'standard' equipment for radio control flyers and is still much loved among the vintage fraternity. This one, by W. Swindles is O.S. powered.

Next Month

A report on the FAI annual meeting by Martin Dilly and Dave Day. An electronic buzzer for free flight models plus all our regular columns. On sale February 19, 1982.

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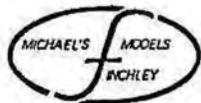


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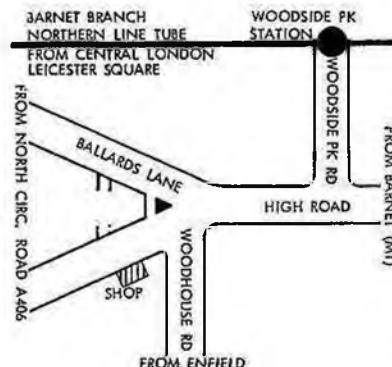
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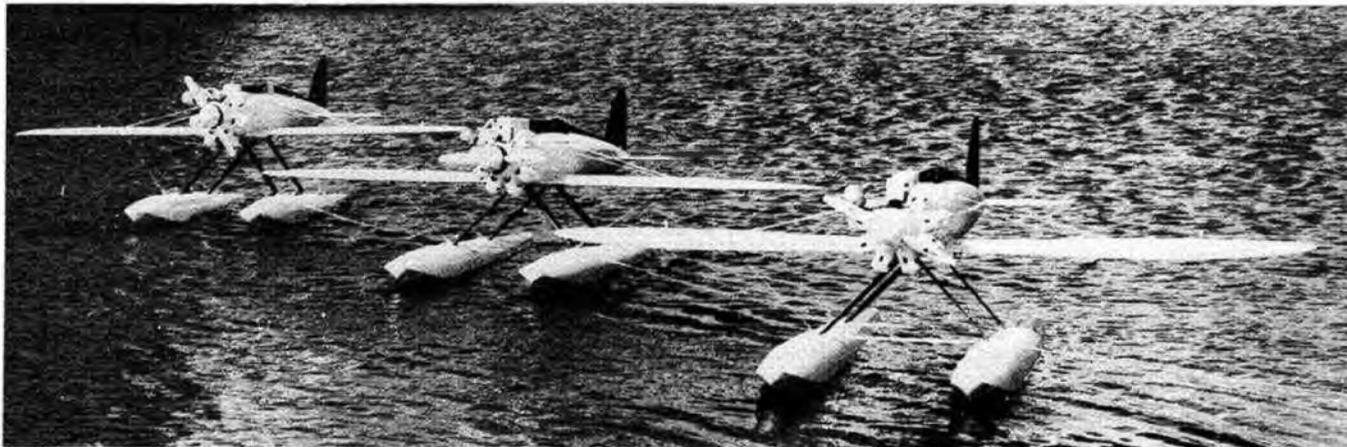
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The heavier the model the faster and harder it lands — and water really is a hard surface to hit at speed. Aim for a low wing loading again! Which finally brings us to our heading photo.

This shows the Flair team of Short Crusader Schneider models. Not only scale jobs, but *racers*. Much, much trickier than conventional floatplanes. Yet they fly magnificently (4th and 5th place in the Schneider '81 event at Calshot). And as their designer said . . . "We put this (outstanding flight performance) down to the fact that they were 98 per cent Solarbo Balsa construction (only the dummy engine hoods were of glassfibre). Our construction methods gave us an advantageous wing loading, the all-up weight being (only) 8½ pounds for these 60" span machines." Plus, of course, the fact that by selecting Solarbo they were using the best available Balsa!

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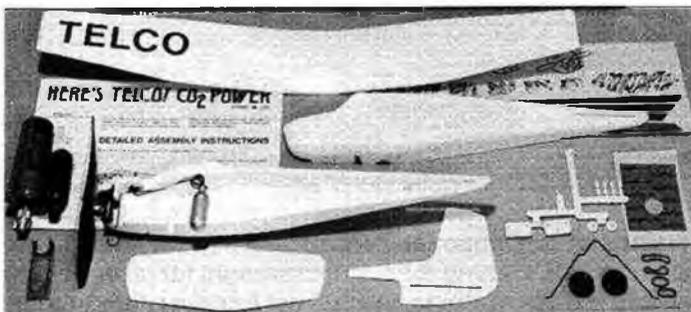
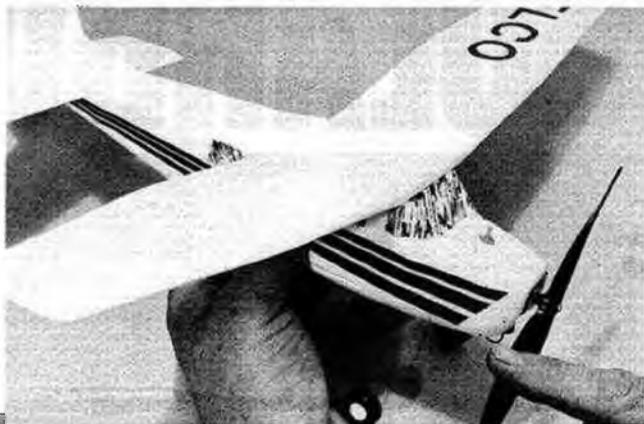
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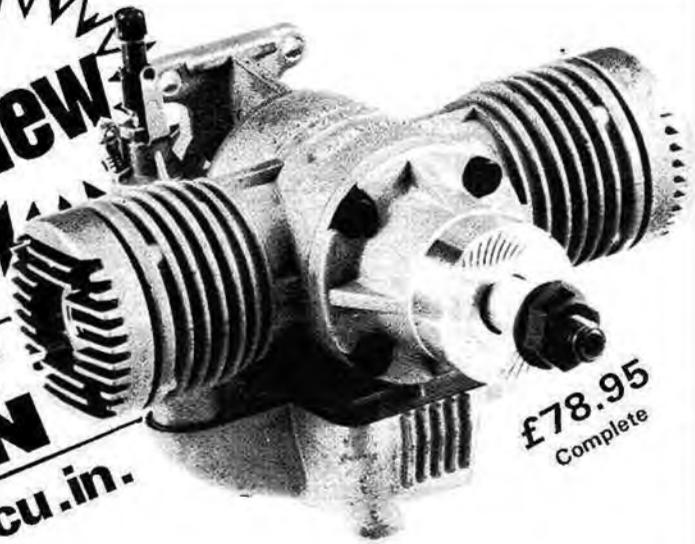
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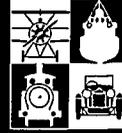
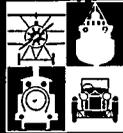
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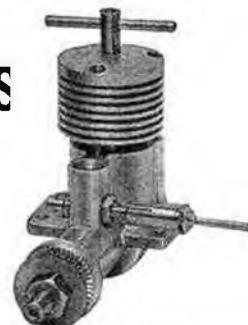
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NEW HANGAR FOR SHUTTLEWORTH

This is to be the hangar for de Havilland aeroplanes that will form the physical base for the new National de Havilland Flying Centre.

The money for the hangar is being raised through a national public appeal and so far supporters have contributed £37,000 in donations. Unfortunately this still falls short of the £57,000 that is required for completing the project. Anyone wishing to donate money should send it to the Shuttleworth Collection at Old Warden Aerodrome, Biggleswade, Beds.

By mid-1982 Old Warden should house the world's most comprehensive range of flying DH aircraft. Types such as the DH51 of 1924, now the oldest DH aircraft flying anywhere, a Dragonfly Executive biplane of the thirties and the famous DH88 Comet racer that won the England to Australia air-race in 1934. This sleek aircraft is on temporary view now in the workshop hangar where it is undergoing full-scale restoration. Like all the aircraft at Shuttleworth, the range of DH types will fly when possible at the various shows put on each year.

WORLD INTER GLIDE

To mark their Tenth Anniversary, the British Association of Radio Control Soarers are to hold an International Thermal Soaring Contest at the ancient English mediaeval town of Warwick, on the weekend of August 7/8, 1982.

This contest is open to any competent radio control thermal soaring pilots, but entry is to be restricted to 100 with preference to overseas flyers.

The contest will be flown to British Thermal Soaring rules, which unlike F3B, are based purely on Thermal Soaring. Copies of the rules are available on application to A. F. Wisher, 21 Williams Terrace, Daventry, Northants NN11 5ER; Further details are to follow, but if you wish to enter write to A. F. Wisher at the above address.

SCOTTISH NATIONALS

August 14 and 15, 1982 has been chosen so as not to clash with Woodvale or the British Nats. SAA have been fortunate to secure Kirknewtown which is a full size air-

field some five miles south west of Edinburgh Airport.

A full programme of events is planned for R/C Power (Scale Club 20 and Aerobatics) and Control Line (Stunt and Team Race). Note Free Flight is likely at another venue in the Spring, the Soaring will be at another site if held on the same weekend. Kirknewton was used for the Aerobatic Home International this year. Camping facilities will be available.

SMAE CHANGES

In what must have been the smoothest, most agreeable Annual General Meeting within memory, the SMAE membership approved a healthy balance sheet, and a bold Budget for the coming year. There were no inquests, no calls for card votes, very few and minor disagreements and even praise for the Newsletter Editor! Out-



Bill Draper had cause to celebrate at the SMAE prizegiving where he was presented with the Gold Trophy for C/L Aerobatics. Fellow CLAPA members provided laurels and cap before Bill had first taste of the champagne.

going Chairman, John Jones, was personally congratulated by at least four ex-chairmen for his very successful management of the society through all the stresses created by noise codes, frequencies, value added tax, insurance for airfields and the creation of a permanent office at Leicester. The new chairman is Dave Goodwin from Sheffield who quickly established himself, fielding questions on the budget (which incidentally now includes support for an R/C team to enter any European championships).

Fees for the coming year are confirmed as: Senior members £10.50, juniors £4 and associates £5. Elections for the post of FAI delegate returned Peter Freebrey with a majority over the other candidates Dave Rudd and Bob Horwood. Other posts were not contested and the 1982 officers are: Treasurer: George Lynn, Technical Secretary B. A. Wade, PRO C. J. Fry. A vice-chairman is to be co-opted.

An unprecedented return of votes for Technical Committee members brought keen competition for 1982 places. Successful candidates were:

R/C Power: J. C. Long, P. C. Burnage, A. R. Dowdeswell.

R/C Glider: S. W. Bannister, M. Procter, D. J. Dyer, plus N. Neve and G. Dallimer for one year.

Scale: D. E. Thumpston, W. D. Dennis, V. N. Wilson plus E. Coates for one year.

Control-line: P. A. Halman, T. Jolley, D. J. Day.

Indoor: C. W. Hadland, R. T. Parham, R. A. Green plus B. Aslett for one year.

Free Flight: M. Woodhouse, S. Phillpot, P. Farrimond.

At the well attended prizegiving dinner which followed the AGM at Leicester on November 21, guest of honour, Group Captain Whittingham, OC Flying Training at the RAF College Cranwell gave the well received news that he was very pleased with the way SMAE handled its Nationals at Barkston Heath and they'd be welcome back there any time. One of the specially hard-working SMAE officers who had done much to ensure good organisation at the Nats, Dave Stapleton, was awarded a certificate of Fellowship at the prizegiving.

Two evenings earlier, at a Royal Aero Club function, John Jones received the RAeC Bronze Medal from HRH The Prince of Wales to complete a busy week in fitting fashion.

ALPHA PLATEFORME

A new French model flying site has been proposed, to be situated 20 miles due East of Paris.

There will be parking facilities for 3,300 cars, two control line circles and two other areas presumably for radio control flying, as the space is hardly big enough for free flight.

Motels, exhibition halls, restaurant and a clubhouse plus two hangars and a boating pool are also part of the proposed complex.

NEW RECORD CATEGORY

The most recent addition to the list of record categories was made at the 1979 CIAM (Commission International Aero Modelisme) meeting, where record proposals for classes of electric power models were proposed for each of the existing F3E class records.

Records can be attempted for Duration, Speed, Closed Course Distance and Straight Line Distance. Models used for the attempts can be classified as

(1) F3E-S: with rechargeable sources of current only (secondary cells).

(2) F3E-P: with non-rechargeable sources of current only (Primary elements).

(3) F3E-SOL: Solar cells only permitted.

(4) F3E-Comb: All sources of current are allowed. No connection between the source of current, aboard the record model and the ground, or to another aircraft or flying object is allowed.

Although no specific rules are included to govern the type or size of motor, or the number of cells or voltage etc., the models have to comply with the FAI general rules, concerning wing loading and maximum weight.

Class F3E-S

Category	Date	Name	Country	
Duration	6.10.81	S. Kodrekso	USSR	38min, 41 sec
Duration	7.10.81	V. Miakinin	USSR	43 min, 10 sec
Speed	7.10.81	V. Miakinin	USSR	59km/hr
Closed circuit distance	7.10.81	V. Miakinin	USSR	15km
Duration	10.10.81	A. Bondarovsky	USSR	1hr 20min
Distance	9.10.81	V. Miakinin	USSR	6450M

Class F3E-P

Duration	8.10.81	V. Miakinin	USSR	21min
Duration	9.10.81	A. Smolentsev	USSR	34 min, 5 sec
Distance	9.10.81	S. Malik	USSR	3230M
Speed	8.10.81	A. Stakhovsky	USSR	40km/hr
Closed circuit distance	8.10.81	V. Miakinin	USSR	8km

Class F3E-Comb

Duration	10.10.81	V. Miakinin	USSR	54min
Distance	10.10.81	V. Miakinin	USSR	3350M
Speed	8.10.81	V. Bellaev	USSR	42km/hr
Closed circuit distance	8.10.81	V. Miakinin	USSR	11km

RUSSIAN RESPONSE

Some two years after the agreement over the new categories a whole string of class F3E Electric flight record claims were received by the FAI covering category F3E for Duration, Speed and Distance and Closed Course Distance. These records all came

from the same source — the USSR!

October 6-10 inclusive must have seen some frantic electric flight activity in the USSR, for no less than 15 World Record claims have been made as a result of what must have been a determined, well practised assault on the new categories.

FAI INTERNATIONAL AEROMODELLING SPORTING CALENDAR 1982

CONTINENTAL CHAMPIONSHIPS

July 16-18	FR GERMANY Wasserkuppe	<i>European Championship F1E and European Cup F1E</i>	Aug. 21	YUGOSLAVIA Mostar	<i>22nd Soko Cup, F1A, F1B, F1C</i>
Sept. 3-8	FR GERMANY Zulpich	<i>European Championship Free Flight F1A, F1B, F1C</i>	Aug. 20-21	ISRAEL Beer-Sheva	<i>Israel Championship (National) F1A, F1B, F1C</i>
			Aug. 20-22	FRANCE Noize (Thouars)	<i>'Concours International du Poitou' F1A, F1B, F1C, F1G</i>

'OPEN' INTERNATIONAL EVENTS

May 15-16	CZECHOSLOVAKIA Kraliky	<i>International Competition F1E</i>	Aug. 28-29	BELGIUM Flemalle	<i>6th International Indoor Event F1D</i>
May 29-30	BELGIUM Genk	<i>International Combat Contest F2D</i>	Sept. 4-5	FR GERMANY Zulpich	<i>International Eifel-Pokal F1A, F1B, F1C</i>
July 16-18	AUSTRIA Stuhleck	<i>4. Europa-Cup-Austria F1E</i>	Sept. 11-12	SWITZERLAND Breitenbach	<i>4. Int. MBZ Cup 82, F2B, F2D</i>
July 21-25	ROMANIA Craiova	<i>International Championship Open F1A, F1B, F1C</i>	Sept. 16-19	BULGARIA Sofia	<i>International Cup F2 F2A, F2B, F2C, F2D</i>
July 31-August 1	BELGIUM Genk	<i>2nd International Indoor Contest F1D</i>	Oct. 3-4	NETHERLANDS Utrecht	<i>Europa Cup, F2A, F2C</i>
Aug. 13-15	CZECHOSLOVAKIA Sezimovo Usti	<i>International Competition F1A, F1B, F1C</i>	Oct. 9-10	USA Taft, California	<i>California FAI Invitational F1A, F1B, F1C</i>
Aug. 14-15	BELGIUM Repinster	<i>International Competition Control Line F2A, F2B, F2C</i>	Oct. 16	YUGOSLAVIA Zagreb	<i>18th Cup of Republic F1A, F1B, F1C</i>
			Oct. 16-17	USA Sacramento	<i>6th Sierra Cup F1A, F1B, F1C</i>

What's Happening?

January 23
INDOOR MEETING ORGANISED BY SOUTH BRISTOL MAC. Venue: Grange Sports Hall, Warmley, Bristol. Contact: Doug Sheppard, 13 Luckington Road, Monks Park, Horfield, Bristol, Avon BS7 0UT.

February 7
CRAWLEY INDOOR MEETING HLG, EZB, RUBBER AND CO₂, SCALE. Venue: Crawley Leisure Centre, 12.00-6.00pm. Contact: J.Dolding, 22 Loxwood Walk, Ifield, Crawley, Sussex RH11 0HY.

April 4
PETERBOROUGH MFC COMPETITION 1st ROUND CLASS A BRITISH DIESEL COMBAT CHAMPS. Venue: Peterborough Embankment. Contact: Brian Waterland, Tel: Market Deeping 343722.

April 11/12
SYWELL R/C EXPO

April 11/12

EASTER HOT-AIR BALLOON EVENT — Balloon Races, parachuting, microlite aircraft, kites and other aerobic activities. Venue: Holker Hall, Cark-in-Cartmel, Cumbria. For further information; The Manager, Tel: (044 853) 328.

May 1/2

MUNSTER R/C CHAMPS. Venue: Waterfall, Co. Cork. Contact: K. Townsend, Beechwood, Church Lane, Greystones, Co. Wicklow.

May 2/3

SPRING MODEL AIRCRAFT RALLY AND FLY-IN — Best All-round Model, Best Scale Model, Best Sports Model, Best Bi-plane, Best Helicopter, Best Multi-Engine Model, 'Tree Tops' award. Venue: Holker Hall and Park, Cark-in-Cartmel, Grange-over-Sands, Cumbria. Contact: Tel: No. (044 853) 328.

May 15/16

7th SANDOWN PARK SYMPOSIUM — Sandown Park.

May 16

PETERBOROUGH MFC COMPETITION 2nd ROUND CLASS A BRITISH DIESEL COMBAT CHAMPS. Venue: Peterborough Embankment. Contact: Brian Waterland, Market Deeping 343722.

May 22/23

IRISH THERAL SOARING NATS. Venue: Mallusk, Co. Antrim. Contact: K. Townsend, Beechwood, Church Lane, Greystones, Co. Wicklow.

May 23

IRISH CONTROL LINE NATS. Venue to be announced. Contact: J. Molloy, 57 Auburn Road, Dun Laire, Co. Dublin.

June 5/6

ULSTER R/C CHAMPS. Venue: Nuts Corner, Co. Antrim. Contact: K. Townsend, Beechwood, Church Lane, Greystones, Co. Wicklow.

June 12/13

LEINSTER R/C CHAMPS. Venue: Fairhouse, Co. Dublin. Contact: K. Townsend, Beechwood, Church Lane, Greystones, Co. Wicklow.

June 19/20

SCALE DAYS. Venue: Old Warden.

June 20

LEINSTER C/L CHAMPS. Venue: Blackrock, Co. Dublin. Contact: J. Molloy, 57 Auburn Road, Dun Laire, Co. Dublin.

June 26/27

CONNAUGHT R/C CHAMPS. Venue: Shannon, Co. Clare. Contact: K. Townsend, Beechwood, Church Lane, Greystones, Co. Wicklow.

EVENTS

April 3/4

READING SOCIETY OF MODEL ENGINEERS EXHIBITION. Working models, layouts, stationary engines, traction engines, aircraft, boats and cars. Venue: The Hexagon, Civic Centre, Reading. Contact: A. B. Milne, 39 Springhill Road, Goring-on-Thames, Reading RG8 0BY.

May 22/23

MODEL CRAFT AND COUNTRY SHOW — Venue: RAS Stoneleigh.

'MISS 38'

A 45in. span vintage style radio assist model for 1-1½cc engines, by Vic Smeed.

INTEREST IN EARLY 'gas models' has become considerable over the last few years, partly as a reaction to modern almost-ready-to-fly designs which fail to satisfy the urge to build, partly from nostalgia, but mostly from the discovery that flying such models is much more fun. There is enormous satisfaction in actually building a structure rather than sticking a few pre-cut sheets and blocks together and joining a pair of ready-made foam wings, and flying the result is relaxing and enjoyable.

There is one tiny fly in the ointment, and that is that most of the early power models were *big*; they needed to be for the weight of the early ignition engines, and in those days balsa was unbelievably cheap, especially in the USA. As an example, 1/8" x 2" x 6in. sheet was the equivalent of just

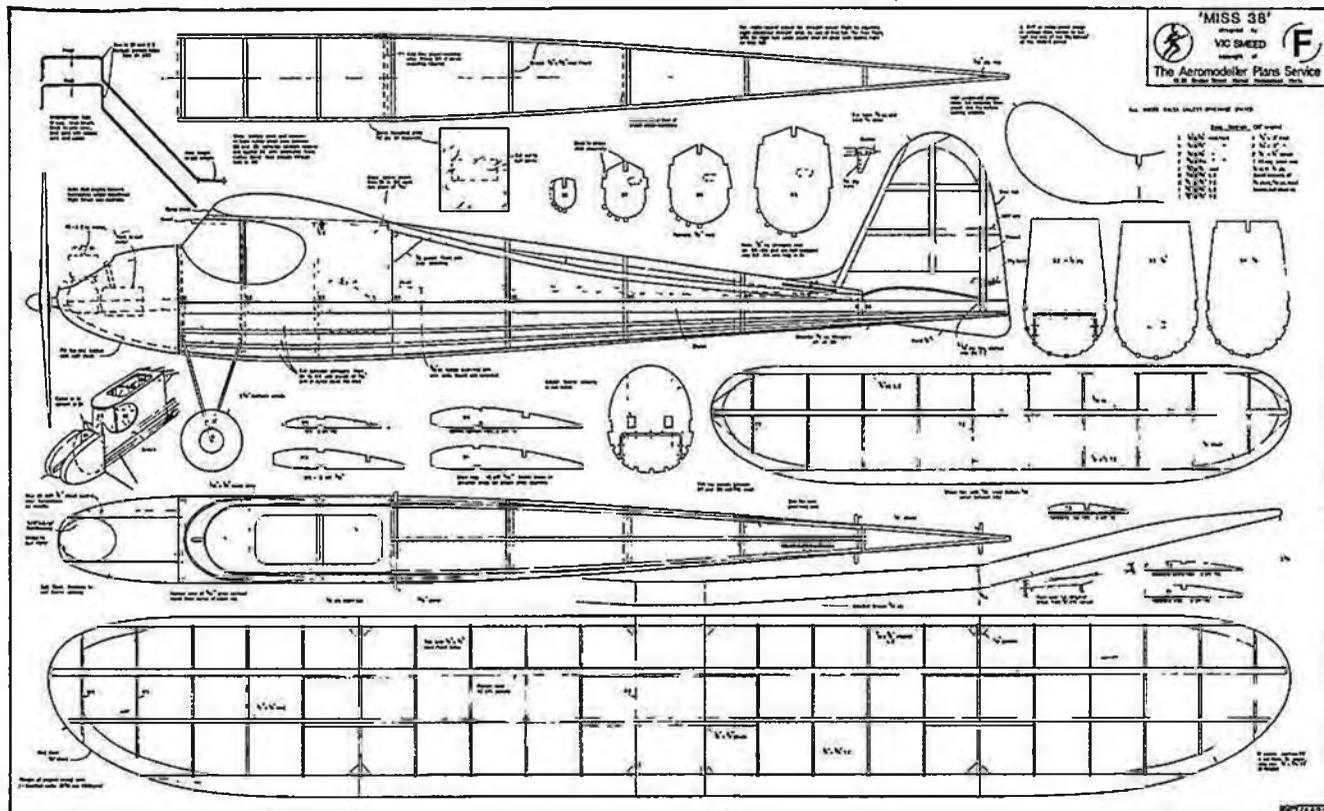
under 1/2p a sheet, nearly 1p if you wanted 3in. width, and 1/8in. square worked out at 12 strips for 1p. In 1937 you could buy, in America, a kit for a 7ft. model for £1, though in a de luxe version at £1.75 you got a finished prop, airwheels, all the ribs cut rather than printed, and two half-pint cans of colour dope. Cement was always included in kits.

British prices in those days were higher (1/8" x 3" x 36in. was the equivalent of 2p a sheet) but many of the power designs over here used a lot of spruce and ply and were on average considerably heavier than American machines. In many countries (Germany for example) balsa was never used.

Building a replica of one of the big models today represents quite an investment in

materials as well as offering problems in storage and transport. Why not, then, build a half-size one? Although the majestic flight would to some extent be lost, the general shape and much of the attraction could be retained, and a lot of people unwilling to tackle a 7-8ft. model might be tempted with a small and relatively inexpensive one. Since scaling up or down is a departure from true-vintage, it is not much more of a step to a new design incorporating vintage characteristics, though it is appreciated that this is an approach which the true-blue vintage enthusiast

Full size copies of the plan reproduced here to 1/7th scale are available as Plan No. PET/1431 price £2.65 plus 40p postage and packing from Aeromodeller Plans Service, PO Box 35, Bridge Street, Hemel Hempstead, Herts., HP1 1EE.



might frown upon.

Thus *Miss 38*. Old hands might discern touches of Garami, Effinger, Struck, Shereslaw or Plecan; recent modellers will perhaps find the methods of construction something of a challenge, although it is all straightforward. The intention was free flight or rudder-assist, the latter being quite different from rudder-only control. Only a small rudder is fitted, and should be used gently to produce wide circles. As with a long tail moment, a lifting-section tail and the consequent rearward CG position, tight turns will rapidly develop into spiral dives. Opposite rudder may straighten such a dive out but the excessive speed then means a loop and/or stalling all over the sky, which is not the sort of relaxed flying originally envisaged.

Wings

The flying surfaces are fairly normal in construction, though the opportunity has been taken to use spruce for one of the mainspars, just in case unintentional aerobatics occur. Making the wing panels separately and then joining has always seemed to me making unnecessary difficulties. Far better to build one panel, prop it in place at the correct dihedral and build the next panel on to it, repeating until the entire wing is assembled. The dihedral braces can then be added after a check that all angles are correct.

With both the wing and tailplane tips, the upper spars should slope down to the sheet tip outlines, and this is best achieved by cutting across the top of the flatways spars (i.e. wing mainspar) and cracking downward, rubbing cement into the crack and all round the spar. Vertical sections need to be

door panels etc. and known as luan ply in some places. Note that the underside stringers rest on all the rear formers but are half sunk into those in the cabin area.

When the crutch is dry, lift it and cement in the formers, back to the fore side of its respective cross-member. Check that all are upright and not twisted in any way. Before fitting B1 and B2, bend the undercarriage legs and sew them to their formers. Drill or pierce the holes marked (use a $\frac{1}{16}$ in. drill or the point of an old pair of school compasses) and thread a needle with a length of strong button thread. Tie through, round the wire, at one bottom corner, then take the thread diagonally across the plain side of the ply, bring it through the next hole, round the wire and back through, diagonally to the next hole etc. until you reach the opposite bottom hole. Pass the thread through the holes and round the wire three times, then move diagonally back, putting two turns round the wire at each pair of holes, until the starting point is reached, when you can tie off to the original end. Rub cement into and around the thread on both sides. The reason for this method is in a heavy landing, the long crosses formed by the thread are less likely to tear through the ply than short stitches between each pair of holes, and the wire is unlikely to cut the short stitches round it, so the result is a stronger and more efficient mounting.

Cement B1 and B2 to the crutch but do not solder the undercarriage legs together yet. Fit the top centre fuselage spine and the cabin top, turn over and fit the bottom three stringers. This anchors B1 and B2 sufficiently for the undercarriage to be completed by making any minor adjustments to the bends and binding and

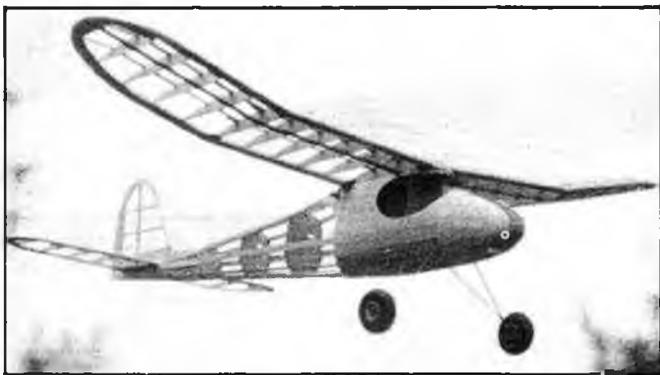
longerons. Before going further, if radio is to be fitted, make the servo mount and the pushrod, both detailed on the plan. Sheet in the top last bays beneath the fin i.e. and make up the fin flat on the drawing. Sand the spine and top longerons to a smooth angle.

Now comes rather a tedious bit, sheeting between the stringers from B1 to B4, followed by the upper cabin sides, which is an easier job than it looks. Trace the shape off the plan, allowing a bit of spare where it curves over B1, fit and glue in place flat, without trying to cement to B1. When dry, coax the sheet to lie on B1 (if necessary, warm or even lightly dampen it) and cement in place. Trim when dry. Add the small strip of sheet round the curve of the cabin top and fit sub-fin, gussets and dowels as shown.

Engine installation

You will have decided on the motor earlier. Cut the bearer notches in B1 to suit the width of your engine. The next step is to cut and fit the bearers, using a card template to obtain the correct downthrust angle. Mark and drill for the engine bolt-holes before cementing the bearers. It is probably easiest to cut a pair of cheeks to the profile of the nose from soft balsa sheet, cementing these in place and the bearers to them. Use a scrap spacer to hold the bearers parallel and check to see that they are square in plane to B1.

When dry, cut and fit very soft block either side, or build up laminations of soft sheet. Fill between the cheeks with more soft sheet or scraps of block, sufficiently thick to be able to carve the nose to shape. Before closing everything off, make pro-



The sturdy structure can be clearly seen in these two photographs. Covering and colour finishing if required, should be completed before adding the cabin glazing.

cut and jointed unless the change of angle is only very slight.

Fuselage

Crutch construction is used for the fuselage, the crutch being a frame of $\frac{1}{8} \times \frac{3}{8}$ in. strip built accurately over the drawing. Make sure the cross-member ends are cut vertically and that they are located accurately and upright on the drawing. While this is drying, trace and cut the formers; gaboon ply was used for B1, B2 and the cabin top on the prototype, as it is adequately strong and quite noticeably lighter than birch ply. It is the reddish coloured, fairly open grain ply used for flush

soldering the bottom ends together. Use thin copper wire, or tinned copper wire, for binding, and the areas of wire to be soldered till they are clean and shiny. Wind the copper wire round leaving gaps between turns; close winding looks nice but the solder may not penetrate to the piano wire. Flux the area (Baker's Fluid works best on piano wire) and heat the joint with a large iron or a small blowlamp flame until when the solder is touched on, it runs into all the joint. Do not overheat or you may draw the temper of the piano wire. Scrub under a tap to remove all traces of flux.

The remaining stringers can now be added, tapering them at the tail to fit neatly together, then add the two top corner

vision for a tank if radio flights are intended, (1oz should be plenty for the sort of motor intended) and put in engine bolts with a touch of epoxy under the heads (see later). Check as you go along that everything can be fuel-proofed; if not, fuel-proof as work proceeds.

Carve and sand to shape when thoroughly dry, aiming for a smoothly rounded effect blending into the main fuselage aft of B1. Different engines will affect the shape very slightly by different cut-out requirements, but make sure that access is adequate for bolt tightening and refuelling.

Sand the fin to shape with the trim tab and rudder tack-cemented in place. For free flight only the tab need be cut away,

repositioning with soft wire so that adjustments can be bent in. For radio, the rudder shown should be hinged with thread or Mylar, or any recognised method, and a horn fitted as shown. Cement the fin to the fuselage, slotting in a reinforcement tongue as drawn.

Again for radio, it is desirable to strengthen the bottom of the fuselage beneath the cabin area by covering it with nylon or silk (a piece of ladies' tights would do). Check that everything on the drawing has been completed and sand over the entire model ready for covering. Heavy-weight tissue is recommended with doped-on lightweight tissue for decoration. The prototype was lightly sprayed with colour dope, but an alternative has been tried successfully on other recent models where the tissue has been applied with coloured dyes. Your DIY shop will have powder dyes

which are mixed with methylated spirit, then thinned with water. This was stroked on with a cotton-wool wad instead of plain water for water shrinking, and produced an even overall colour which was then clear doped. It won't 'take' over filled areas, e.g. if you have attached the tissue with dope or cement, and it is desirable to treat a few tissue trimmings, dried flat, so that there is something with which to patch small punctures; it gives a brightish colour for negligible weight increase.

Covering

Tissue covering a stringered fuselage may be new to some builders, but if it is done in fore-and-aft strips, it is not difficult. Cover the solid nose with narrow strips, the edges of which will disappear after doping and sanding. The rest of the fuselage and the flying surfaces are virtually conven-

tional, except that the fuselage top is best done in two strips.

Flying

Check that the surfaces are all warp-free and sit square to each other from ahead and above, and that the model balances at the point shown or fractionally ahead of it. A couple of gentle glide tests will indicate if there is anything severely wrong, but the final glide trim should be adjusted after longer flights. Start these off by running the engine over-rich, gradually leaning out as the trim is established.

For free flight, the engine can have a small amount of sidethrust to the right, especially if a 1½cc motor is used, and should have right trim tab. With no engine offset, don't be afraid to use 15-20° of right tab. The aim is a wide right-hand circle for both climb and glide. For radio, ideally straight flight under power and on the glide should be sought, which means adjusting right sidethrust. If the bearer holes are larger than the engine bolts, slackening the nuts and relighting while holding the engine twisted as required should give enough adjustment, which is why only the bolt heads should be epoxied and not the shanks of the bolts in the holds. If necessary, use right trim tab to get straight flight or slight right turn, as the rudder is larger than the tab and will still allow the model to be steered gently around the sky.

Finally, do make sure that the nose end is thoroughly fuel-proofed. This sort of model can put in a lot of hours flying on those lovely calm summer evenings and the biggest hazard to a long life is likely to be fuel soakage!



Our model is covered in heavyweight model span tissue. This is an ideal subject to use the dying tissue colouring method. See page 529 of the October 1981 issue.

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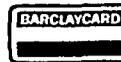
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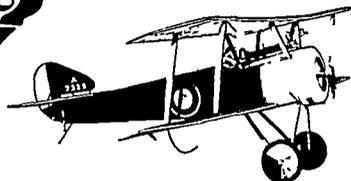
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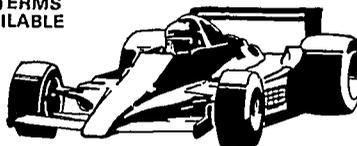


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F1A GLIDER TECHNOLOGY

By
Martyn Cowley

THE PAST DECADE has seen the progressive development of circle tow for F1A gliders following the lead of the Russian flyers. The 1981 Championships therefore provided quite a shock for many contestants. Considerably higher wind speeds than has been the norm for such events forced many to revert to their *old* straight tow models or to continue with designs unsuited or untrimmed for such conditions.

Three Model Rule

The first point to raise is the rule allowing only three models to be processed for a World Championship event. Unsure of conditions on the day most competitors are forced to process a combination of calm air and rough weather models. The fact remains that in rough weather, models are far more likely to be damaged or lost requiring at least one rough weather reserve back-up which then only allows one calm air or fly-off type model. Should the rules restrict modellers to just three models? Should there even be a restriction on the number of models used. Certainly some top flyers were put out of the running by the luck factor of lost or damaged models that was no reflection on their flying ability.

Straight vs Circle Tow

Having stated that this was definitely a straight tow Championships, the handful of flyers that chose to circle tow did so both with supreme skill and confidence and also with very impressive results. Lepp or Lagan, 2nd and 3rd, could easily have walked away with the event, and proved conclusively that a good model is a good model, irrespective of wind conditions. They proved also that circle towing gives the competitor the primary advantage of field mobility, allowing careful positioning to take maximum advantage of thermals marked by other competitors, while in return preventing others from taking the same benefit. All you need is more practice!

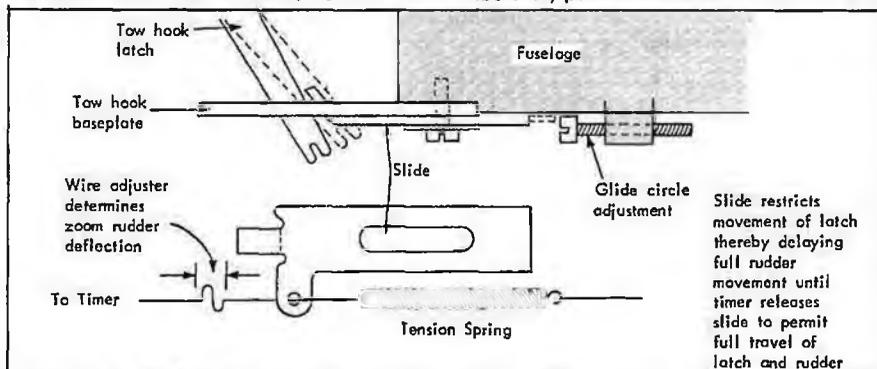
Forward Towhook Lock

The problem of circle towing in high winds comes during the down wind circuit when the model picks up speed and requires very athletic pursuit by the flyer, with the high risk of towing the glider into the ground. This problem was overcome by Andres Lepp for example, who used an 'over centre' mechanism on his circle tow hook that would keep the hook in the forward straight tow position until deliberately pulled into the circle mode at his

instigation. This was achieved simply by a light spring pulling the hook forward which just overcame the rearward pull of the rudder spring. This left the hook in a forward bias straight tow equilibrium position. Andres used this hook set-up to pull the model way in front of him on tow, also gaining some useful slack line, before starting his down-wind run, with the model still on straight rudder kiting into wind. With a head start on the model, Andres could then choose his moment to jerk the line and pull the hook back into the circle mode to complete the manoeuvre — very much overhead as opposed to down wind. Other models used a similar principle, with light magnets retaining the hook in its forward position until released by a rearward pull on the tow line.

Delayed Rudder

One increasing trend in glider gadgets, be they straight or circle tow models, is the delayed rudder transition between release and true glide. The excessively high air speeds now being achieved during acceleration just prior to a catapult launch, can produce an unwanted wing over manoeuvre when the model is ultimately free of the towline with full glide rudder deflection. The idea is not new, but the benefits were perhaps more notable with the high winds generally giving models higher speeds on tow. In all cases the rudder is delayed using a function on the dethermaliser timer which is activated either as the hook unlatches or as the timer is started by the usual line activated methods. Systems varied from two position

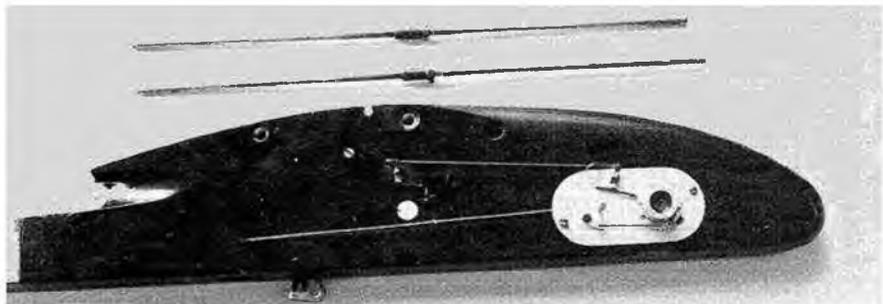
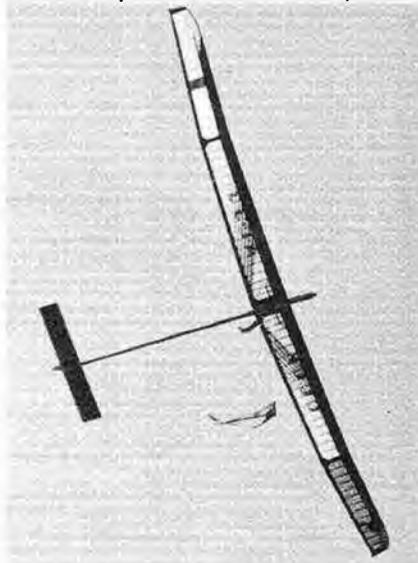


Ivan Horejsl's delayed rudder mechanism.

Andres Lepp's AL-33 on tow during seventh round; note lighter structure at tips.

Jubilant Ivan Weiss place fourth, using this plastic winch which features super tough gears, an improvement over similar models. Galil Glider winch available from Ivan, Jabutinsky 34, Nahariya, Israel. Price \$15.00.

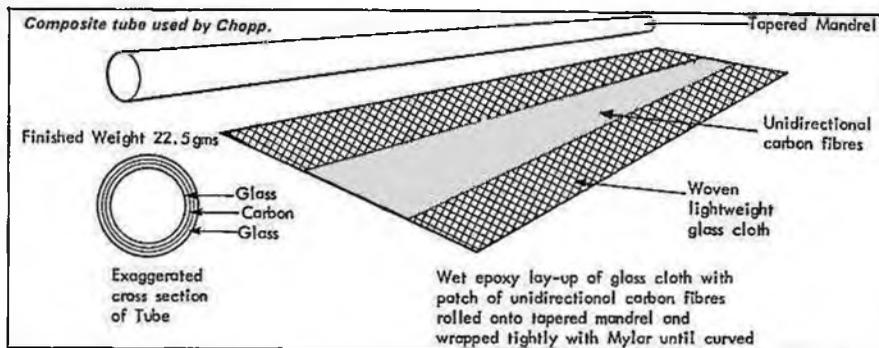
Removable wing dowels on Lepp's models use drilled through bolts which screw into the fuselage.



rudder stops to restrictions put on tow hook or latch movement, each delayed by a few seconds by the timer. The Chinese team who continue to develop their unique pendulum rudder set-up (described page 93 February 1980 Aeromodeller) had a similar arrangement with the pendulum held in position after launch, until released by the timer to produce rudder deflection.

Towline Release

The Russians and Chinese particularly, also took advantage of releasing the ground end of the towline at launch, which allows full line extension just prior to launch with no deceleration during release. This system obviously requires the towline to be detachable from the winch in the first place as throwing the winch forfeits the flight! More importantly the release mechanism at the model end has to allow the free towline to simply fall off the hook without any hang-ups caused by additional D.T. timer start lines or Auto Rudder lines. For that reason a timer start activated by the latch or such similar mechanism is required. This launch method is particularly suited to the 'up and off' technique of waiting on the ground for signs of lift followed by a quick tow and immediate release. The technique allows maximum acceleration of the model as demonstrated with some extremely fast tows. The flyer can hold the very end of the towline with arm extended straight overhead, gaining perhaps 8 feet above ground level, and requiring no spare line for release, he can build up maximum tension in the line during tow before simply releasing his end of the line, allowing the model to zoom upwards and convert its speed into additional altitude.

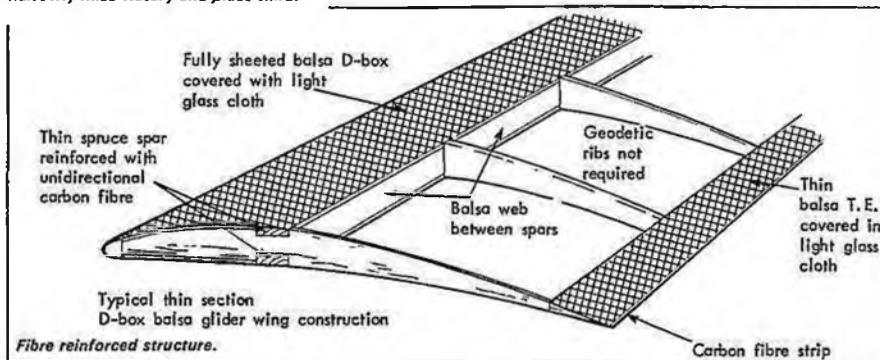


in the rear half of the wing structure. Pavel Dvorak, still flying his winning design *Saper*, now uses 1.5mm balsa sheet top and bottom, similar to F1C power model practice; will there be a move toward metal foil covered gliders in the future? Also in the quest for lightweight and rigidity, Victor Chopp is now using carbon fibre laminated with glass cloth for his fuselage boom tubes. Unidirectional carbon fibre was also being increasingly used by other competitors notably Susumu Kurokawa of Japan, primarily as a reinforcement for wing spars and along leading and trailing edges. Carbon fibre offers tremendous strength for very little weight and a little goes a long way towards producing a strong, stiff light wing structure.

Ivan Horejsi's F1A-811

Ivan's latest model — 811, was designed specifically to fly well in windy conditions — with a strong wing, damage resistant structure and able to tow and make good releases in turbulent wind. The balsa sheeted D-box wing is fibreglassed for strength and rigidity and the bottom of the wing is covered in Super Monokote over the tissue. This gives super puncture resistance for very little weight penalty. The fuselage boom is one of the new Chopp fibreglass and carbon tubes. The model is also fitted with a piezo-ceramic electric buzzer to aid retrieving long flights in wind.

The tow hook is fitted with a simple delayed rudder slide, which is now standard for Ivan's models. He considers wash-in essential for correct zoom and stable flight, and the rudder delay simplifies catapult launch adjustment. During the first 3-10 seconds, the slide is in its forward position and the rudder is only slightly deflected, until the time releases the slide and the rudder moves to full glide deflection. The model has been an instant hit for Ivan and he rates it as his best towing model with the release being very safe and very high!



leaving his end of the line, allowing the model to zoom upwards and convert its speed into additional altitude.

Structures

Higher airspeeds and stresses on gliders during tow continue to produce refinements in construction; Jim Wilson for example reckons he puts an 18G load on his model just prior to release! Apart from simply preventing the wings from bending

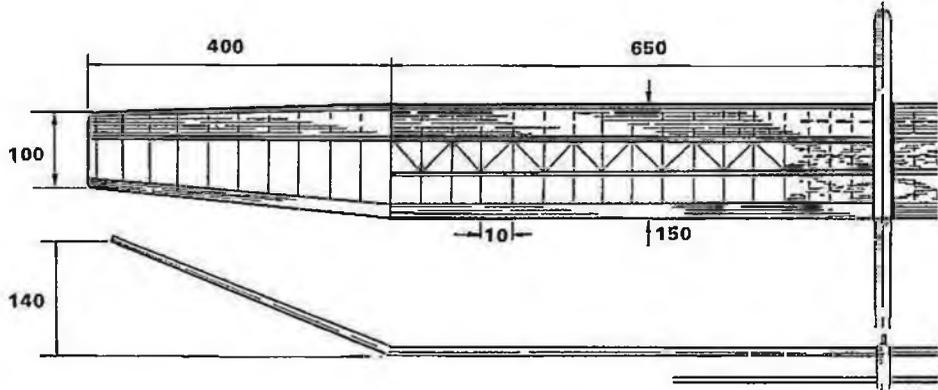
until they break under such extremes, torsional rigidity is also very important in preventing wing flutter from causing drag which slows the model up and reduces its launch height potential. Many of the Russian style models which feature thin wing sections with sheeted D box leading edges are now moving towards glass cloth covering for increased rigidity. Indeed many Russian models with glass-covered leading edges no longer need geodetic ribs

Far right: China's Zhov Yaodong demonstrates the releasable towline; note winch in other hand.

Carbon fibre spar and trailing edge reinforcement on elegant models of Susumu Kurokawa from Japan.

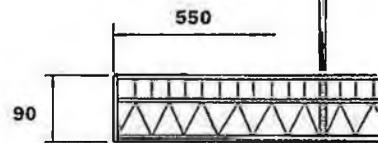
Jim Wilson, member of well prepared US team who spent time practising in windy weather in anticipation of actual conditions — they had done their homework! Jim, it flies better the other way up!





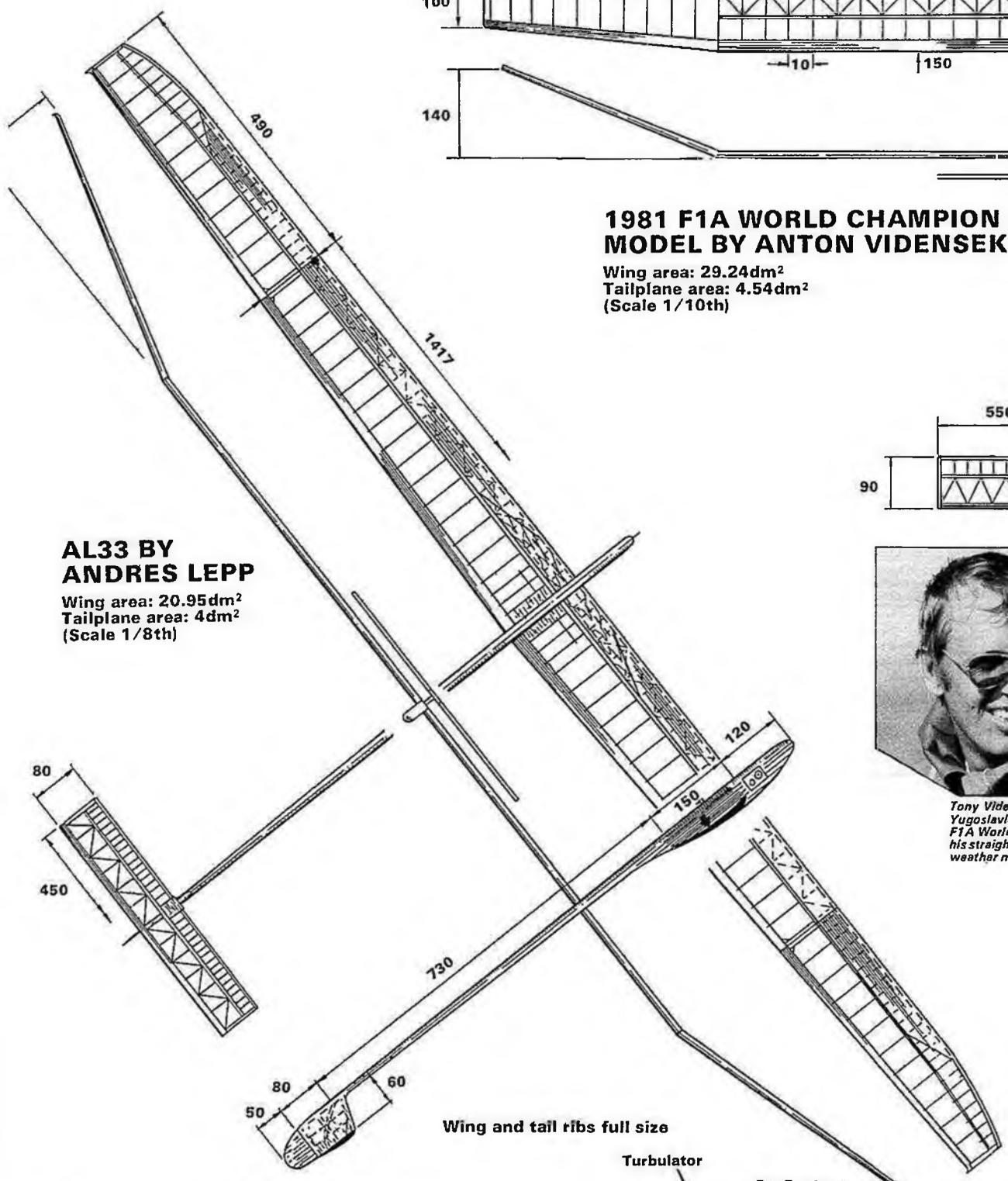
**1981 F1A WORLD CHAMPION
MODEL BY ANTON VIDENSEK**

Wing area: 29.24dm²
Tailplane area: 4.54dm²
(Scale 1/10th)



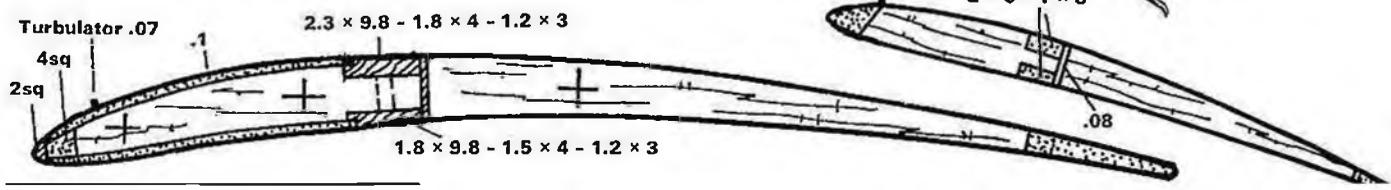
**AL33 BY
ANDRES LEPP**

Wing area: 20.95dm²
Tailplane area: 4dm²
(Scale 1/8th)



Tony Vidensek from Yugoslavia became the 1981 F1A World Champion flying his straight two windy weather model.

Wing and tail ribs full size



130

+ 3.5°

Wing and tail ribs full size
(wood sizes not available)

690

B6356 MOD

811 BY IVAN HOREJSI

Wing area: 29dm²
Tailplane area: 4.6dm²
Fuselage boom:
Carbon fibre
(Scale 1/8th)



Ivan Horejsi, who has an impressive record of top placings at recent Championships, helping Czechoslovakia take second Team prize this year.

540

120

160

660

85

30

420

Wing warps for RT circles
Both tips washout 2mm
Left centre panel: flat
right centre panel: wash-in 1.5mm

510

125

125

3 x 3

2.5 x 8

1.5 x 6

1.5 x 2

Turbulator .07

4 x 5

2 x 7

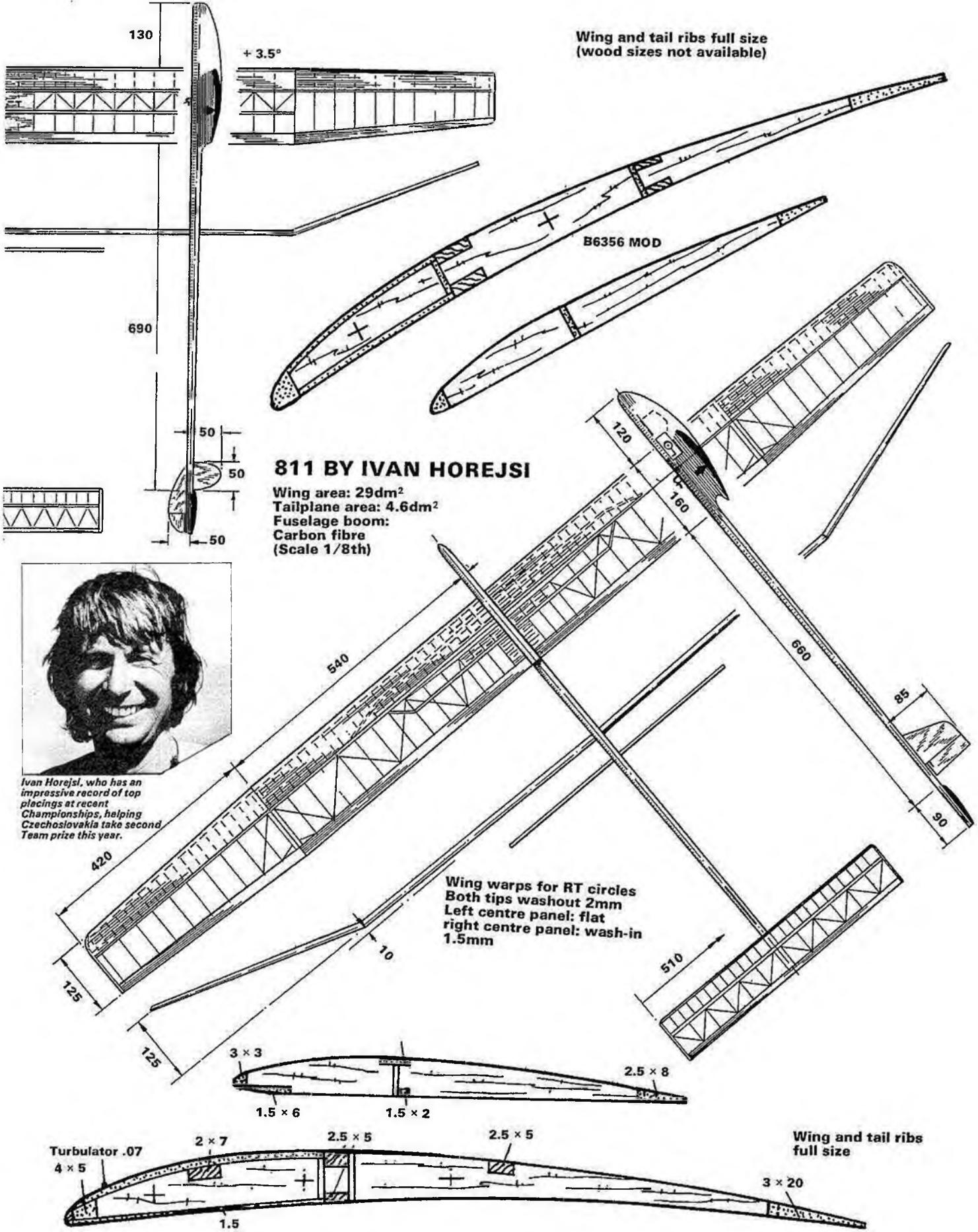
2.5 x 5

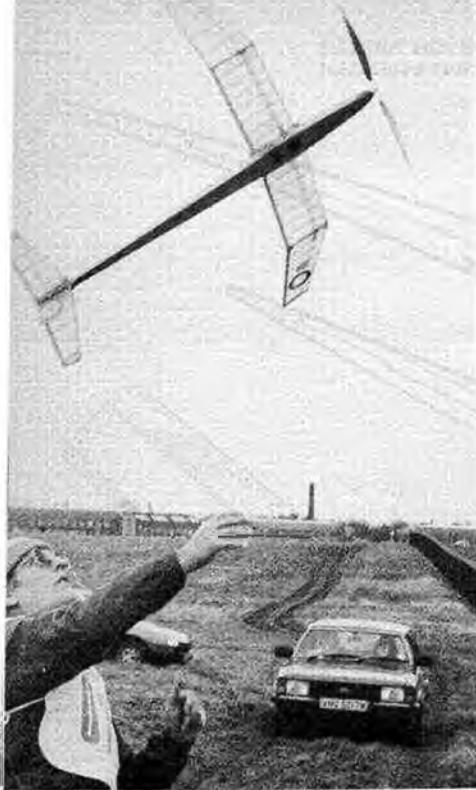
2.5 x 5

Wing and tail ribs full size

3 x 20

1.5





Jim Higgins (Croydon) gets his tapered wing 80gm model away to a max on its fifth flight, after four previous low times.

Jerry Cuthbert (Grantham) managed two max's but fell down poorly on two of his other flights.



COUPE d'HIVER 1981

The venue for this year, RAF Henlow, could not have been better, thanks to the RAF and Wing Commander Basil Gowling who made it all possible. We also extend our thanks to Flt.Lt. George Gatherer and the members of the RAF Henlow's model aircraft club who helped throughout the day.

Although very cold, the weather was also kind with only a slight north westerly breeze blowing, which enabled a flight line that gave a clear path across the airfield. It is surprising how even on such a large air-

field as Henlow, in certain wind directions unforeseen hazards reveal themselves.

The weather did break around 3pm with rain and rising wind strength one hour had been lost between 12-1pm, sum flying had to stop due to full size operations. This was one reason for quite a few late starters, which in turn made finalising the score-board rather hectic.

Support was the best for some years, a total of 85 entries in 80gm-75 flew, and 56 entries in 100gm — 45 flew, representing 530 recorded flights, apart from the many practice and no-show entries.

COUPE D'HIVER '81

RAF HENLOW DECEMBER 6



Peter Farmond (Wigan) with his all sheet wing (saw tooth) turbulator) had a good second flight time, but was unable to find good air for the other four.

Stafford Screen unhooks the winder with Ian Dowsett helping.

Below left: Ian Dowsett about to launch his 'Super Swallow' in the 100gm. Centre: Newham Beaumont with his interesting polyhedral tellplano 100 gram model. Right: Stafford Screen and helpers study the thermal detector.



80gm AEROMODELLER TROPHY

This must have been Dave Hipperson's year, yet another win although it was very close, Ian Dowsett only four seconds behind in a second place. Dave was now flying a distinctive red tip model with a span of over 40in. In fact most of the top placed competitors had large models.

Ian Dowsett flew his modified APS Swallow (Super Swallow) which had to be retrieved from a tree on one flight by the climbing skills of John Fletcher.

John came a very close third, only two seconds behind Ian. Junior flyers were well to the fore, with Ian and Graham Davitt at seventh and 15th with John Walker and Simon Billam not so far behind.

Over 65 max's were recorded in 80gm and 17 in 100gm, so there must have been some good air around at times, not bad for a cold December day. If it had been one week later there would have been a different story to tell as the field was under eight inches of snow!



Above: a graceful launch by a happy lady competitor. Right: John Wheddon (Northwood) making a good launch but was unable to find the lift.



Above: Don Niel managed a max on his third flight. Top right: John Riggs of St. Albans gets his rolled tube fuselage and well braced wing model away. Right: Peter Michel gets his model airborne.



100gm BERNARD BOUTILLIER CUP

For the second year running we had a proxy flown winner at the Coupe d'Hiver. Last year's 80gm *Aeromodeller Trophy* class was won by Frank Mont's USA proxy flown by John O'Donnell. Incidentally John was unable to attend this year's Coupe and was very much missed; a meeting without that overcoat seems hardly right! This year Canada scooped the *Bernard Boutillier Trophy* (100gm) with Stewart Savage's model 'Gannet,' thanks to the fine proxy flying of Ian Dowsett, who managed three max's. This is the same model that won the 1975 Nationals (apart from a few repairs!).

Norman Marcus was second with Dave Hipperson close in third place. Dennis Davitt had considerable difficulty in trimming his 'A' model and decided to enter his 'B' model late in the day which gained a creditable third place.

It was very encouraging with the supposedly falling of interest in free flight to see control line and radio control flyers at the meeting; let's see more of you at next year's venues.

The prizegiving was held in a hangar with appropriate comments from Ron Moulton. Wing Commander Gowling presented the *Aeromodeller* and *Bernard Boutillier Cups* and also announced that he would be pleased to have us back next year if it was possible. This is extremely good news as venues such as Henlow are hard to obtain these days.

There were prizes for most of the competitors even if towards the end it was just a

Right: what action! Ray Monks launching and time-keeper with his finger still on the button. Below left: Peter Carter (Croydon) getting his 100 gram away. Right: Andy Crisp piles on the turns.



tube of glue. Thanks to all the firms and individuals who donated prizes; David Stapleton gave one of his beautifully made winders, the first prize to go! Ian Dowsett donated a super carbon fibre Wake fuselage that was well appreciated, and Martyn Pressnell gave an autographed copy of his book *Aerofoils for Aeromodellers*; Solarbo & Keilkraft (balsa wood), Morris and Ingram (Badger 350-3 Airbrush), Harden Associates (CO₂ motor and Anemometer), Humbrol Ltd. (Dope, Glue, Cement), Micro-Mold Ltd. (Versa-Vice and Paint Sprayer), Turnbridges Ltd. (Balsa Cement, Sanding Sealer and Dope), and Model Aircraft (Bournemouth) for an Impala glider kit.

Here's to next year, let's keep up the superb support and pray the weather will hold good.

OFFICIAL RESULTS

100gr (Bernard Boutillier Trophy) 56 entered, 45 flew

1. S. Savage (Canada) (proxy I. Dowsett)	120	120	120	360
2. N. Marcus	120	107	120	347



3. D. Hipperson	120	120	105	345
4. D. Davitt	106	120	85	311
5. R. Monks	69	120	115	304
6. J. Cooper	80	102	120	302
7. J. E. Fletcher	89	92	120	301
8. I. Dowsett	97	91	107	295
9. N. Marcus	89	120	85	294
10. J. Brookes	95	78	120	293
11. J. Higgins, 288;	12. D. Greaves, 282;	13. P. Ball, 279;	14. N. Beaumont, 277;	15. P. Carter, 269;
16. J. Brookes, 264;	17. M. Dilly, 258;	18. P. Ball, 255;	19. D. Roche, 254;	20. J. E. Billam, 253;
21. R. Miller, 250;	22. T. Gray, 245;	23. G. Ferer, 241;	24. R. Peers, 232;	25. M. Chilton, 219;
26. A. Wells, 197;	27. S. Billam (Jnr.), 193;	28. R. Peers, 190;	29. J. Walker (Jnr.), 161;	30. J. Hopper and K. G. Smith, 160;
32. J. Cuthbert, 157;	33. A. Crisp, 156;	34. S. Darmon and D. V. Carter, 155;	36. B. Lavis, 152;	37. A. Crisp, 146;
38. D. Neil, 136;	39. R. Chilton, 134;	40. A. Ball (Jnr.), 110;	41. R. Moore, 109;	42. L. Ranson, 107;
43. P. Masterman, 78;	44. G. Davitt, 61;	45. D. Davitt, 60.		

80gr (Aeromodeller Trophy), 85 entered, 79 flew

1. D. Hipperson	100	112	120	120	572
2. I. Dowsett	120	100	108	120	568
3. J. E. Fletcher	120	116	90	120	566
4. B. Spooner	109	116	120	97	562
5. D. Greaves	99	120	99	120	558
6. E. Hawthorn	120	75	120	120	555
7. I. Davitt	74	120	120	120	554
8. M. Chilton	120	120	120	73	553
9. J. Cooper	94	120	115	97	546
10. D. Davitt	118	120	120	76	542
11. P. Ball, 541;	12. M. Dilly, 539;	13. M. Howick, 528;	14. T. Gray, 513;	15. G. Davitt, 509;	
16. M. Bull, 506;	17. B. V. Rowe, 504;	18. D. Roche, 499;	19. J. Brookes, 497;	20. G. Sharp, 486;	
21. J. Bailey, 485;	22. A. R. Well, 476;	23. L. Ransom, 475;	24. J. Cuthbert, 472;	25. J. P. Walker (Jnr), 460;	
26. M. Dixon, 459;	27. P. Michel, 458;	28. G. Ferer, 452;	29. R. Peers, 450;	30. S. Billam (Jnr), 447;	
31. R. C. Uden, 447;	32. K. Taylor, 444;	33. P. Carter, 443;	34. J. Meaney, 442;	35. R. W. Paveley, 436;	
36. D. A. Neil, 434;	37. P. Harris, 426;	38. F. Chilton, 423;	39. B. Lavis, 419;	R. Miller, 419;	
41. G. E. Neil (Jnr), 415;	42. D. Taylor, 412;	43. K. Fordham, 410;	44. J. Higgins, 406;	45. S. Dixon (Jnr), 405;	
46. S. Screen, 397;	47. J. E. Billam, 391;	48. Mrs. J. M. Nash, 395;	49. N. Dixon (Jnr), 384;	50. P. Cameron, 378;	
51. Unknown, 367;	52. P. Siddall, 362;	53. P. J. Harris, 361;	54. J. Hopper, 358;	55. H. Rothera, 352;	
56. P. Farrimond, 351;	57. P. Ellis, 347;	58. M. J. Stones, 346;	59. D. V. Carter, 338;	60. N. Robson, 335;	
61. S. Darmon, 331;	62. I. Cliff (Jnr), 324;	A. Ball (Jnr), 309;	M. Pressnell and P. Masterman, 301;	66. R. Johnson, 291;	
67. P. Bixby, 289;	68. K. G. Smith, 283;	69. W. E. Colledge, 282;	70. R. Chilton, 277;	71. M. Bird, 274;	
72. A. Crisp, 247;	73. C. H. Blanch, 219;	74. M. J. Metcalf, 214;	75. M. J. Riggs, 210;	76. J. Wheddon, 198;	
77. E. Burge, 141;	78. B. Horsley, 108;	79. R. Elliott, 63.			

SCALE MATTERS

by Alan Callaghan

The Chosen Ones

Ever wonder why other modellers choose to build the aircraft that they do? If one takes, for the sake of argument, what may be commonly held as the opposite ends of the flying scale spectrum, i.e. the large, elaborate, heavyweight, radio scale model, and the small, lightweight, intricate, indoor scale model, and ask what is one of the more notable features apparent from a gathering of such types at, say, a Nationals event, the answer would probably include a mention of the wide variety of subjects chosen. Support for both of these two model classes in the early 1980s is at such a level it would seem that a simple law of averages would dictate that simply because of the sheer number of active builders, the range of subjects chosen is bound to be extremely wide. Things are rarely as simple as this however, since it also seems to be true that the more activity there is in any one particular branch of modelling, the more its devotees are aware of what fellow builders are doing. This being so, the scale modellers, who would probably admit to a liking of playing his cards close to his chest regarding the next model on his building board, is in this roundabout way more directly affected in his choice of subject by what he knows other people are building or planning to build, than he would otherwise be. Perhaps it is simply an ingrained mark of respect of other people's efforts, but it is certainly not unusual for the flying scale modeller to dismiss building a certain

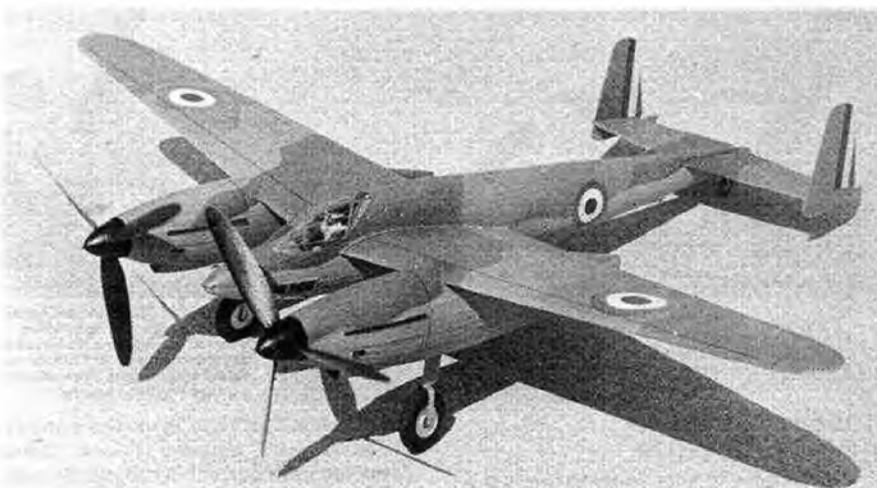
subject because it has been done before, no matter how good or bad the previous effort turned out to be.

There is always some special pleasure to be gained from finding a very suitable and apparently un-modelled prototype for one scale class or another, but with the enormous amount of aviation literature that is published today, there is never an easy route to researching a really unique type. My own method is to read and read as widely as possible so as to build up a rough mental picture of where in future one may begin to look for any type of material. Even if you do not have easy access to such an excellent bookshop as London's Beaumont Aviation Literature of Holloway Road, and your local library keeps only a token amount of aviation titles, it is always worthwhile having an occasional quick browse through *all* of the currently published aviation magazines in your local newsagent before buying anything.

It does not take long to become aware of which magazines specialise more in your type of subjects. Which magazines regularly publish 3 views? Which never do? Which make features of colours and markings? Which never ever mention the subject? They are all easy to spot, and although they mostly claim to cater for a wide readership, any bias in the compilation of editorial matter is difficult to disguise. Keep a mental note of the *type* of information published, rather than trying to remember all the individual aircraft featured.

For the most part my own interests in aircraft are civil rather than military, historic rather than modern, and light planes rather than the heavy stuff! Civil aircraft of any unusual make can be notoriously difficult to document in the way of colour schemes and minor details, and consequently one has to cast the net as wide as possible for fruitful reading matter. To this end several years ago I joined the *Experimental Aircraft Association* based at P.O. Box 229, Hales Corners, Wisconsin 53130, USA, having

Ing. Lubonir Kautny releases his son Peter's Zeppelin CS-1 for ROW take-off. Model is 1:20 scale.



Above: this very elegant Breguet 820 was built for rubber power by Oswald Janisch shown launching the Breguet below. Model is 1:20 scale, weighs 70gms and is capable of flights of up to one minute.





Above: Mike Hetherington's own design fighter, built entirely from paper with a few balsa inserts. Prop is paper covered too. Right: this simple, attractive and very suitable FF subject is an 'Aero 42' powered by a Modela CO₂, and built by Antonín Alfrey of Czechoslovakia.

read and been very impressed with several copies of their main monthly magazine, 'Sport Aviation'. This magazine deals only with fullsize aircraft, including homebuilt types both modern and vintage, replicas, and aircraft restoration. Other magazines companion to it from the same source are 'The Vintage Airplane', 'Sport Aerobatics' and a 'Warbirds' Newsletter. All of these self-explanatory titles are available only on subscription from the above address (Membership plus 'Sport Aviation' costs \$25 per year) and I would highly recommend the vintage and sport issues to anyone who likes lightplanes both ancient and modern. The quality of printing and photography in black and white and colour is superb, and being aimed at those who actually build aircraft, a great effort is made to show clearly the kind of detail that modellers need to see, such as cockpit interiors and minor points of construction. Three views are rarely if ever published, but the wealth of other information more than compensates for this as far as documentation goes.

Taking these magazines has been rewarding in many ways but one particular recent example occurred in mid-August when the latest issue of the 'Vintage Airplane' arrived. The major feature was a rare and beautifully restored *Waco 10* three seater biplane. A superb colour study featured on the cover and many black and white detail shots appeared inside. Less than a week later whilst browsing through a box of secondhand modelling magazines at a trade stall at the Nationals, what should come to light but an excellent 3 view drawing of the type which was more than adequate to work from. The net result is that a known but unusual subject which would probably never have been given a second thought due to the difficulty of documentation, now becomes a very viable proposition — mainly due to the bit of luck

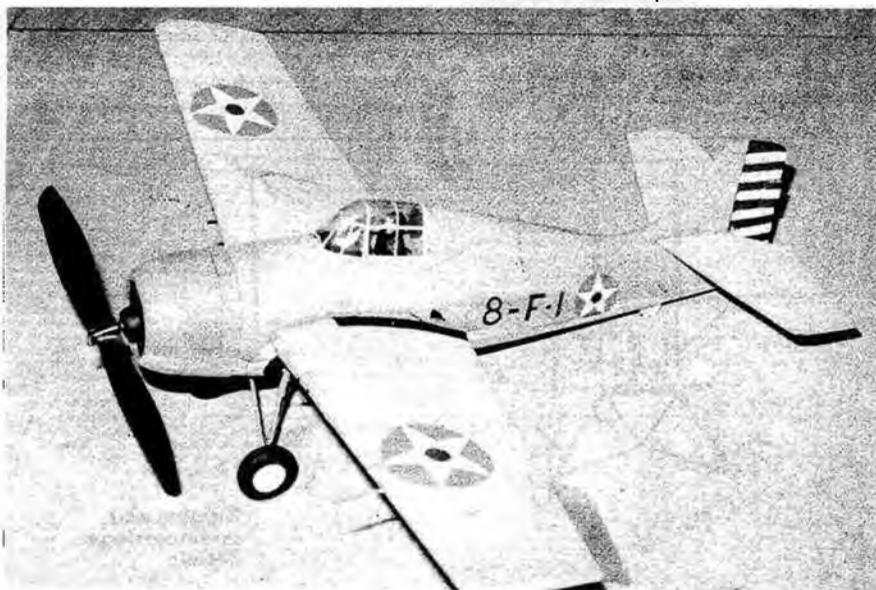


but also by keeping in mind the fact that certain magazines occasionally publish rather nice scale drawings!

So how does one go about acquiring in a more concerted way, a suitable folder of documentation of a more obscure type which never featured as a 'Profile', was by a minor manufacturer, or was built only in very small numbers? My own method is to maintain a card index with a single card devoted to each particular aircraft type. Like most scale modellers, I always have at the back of my mind a list of types that interest me more than others, and so whenever I'm browsing through those magazines or books whether new or already in my possession, any mention of the aircraft type — three views, sketches, photos, details however small, are entered up while the item is fresh in the mind. Even the most haphazard re-reading of one's own stock of magazines etc., can unearth the odd little detail that may remain quite untraceable especially when the need for it arises. I am most reluctant to cut out and file a photo or similar, but if the item is simply referred to in the index then the job is done.

References soon build up to a worthwhile amount — I like to include engine details too, and eventually sufficient material is accessible to make a good set of documentation possible for that rare or unusual model. Working this way it seems that a far wider range of models becomes quite practicable than would be the case when the idea for the model comes before the availability of the right material. Often the long and arduous search for material for a particular model can dull the enthusiasm for the subject. As in the case of the *Waco*, enthusiasm can be stimulated by encouraging it to happen the other way around.

Below: 'Grumman Helicat' by Barry Pursglove. Typical of many US carrier aircraft with good proportions for FF rubber power i.e. plenty of dihedral, tail area, good moment arms, etc. Also colourful and easy to document. Seen at Milton Keynes.



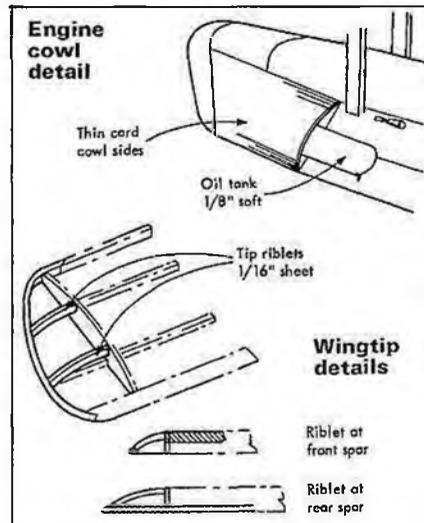
D.H. Tiger Moth

By Stan Cole
A superb 18 1/2 in. span flying scale model for CO power units



'NOT ANOTHER TIGER MOTH!' Well, for me there could never be too many but sadly, many of the type I have seen modelled, whilst the shape is there, somehow the feel and character of this beautiful thoro'bred seems to be missing. As a 'Tigerholic' I have built several 'Tiggies' over the years with hopeful improvements incorporated in this design. With no great pains taken, the finished model 'weighed-in' at 2oz. and in flight was ridiculously stable. With your 'Tiger' cruising lazily in left hand circles on a balmy summer evening — when seasoned 'Radio boys' put down their transmitters to stroll over asking all sorts of questions as to 'how does it fly like that?' will be reward enough for your labours.

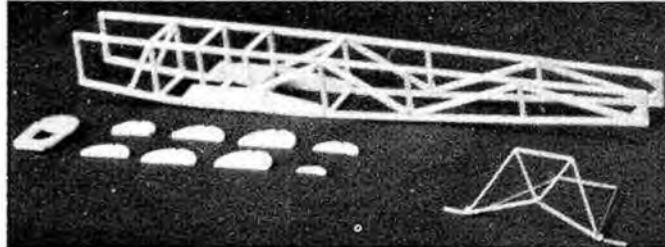
longerons, build another fuselage side on top of the first and split with razor blade when dry. In the plan view the Tiger fuselage has three straight changes of profile — one at former 'B', one at former 'C' and one in front of fin (see plan). Carefully crack fuselage sides at these points LH and RH before adding 3/32 and 1/16 in cross braces followed by top deck formers 'A' to 'G'. Next add the 1/16 in. sq. spine and cover top deck with 1/32 in. sheet. Bind on undercarriage and add 1/16 in. x 1/16 in. cross braces; next add motor mount with gussets (balsa cement) and cement in securely (PVA white is used for general construction). Now fit motor and tank assembly (I used a Telco) and build motor



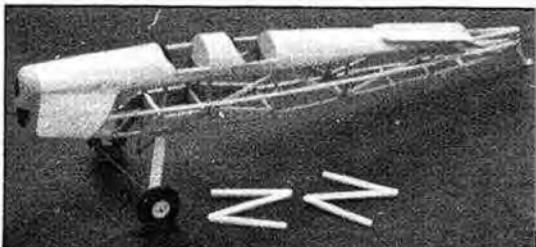
given one coat 50/50 clear dope. Cut out cockpit apertures (detail later).

Wings

These are of conventional construction — the wing tips being laminated around stout cardboard formers. I found construction much simplified by making a complete set of cardboard (1/16 in. thick) formers to 'inside' profile line of wing tips tailplane and rudder, pinning these down on a separate board and having all laminated shapes ready when needed later. The upper



Left: the fuselage side frames assembled. It is very important to ensure they are square to each other. Cut all of the eight cross members to exactly the same size, place the side frames on a flat surface, with the top straight longeron face down. A weight can be used to hold them in place. Right: the completed fuselage ready for covering.



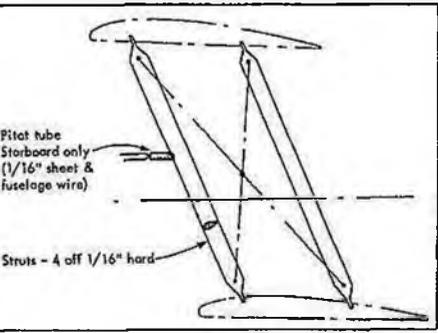
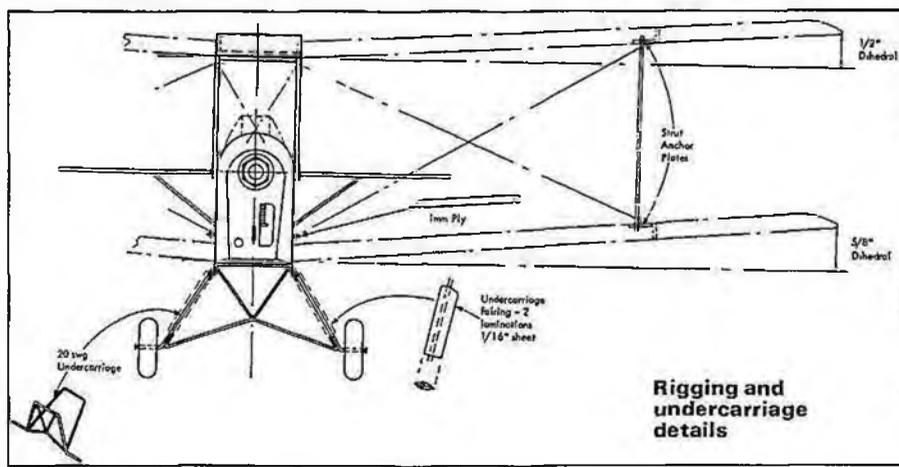
Fuselage

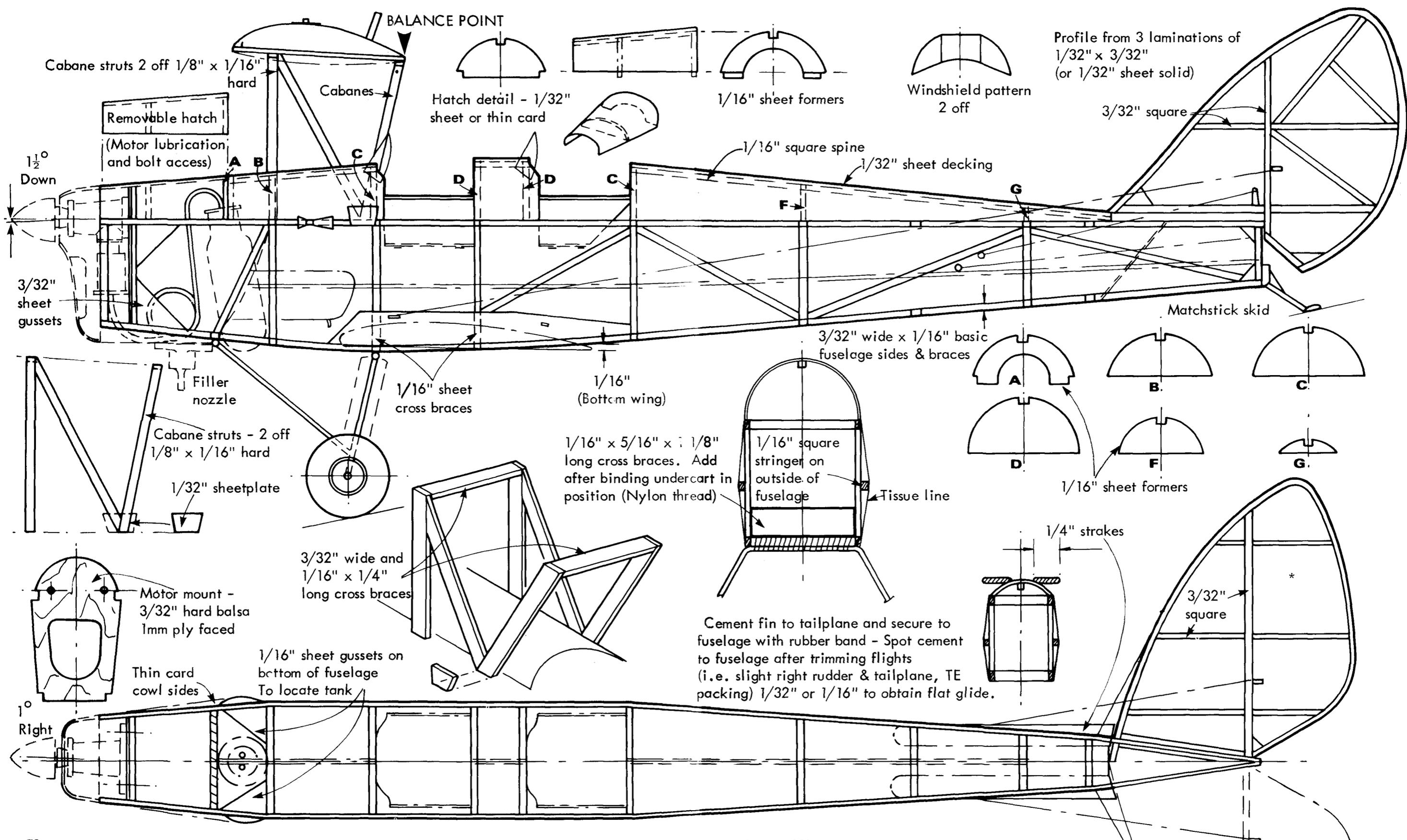
Start by building fuselage sides flat on plan together with 'warren girder' inter braces. Select medium hard stock for the main top and bottom full length 3/32 x 1/16 in.

access hatch. Fit a 1mm ply clamp plate behind motor mount 1 3/16 in. wide 1 3/16 in. long to act as a washer for engine nuts. Attach 1/16 in. sq. stringer full length to each side of fuselage. Entire fuselage can now be covered with modelspan lightweight and

main planes are joined to 1/16 in. sheet centre-section and set at 1/2 in. dihedral at both wing tips. Cover centre section (fuel tank) with thin card and add 1/4 in. wide note-paper tissue supports chordwise over ribs R-2. If desired the complete top surface of the centre section may be 'corrugated' by applying cotton at about .04 in. pitch. Wings are skinned with lightweight modelspan with 50/50 dope (one coat), as are tailplane and fin/rudder.

If it is decided to paint the model (thinned





Cabane struts 2 off 1/8" x 1/16" hard

BALANCE POINT

Profile from 3 laminations of 1/32" x 3/32" (or 1/32" sheet solid)

Removable hatch (Motor lubrication and bolt access)

Hatch detail - 1/32" sheet or thin card

1/16" sheet formers

Windshield pattern 2 off

3/32" square

1 1/2° Down

3/32" sheet gussets

1/16" square spine

1/32" sheet decking

Matchstick skid

Filler nozzle

1/16" sheet cross braces

1/16" (Bottom wing)

3/32" wide x 1/16" basic fuselage sides & braces

Cabane struts - 2 off 1/8" x 1/16" hard

1/32" sheetplate

1/16" x 5/16" x 1/8" long cross braces. Add after binding undercart in position (Nylon thread)

1/16" square stringer on outside of fuselage

Tissue line

1/16" sheet formers

3/32" wide and 1/16" x 1/4" long cross braces

1/4" strakes

Motor mount - 3/32" hard balsa 1mm ply faced

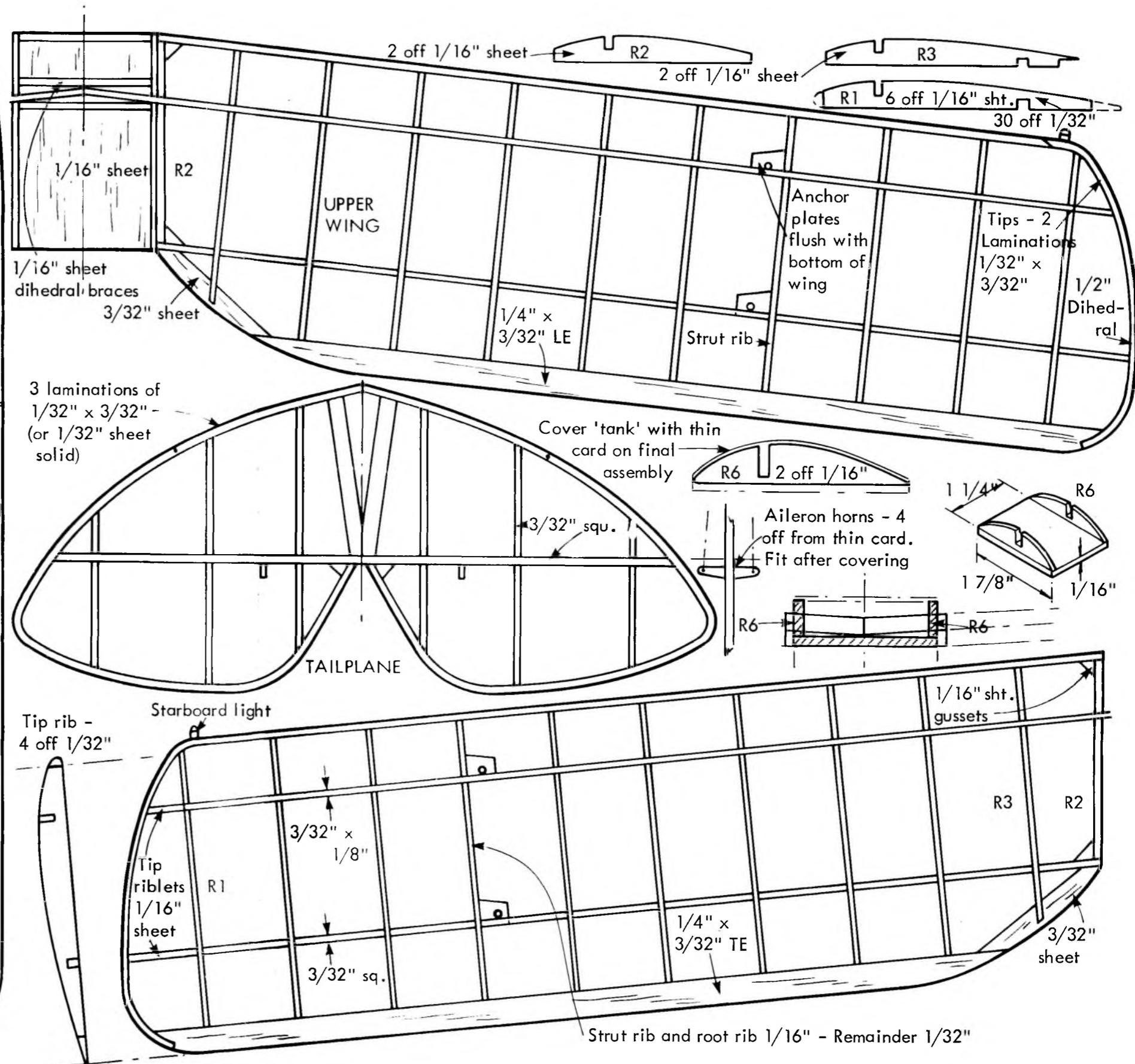
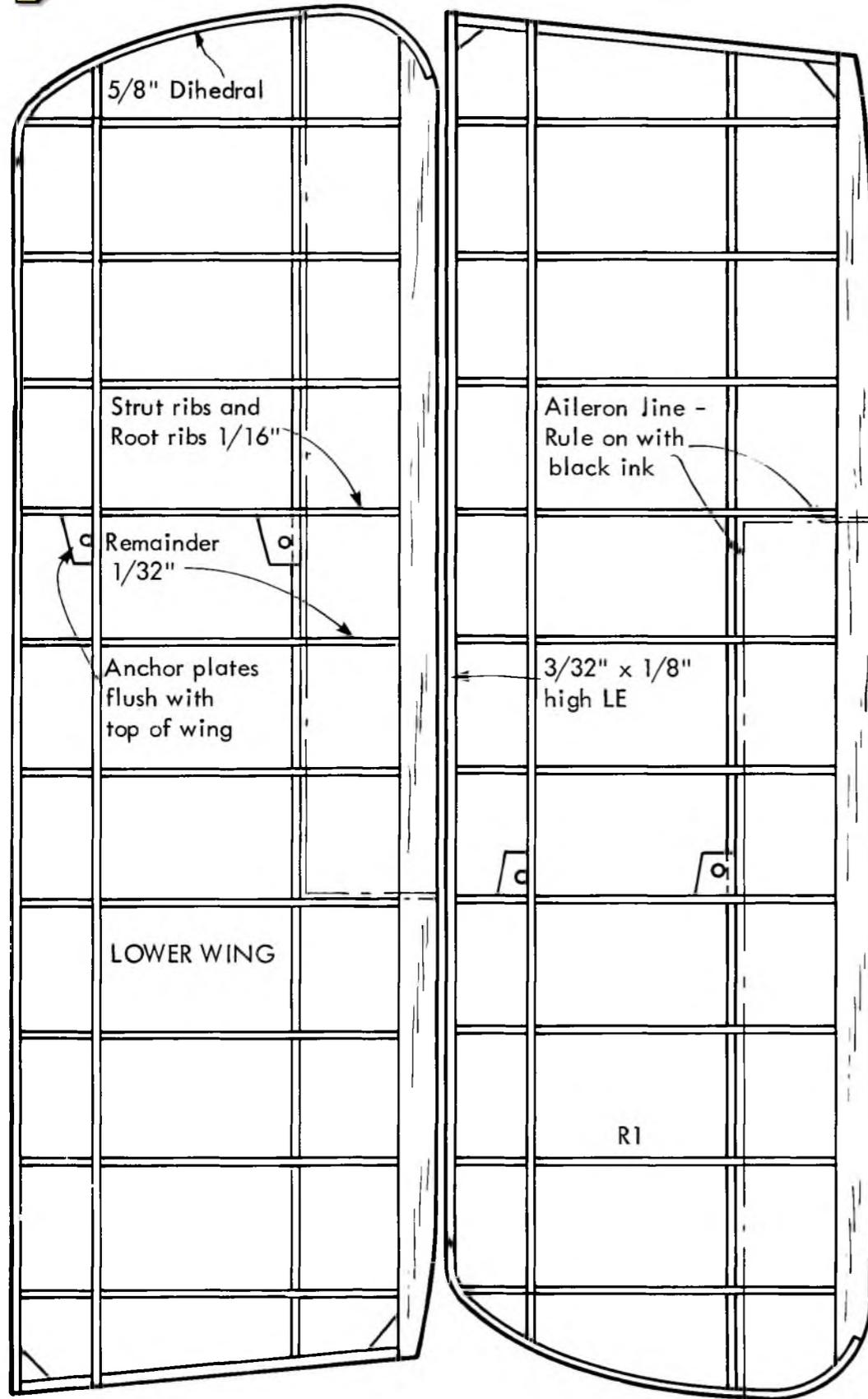
Thin card cowl sides

1/16" sheet gussets on bottom of fuselage To locate tank

Cement fin to tailplane and secure to fuselage with rubber band - Spot cement to fuselage after trimming flights (i.e. slight right rudder & tailplane, TE packing) 1/32" or 1/16" to obtain flat glide.

3/32" square

1° Right

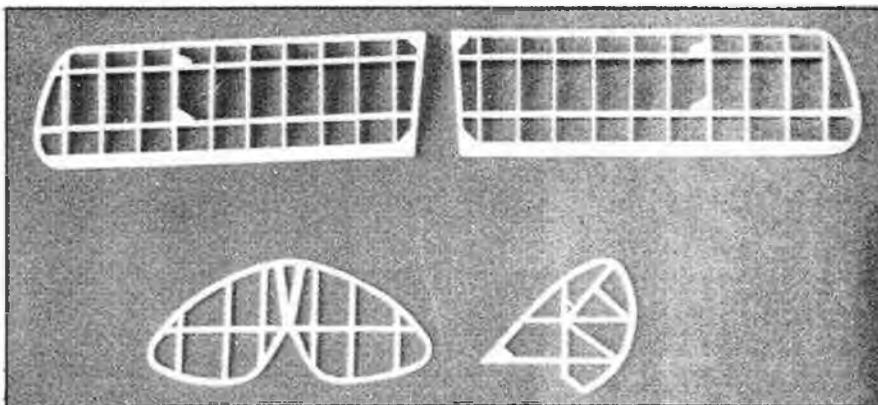


When shrinking the covering tissue on the wing, tail and fin, hold flat using pins angled over the leading and trailing edges with 1/16 packing under the leading and trailing edge to keep the lower surface free to dry and shrink. This procedure should also be carried out when doping and left over night, as shrinking can still take place for some time after the dope is apparently dry.

matt Humbrol), it is at this stage it should be done — before assembly. Various liveries for this type are to numerous to mention. M.A.P. plan pack 2681 includes a 1/48th and 1/36th scale plan, plus excellent detailed sketches and service history.

Assembly

Add built-up cabane struts to fuselage and 'cement' on completed upper mainplane. When dry, chock-up fuselage and cement lower planes in position shown on plan — keeping a careful eye on equilateral dihedral and squareness. When dry add wing struts. Cement fin to tailplane — this assembly is secured to fuselage with a rubber band until satisfactory trim, turn and glide have been established. It is then spot cemented 'in-situ' and rigging added (cotton); add rigging to wings (see sketch). At this point all scale embellishments may be added to model. Personally I found 'Aeromodeller' scale drawing No. 2681 a boon in this direction and therefore, have



glide dead straight. Add 1/32in. packing under rear of tailplane (neg. incidence), increase if necessary to 1/16in. until a flat glide is obtained. The motor will have been installed with 1° right side thrust and 1 1/2° down thrust; give the motor an 'up' (dry charge and launch model into wind (if any) at shoulder height with a smooth follow through motion. Always trim for left hand circles adjusting the rudder slightly. Stalling can of course be cured by adding either more down thrust or a small amount

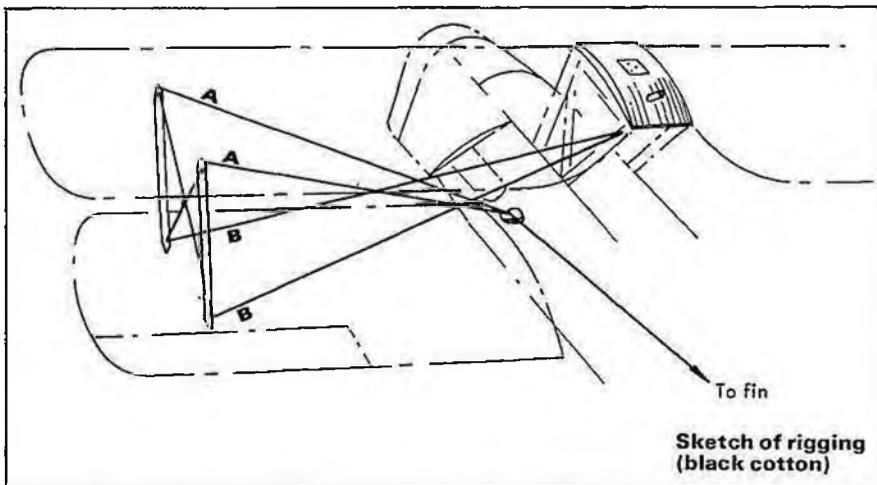
of plasticene up front. When satisfied with trim, give the motor a 'down' charge — follow through launch again and watch your 'Tiggy' come back slowly over your head — I think you will be pleased you built it!

A few comments on the engine

I found the Telco very flexible in RPM range — trimming on low revs and stepping-up revs once the feel of the model had been gained. Personally I prefer to leave the injection nozzle free — that is hanging slightly out of the underside of the fuselage and injecting the CO₂ by gripping the nozzle with the thumb and fore finger, thus saving the weight of a structure to withstand the nozzle pressure required and possible damage to fuselage.

In conclusion

Two prototypes were built and both had the same stable characteristics. G-ADIA was built around 1935, saw war service and has recently been completely refurbished and was the aeroplane flown by HRH The Prince of Wales. Finally I wish to thank my colleague Mr. G. Sheppard for his patience and help in taking the photographs.



not noted these points on the plan — to keep a working drawing simple. However here are some of them. Intake louvre and step on cowl — starboard side, pitot tube on starboard strut, wing tip and rudder lights, tailplane struts, oil tank (on plan) cockpit dashboard with 'leather' crash pads, wind shields, and pilot. The nose cowling is a simple acetate moulding but a balsa hollowed out version will serve equally as well. Engine hatch is lightly spot cemented in position for easy removal.

Trimming and flying

For a model of this type ie. CO₂ weighing 2oz., choose a warm calm day (or evening) — shades of next spring I think! And launch model over long grass. Built as plan the model should be slightly nose heavy and



Free Flight Scene

DAVE HIPPERSON
reports

Open Rubber Trophy 81 — RAF Hemswell — October 18, 1981

It had to be windy — Sundays had been windy for weeks and everyone was ready for another. It still would have been a good contest. Miraculously, however, the little bit of old fashioned English autumn that had been blessing the Hemswell area for a few days before the contest, held and it was calm. The misty, sunny and light breeze conditions at the start gave way to clear and calmer air throughout the day with almost constant sunshine. The past two years' events had begun to affect model design noticeably and this calm saw the appearance of many new and often very large models.

Flown in four rounds commencing with a basic three minute max and increasing to two four's and finally a five minute flight before the fly off, the atmosphere at the start was tense as the conditions then were a little turbulent and gave the impression that things may get blowy. Ken Taylor and Gerry Ferer put themselves out right away. Gerry's model going rather flat about half-way through the power run and Ken dropping 12 seconds on this comparatively easy flight and presumably kicking himself all the rest of the day as he maxed out.

It was policy to make the max decision well in advance so that contestants knew what they would be expected to do in the flight after next. Thus the decision to make both the second and third maxes four minutes was taken well before it calmed off completely. Nevertheless these rounds weeded the perfect scores down to half the field. Before the fourth flight control was moved as the drift was backing slightly and although the surrounding fields were flat and empty enough to make retrieval no



Bob Wells away in lift for an easy four minute max.

Centre: beautiful launch from John Ashmole. Model a slightly stretched Trip Stick.

Right: Alan Gibbs made it through to the flyoff with this fast climber.



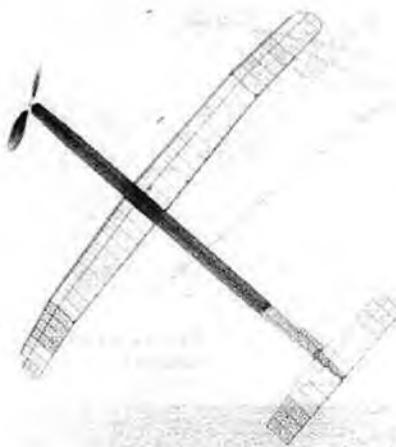
problem it felt safer to use as much of the drome as possible.

John Fletcher had muffed his third with a flight that stuck its nose in the air and held a slow climb and a steep stally glide in a terrible hole for a mere 2.14. Clubmate Bailey had little luck with his lightweight either. His pattern looked in need of some more trimming. Laurie Barr had been unlucky with a stall off the top of the climb on his second round flight in a bit of turbulence that had the model on the ground at 3.20 and John Carter had ten

seconds trimmed off his total on this round too.

Eighteen people had perfect scores at the start of the final 30 minute round at 4pm with a fly-off scheduled for 5.15. Going for the five minute max Mike Howick flew at the worst moment got no height and recorded 2.49. Both the Neils, father and son, were in trouble with dropped flights. Abraham in one of his first rubber contest spoilt a perfect score with 3.31 and Bernard Aslett — another indoor flier tempted out — had his neat yellow and white model pick up a stall on the glide to rob him of a chance later. Norman Marcus's deep fuselaged model with nearly a three minute run came a cropper in air that wasn't good enough for five minutes and closest of all the near misses was Russell Peers who was clocked off just five seconds short behind an obstruction on the horizon. This after his first model — retrieved from Odiham a few weeks before — was attacked by more bullocks. Perhaps it is something he uses in the dope that attracts them?

Phil Ball's day had started with his winding up a motor the wrong way but realising in time. He is a little ambidextrous. His Coupes have left-handed props and are correspondingly wound in reverse he was flying Coupe last week and hadn't re-adjusted! His first maxes were with his well known large model that is beginning to look its age. Later in the afternoon he began testing a very new and enormous tapered



Above: Phil Ball won yet again - this year with a new fully tapered turbulated two piece wing and enormous span.

Far left: Gerry Ferer went slightly flat on the first flight and dropped valuable time.

Left: eventual fourth placar - John O'Donnell got away in third round.

Right: John Carter away in first round.



wing model much to the delight of on-lookers. In this vital fourth round he decided to use it. The air he launched in enhanced the climb and held the glide at considerable altitude until the necessary five minutes had elapsed — then six — then seven — then eight. With DT stuck but a very slow drift Phil continued trotting across Lincolnshire under the model which steadfastly held height.

While this drama was unfolding John Godden finished off a perfect score with another fast climb from his conventional and really quite heavy but well trimmed model. JOD using his 54 Wake rule model made this flight look easy although all day he had been climbing very high.

Mark Croome who made his debut at this event last year now has a carload of huge models and a number in the pipeline. For the contest flights he used one slightly smaller than usual — 400sq ins and finished all over in fluorescent orange. An impressive sight it made climbing in the sunshine. His fourth was a max too and likewise into the flyoff top Junior once again Jonathan Walker with his distinctive rolled balsa tube fuselage and tip dihedral configuration.

The final round over and most models returned with few losses but an occasional breakage due mostly to owners tampering with trim to get that last little bit. Still high on the horizon and at colossal altitude was Ball's model having been in the air now for some quarter of an hour and a mile or so off the drome. The drift was dropping the whole time and the eight other flyoff qualifiers were preparing and re-trimming for the final sudden death flight at 5.15. At about 4.50 Ball's fly away had faded from view in the binoculars at some 25 minutes and seemed to be descending. The model could never land, let alone be returned in time for the flyoff he would have to fly his older one — but would he make it back even empty handed?

At this time entries opened for the Champagne Flyoff to be staged just as late as possible in an attempt to give those that dropped earlier another chance to show how they could have won. As an added incentive a cup of bubbly was presented to each entrant which inspired Mrs. Barr to sportingly enter even though she hadn't a model.

The main fly-off hooter blew and almost simultaneously Ball reappeared from downwind and with the model! He had run

under it all the way for 28 minutes, a total of three miles. Then he had the impossible dash back in only 20 minutes with a 450 square inch wing under his arm — lucky it comes apart. It would not be an understatement to say by this time Phil had warmed up and somehow already there was a feeling in the air about the outcome of this contest even though it had looked unlikely earlier in the morning. A countdown to the flyoff was accompanied by the whirring of half a dozen winders and on the start signal a number of models were airborne quickly. Lee, Scruby, Godden and Walker were all away but top of this stack of climbs was O'Donnell's mylar fin and tailed model glinting in the sun that had already set on the ground. As these flights moved into the glide Croome launched to a slightly flat initial climb from his 500sq. in. model. It soon settled down or rather up and looked safe and high at prop fold. Bob Wells climbed fast obviously in good air and then everyone's attention turned to Ball who was recovering from his dash and preparing the model. Some 7ft. of tapered wing, saw tooth turbulators, thin section, 5oz of rubber and only 3½oz of airframe — a model perfect for the calm conditions. He waited with the model wound and only a few minutes from the final hooter launched after studying his thermistor with the comment — "I'll go — I'm only cooking the motor." Characteristically of these big models the initial climb was gentle and flat but as it worked into better air it became steeper. The on-lookers were hypnotised and seemed to come too again at about three minutes when they realised the prop had folded and the model was way up and hanging. It went on and on hanging in the evening air eventually landing at just short of ten minutes — he had done it again.

Activity was not over and at 5.50 the Champagne Flyoff took place and almost

the entire entry launched on the start signal and very impressive it looked. Times were much closer in these cooler evening conditions, John Carter having revenge for that ten seconds he lost earlier with a near seven minute flight and Norman Marcus adding a couple of strands to his very long running model and climbing much higher as a consequence. Highest of all was Russell Peers using a brand new tapered layout of about 300sq. in. This model climbed like a Wakefield but for a minute and a half Bernard Aslett had been delayed by retrieving a trimming flight and got away last with a model much larger than the one he had been flying all day — about the proportions of Ball's original. This was an incredible flight as no one could have expected lift at this time yet his very long (2.30) climb pulled the model respectably high from where it seemed to glide on and on. Eyestrain in the murk meant that watches were clocked off a little over eight minutes but the model was still at some altitude. Those closer said it flew virtually 9½ minutes and this almost at night time.

The prize giving at the local pub attracted a good attendance, substantial prizes going down to tenth and at least one free beer each. Something like £300 worth of goods and cash were given away although even this had to be an anti-climax compared to the extra ordinary dramas of the day. Remembering the events of the first Open Rubber Trophy, there was little doubt in anyone's mind why Bob Wells received such a round of applause for his second place. The contest had done what was intended to create an exciting competition for everyone all day and improve model performance through design progress.



Above: biggest model on the field yet to be fully trimmed. John Fletcher's 520sq. inch monster.

Above right: Neil family in action. Mr. and Mrs. hold while Graham (second junior) winds.

Right: Bob Bailey winds 81 version of 1966 multiple winner. Out of luck this year.

Far left: Dennis Davitt launches 300 sq. incher on first flight.

Left: massive long run on this latest Norman Marcus creation.



Mark Croome hides behind all orange 400 sq. incher used on all qualifying flights.

Open Rubber Trophy Results (41 entered — 36 flew)

1. P. Ball	Grantham	3.00	4.00	4.00	5.00	16.00	+ 9.55
2. A. Wells	Anglia	3.00	4.00	4.00	5.00	16.00	+ 8.43
3. M. Croome	C/M	3.00	4.00	4.00	5.00	16.00	+ 7.53
4. J. O'Donnell	Whitefield	3.00	4.00	4.00	5.00	16.00	+ 7.37
5. N. Lee	E. Gristead	3.00	4.00	4.00	5.00	16.00	+ 5.37
6. D. J. Scruby	C/M	3.00	4.00	4.00	5.00	16.00	+ 5.15
7. J. Godden	Leeds	3.00	4.00	4.00	5.00	16.00	+ 4.44
8. J. Walker (J)	Birmingham	3.00	4.00	4.00	5.00	16.00	+ 4.38
9. A. Gibbs	Birmingham	3.00	4.00	4.00	5.00	16.00	+ 4.04

Champagne Flyoff at 5.50pm (13 flew)

1. B. Aslett	Swindon	8.16
2. J. Carter	Falcons	6.59
3. N. Marcus	Croydon	6.34
4. R. Peers	Falcons	6.32
5. J. Fletcher	St. Albans	6.24



Although it also underlined how well one can do with a conventional airframe if properly trimmed. John Godden even used a free wheeling prop on one of his four minute max flights!

There will be comparison of the top models in a later issue.

Sponsors

Dave Stapleton — Winder.
Mike Coomes (Loctite) — Cyno and Sprays.
Humbrol — Airbrushes (2) and Cyno.
Micromold — Kits (2) and Cyno.
Maple Models — presentation pack.
Michael's Models — Discount on purchase of

prizes.

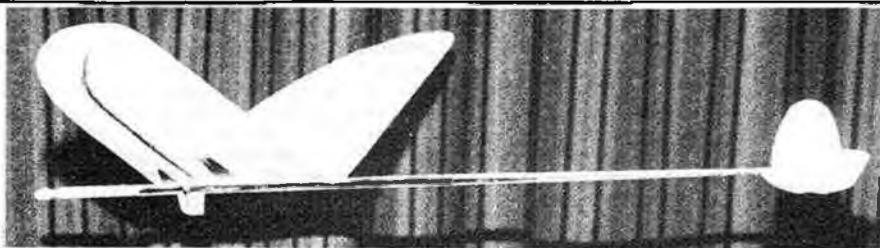
H. J. Nicholls — Wood.
Gooders Models — Glue etc.
Super Models — Glue etc.
C and B Models — Glue etc.
Aeromodeller — enamel paints.
Ripmax — Telco CO2 Cessnas and motors Tuff Stuff.

Slaithwaite Indoor Event — 8th November 1981

Organiser and Reporter Bernard Hunt

The first event of the North of England winter season was run by the Huddersfield Club at Colne Valley Leisure Centre, which is 110ft. x 65ft. x 24ft. high hall noted for its low drift and turbulence-free conditions.

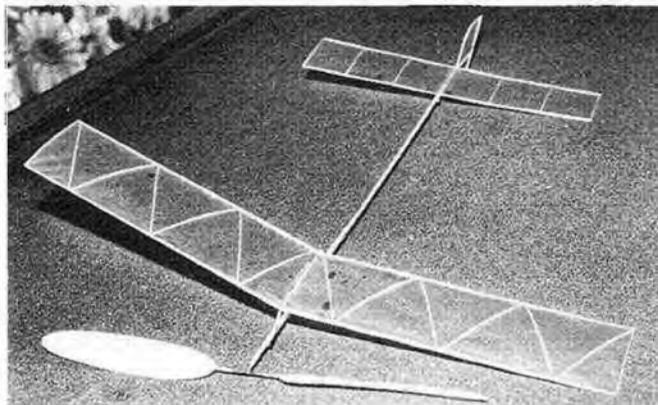
This year changes were made to the format of the competition with both duration events flown in A & B sections to try and give more closely matched contests. So it proved in the first event, hand launched glider, where Graham Davitt of Leeds won the A section comfortably with 33.7 + 33.6 seconds. Tony Balding of



Graham Davitt's HLG is a development of his earlier model, weighs 4.6 gm.

Dennis Davitt's EZB designed by Graham, weighs 1.25gm and features 145 per cent CG.

Reg Boor launches his DH8A Puss Moth, which gained the highest static score at Slaithwaite Indoor Event.



Cleethorpes won B section with 24.3 + 22.6 seconds, there was less than 2 seconds per flight between the first 4 places.

Rubber scale with 16 entries turned out to be a super event with lots of new and interesting models. Star of the show was Reg Boor's open class DH 8A Puss Moth which topped static and just managed to squeeze its highly banked circle into the hall and so beat Mike Sanderson's neat Wittman Tailwind into second place. The 'best effort' prize went to D. Horsefield of Bolton with his highly original Armstrong Whitworth FT10 quadruplane peanut which flew most impressively. Thanks go to the patient judges Jack Hardcastle and

Dennis Schofield of the Huddersfield Club.

EZB although not quite as well supported this time saw very high flight times with countless 10 min + flights and the old hall record of 11 minutes being beaten on no less than 6 occasions. The winner of A section was Dennis Davitt of Leeds with 12.01 + 13.53 (yes 13.53 which is almost unbelievable for 24ft. ceiling height and a 1.2 gramme model) and Brian Kenny of Falcons won B section with 8.54 + 9.56 (which would have come close to winning the open event 2 years ago). The thorny old problem of steering caused some aggro and a vote in favour of 'no steering' was passed for future events.



MARTIN DILLY reports

Motivation

Occasionally people ask how competition flyers find the time and energy to maintain both aircraft and enthusiasm. This is not, of course, a peculiarity unique to free-flight; the same is true for control-line and R/C flyers who see more to their activity than simply filling in spare time while the Sunday lunch is being cooked, and, I suspect, also for cross-country runners, mountain climbers or anglers. While competition is a strong incentive for free-flight enthusiasts, we are lucky in that, like control-line speed, ours is a purely objective sport, with a stopwatch, rather than a judge's opinion as the sole arbiter of achievement. The man-versus-the-elements aspect is one that does not appeal to everyone — they feel that there are forces out there that they do not understand and that they feel may be stronger than they are; this is why people stay at home and make miniature Westminster Abbeys from matchsticks or take up amateur dramatics. Maybe it is why plastic scale model making is very popular; you can spend a lot of time on a project which a lot of people can instantly admire, because they know what it is supposed to be. Better still, after you have finished making the thing, if you don't fly it in a performance testing contest there is no risk that those bad old Laws of Nature will show everybody that you have not got it quite as right as someone else.

For me and many others in free-flight it is the single-handed challenging of nature that is a large part of the appeal. I know that sounds pretentious, but if you marooned one of them on an island the chances are that he would soon be trying to make something fly and trying to get the thing to stay up for longer than the previous time. Competing with other humans adds to the enjoyment a lot, but it is still Mother Nature whom we are trying to work with, assisted by the ideas of Isaac Newton and others; she is impartial and she doesn't suffer fools gladly.

A high output of models is unnecessary; having a few good ones whose flying needs you understand is most of the battle. Of course, you have to make choices. Stage

one, perhaps, is not to think of model flying as some sort of clandestine activity that you do in addition to the better known ones, like going to the pub every night; you do it *instead*. There are people who find time to compete at a high level in free-flight plus other sports, raise a family and no doubt mow the lawn too, but I daresay they don't spend a lot of time staring at the haunted fish-tank in the corner of the sitting room. Television is the one major time-waster that any would-be model flyer must contend with; however, once you realise that 90 per cent of the output is rubbish and most of the other ten per cent is so trivialised as to be gibberish, cutting out wing-ribs or torque-testing rubber seems much easier.

I do think that we in Britain have a very self-handicapping approach to model flying — and other activities, too. Some years ago I remember our R/C Aerobatics flyers returning from a World Championships with a slightly outraged story of how the winner, Phil Kraft, actually practised the complete schedule for half an hour every lunchtime when he was at work. A little later our C/L team returned from a World Championships, full of stirring tales about the late nights and the strength of the Czech beer, and mentioned that they looked out of their bedroom window at six o'clock one morning to see the Soviet team out in their tracksuits doing their road-work before the team race heats started. Ridiculous! I'm not suggesting that road-work is essential, but it shows a rather interesting attitude towards what we do; are we serious or not?

On the subject of fitness, although I am the last person to be qualified in that area, it certainly helps in free-flight. A quarter hour circle tow in calm weather can leave me capable of little further effort, and pedestrian retrieving over rough country for seven rounds on a windy day can mean a 15 mile walk. But this surely does not detract from free-flight, but adds to it. Hot weather flying, a trifle rare in Britain, requires different techniques from our usual ones; although it is not too easy to recognise, heat exhaustion, dehydration and loss of body salts are factors to guard against. One of our best-known recent team members was hospitalised a few years ago at an overseas contest, with heatstroke which could have been avoided with regular non-alcoholic drinks and salt tablets during the day. Even

if you don't *feel* thirsty it pays to have a good swig every hour or so, and drink powders like Accolade or Gatorade replace the electrolytic body salts lost during a hot day's flying.

Although hand-launched glider flying can lead to arm and shoulder injuries, I may be the first case known to medical science of towline elbow (related to tennis elbow); the sudden downward jerk needed to unlatch a slightly sticky circle towhook has twice produced painful elbow conditions that last for several weeks. At present I am divided as to whether the treatment — a cortisone shot straight into the affected part — is worth it or not...

Maxaid winch improvements

Elton Drew and Reg Latimer, who form Maxaid Modelling Products, have been taking note of the operational reports coming in from users of their neat glider winches, and have a modified version now available that seems to have cured the minor snags the originals had.

Moulded polypropylene faceplates are now used, which are fully located in the winch's outer casing, to prevent misalignment without relying on the clamping effect of the four screws holding them in place. These new faceplates feature moulded-in metal bearings, instead of the earlier nylon ones which could sometimes spin; additionally the gears are now fully enclosed, instead of having their shaft ends exposed. This will prevent dust and grit entering the mechanism, the shafts of which are now a ground stainless material.

Maxaid are also about to introduce a moulded plastic spool, rather than the present light alloy one, and the winches are now fitted with an improved handle folding mechanism, so the handle can be folded and unfolded simply by holding the spool and turning the handle sharply anticlockwise or clockwise, allowing it to lie alongside the gearbox for pocketability. The winch costs £11.00 + 60p post and packing (£2.00 airmail). The polypropylene spools are £1.00 each, compared with £1.40 for the alloy ones, plus 35p UK mail (60p airmail); this looks a convenient way to have a spare line handy, and Elton tells me the new spools will be a boon for winch droppers. Maxaid equipment is available from: 2, Downfield Close, Alveston, Bristol BS12 2NJ, or speak to Elton at a contest.

AUTUMN MINI — WATTON 22.11.81

Report by Chris Blanch

Watton has a reputation for being a rather turbulent airfield, and this was certainly the case for this Mini event. For much of the day there was a distinct area of sink, half-way across the airfield and as such maxes were rather difficult to come by.

Coupe attracted the largest entry and three good maxes, backed up by two other useful flights resulted in a win for Derek Roche. He was followed a minute or so in arrears by Dennis and Ian Davitt. Considering the extremely turbulent conditions these must be considered excellent scores.

Russell Peers revelled in the conditions and despite being treed twice won 1/2A. Bob Wells finished second after wrecking one model when it flew through an open

window and crashed into the far wall, and then losing his second model on his fourth flight.

A1 was won by Brian Lavis with some consistent and determined flying, bearing in mind the conditions. Julian Hopper arrived late and after two excellent flights faltered and finally broke his model. He

then concentrated on HLG to win this event.

In conditions far from ideal for CO² this event was won with some good flights by Phil Siddall.

Trophies and prizes were awarded to the first three in each event thanks to generous trade support.

Results		Coupe	
1/2A Power		1 D Roche.....	8.57
1 R. Peers.....	8.23	2 D. Davitt.....	7.47
2 A. Wells.....	6.56	3 I. Davitt.....	7.34
3 M. Bull.....	3.00		
A1 Glider		CO ²	
1 B. Lavis.....	7.25	1 P. Siddall.....	7.14
2 C. Edge.....	6.25	2 P. Davies.....	0.55
3 J. Hopper.....	6.17		
		HLG	
		1 J. Hopper.....	3.08
		2 B. Lavis.....	0.52

Club News... SPORT R/C FLYING IN WEST GERMANY by John Stannard

WESERBERGLAND MODELFLUGSHAU 1981

I have been a member of the Hameln model club here in W. Germany since 1972.

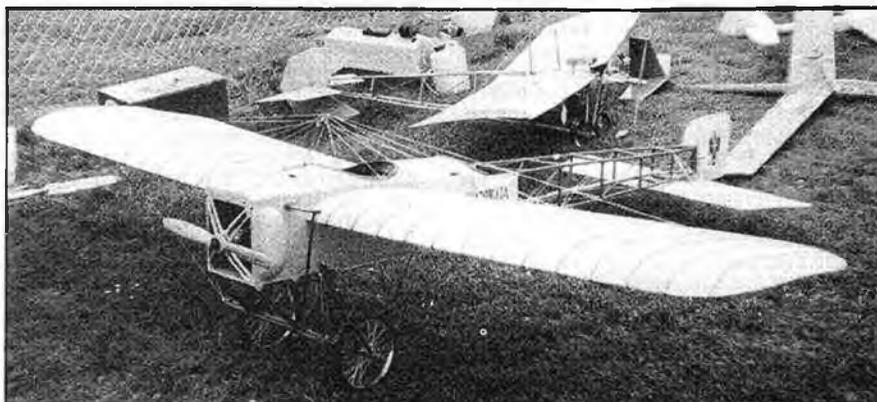
Our once annual major flying display now only takes place on alternate years. Before enlarging on this I will just recap on the local situation. As in the U.K. model flying space is at a premium and new sites are very difficult to find. Because of this, once established a club tends to become very 'permanent' with a large membership, good facilities and fairly expensive subs. Local byelaws are very strict and in our case no model engines can be run between 1.00 pm and 3.00 pm daily. No displays, even on private ground can be held without local council permission. Once established a club is allotted a flying zone and the location of this appears on maps used by full size aircraft. Two full size aircraft have tried to land on our 100m tarmac runway which caused quite a stir! Both were damaged and had to be dismantled and towed away. Our field lies close to the river Weser and the valley in which the river runs at this point is a military 'low level' area. Military jets hug the valley floor and

static and flying display events always attract a large number of people.

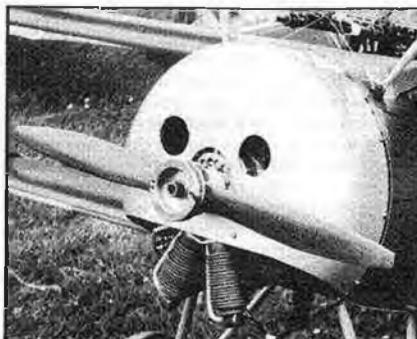
Whilst this is very gratifying and good for club funds the work load required to organise and run these functions has become excessive. For this reason and certainly no lack of public interest and enthusiasm we have decided to run our displays every other year. In 1981 we had superb weather and over 3,000 people turned up. The biggest headache came from car parking and the club members involved in this onerous task all swore 'never again'. Virtually all the participants

in the flying display come from clubs other than our own. Many of them are 'regulars' who travel all over Germany demonstrating at different shows. Some are sponsored by firms but most just do it for fun. The photos show just some of the more interesting models flown during the five hour display.

One of the most impressive and entertaining models was a Fokker Triplane. This was powered by a 58cc motor and featured 'firing' guns and had a superb mock battle with an equally large Ansaldo SVA also powered by a 58cc motor. The Asaldo was equipped with smoke which was used to



Above: a large Bleriot, one of three old timers at the meeting all powered with four-stroke motors.



Above left: 58cc powered Fokker triplane, features firing guns. Above right: close up view of Triplane's 58cc engine. Below right: large scale Akromaster powered by the 58cc Wankel chainsaw motor shown below, beautifully compact and powerful. Unfortunately no longer available.

often give one a fright when they appear nowhere at zero feet! Anyway back to the model variety. The model scene here is very healthy and new models and equipment abound. A small town usually has one if not two quite good model shops and most offer discounts to regular customers. Although plenty of kits etc. are produced by German firms the Japanese seem to be increasing their share of the market. My pilgrimage to Sywell in 1981 convinced me that modelling is still cheaper in the U.K. This applies to basic items such as balsa and fuel right through to motors and R/C gear. I buy many items from the U.K. and usually find mail order services to be excellent.

Modelling and particularly R/C aircraft modelling is extremely popular, both our

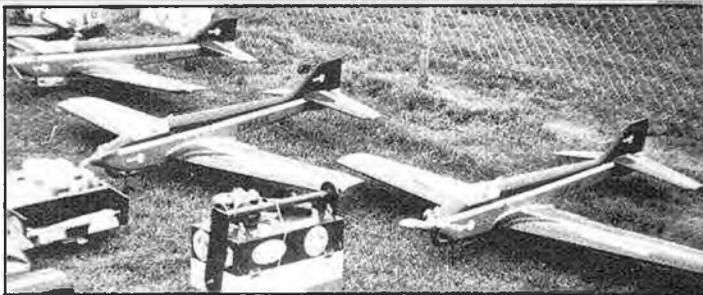
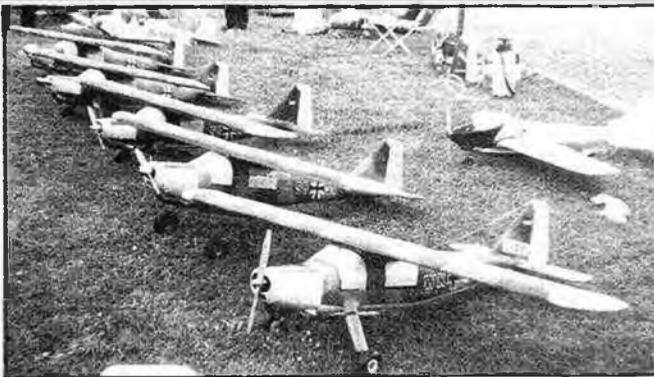


good effect during the combat sequence. Both flew low and this combined with their size added to the realism.

There were numerous 'large' models flying and most were powered by Quadras, although a large scale Akromaster had used a 58cc Wankel motor. The motor is beautifully compact and powerful and I understand was designed for chain saw use.

Almost all the smaller scale 'old timer' models used 4 stroke motors. An Antoinette, Bleriot and Klemm which were good examples of the current interest in this type of model and power plant. They were a really delightful sight and sound in the air.

Formation flying was popular this year with both the participants and spectators. A formation team of seven Dornier Do 27s took off simultaneously in 'loose' formation. Unfortunately two collided on landing but were not badly damaged. This is one approach to formation flying which has



Left: five of the seven Dornier Do 27s that flew simultaneously, the other two collided on landing, but were not badly damaged. Above: three identical 'Curare' models that gave a superb formation flying display. Below: the Dornier Do 17 flew well. One of the many twins at the display.

good spectator appeal yet does not require too much practise, just good eyesight to know which is your model! At the other end of the scale was the Peter Stuyvesant formation aerobatic team.

The three identical Curare models gave a superb performance from the moment they took off in formation until their formation landing. In windy conditions they held their positions like Red Arrows and flew a schedule that would have been difficult enough for an individual pilot, and earned a well deserved round of applause. Sponsorship is not new in modelling but I would have liked to have found out exactly what form it took in their case.

The Dornier Do 17 and B-25 Mitchell were just two of a number of twins that gave a simultaneous performance. They flew extremely well and most were surprisingly aerobatic, a bit out of character but never mind.

The Las Vegas scale aerobatic model from Gunter Hoppe, flew the Las Vegas schedule and demonstrated again why he maintains a high ranking in world class aerobatic competitions. Gunter uses two geared 61 motors which are completely enclosed inside the cowl.

The models described represent only a small part of the complete show and there were plenty more interesting displays. Although helicopters did not play a large part in the show we were treated to a fine display of formation flying which included a pair flying a pattern in the mirror position.

If you visit the continent for a holiday it is worth looking out for posters advertising



model displays, or ask the local model shop to tell you where their club flies. This summer during a holiday in France I saw a poster advertising a Grand Meeting Aerien D' Aeromodelisme Radiocommande. Luckily it was taking place nearby and it

was a fine display. Included were such items as an Italian delta powered by twin pulse jets and a seven plane team flying Phantoms. These models all had retracts, fired rockers, dropped bombs and some even had landing brake parachutes!



Above: the gears can just be seen in this close-up of Gunter Hoppe's Las Vegas scale aerobatic model (far right). The model is powered by two geared 61 motors. Below: several of the twins flew simultaneously including this very nice Mitchell. Right: one of the larger models at the show (a freelance design) did not fly due to damage it suffered in an early test flight. The protrusion on the nose caused some speculation, it was in fact lead to cure to cure a CG problem.



FROM THE HANDLE

DAVE DAY reports

Non-Linear Flaps — An approach to an Exponential Control System

At the recent European C/L Championships at Genk, Belgium, a flier from Czechoslovakia caused quite a stir with a model featuring an exponential control system. The modeller's name was Skrabalek and he called his model 'Progress 81'. Its controls were so arranged that the surfaces had more movement at the extremes of the handle movement, thus giving a 'softer' control around neutral.

In 1964 the writer produced a model with a control system giving the same effect, although I suspect that it was different in the way this was achieved. Until details of Mr. Skrabalek's system are made known, readers may be interested in my system.

Theory

Since the late Fifties/early Sixties when large, flapped, stunt models became common, stunt design has fallen into two main schools. The 'Palmer' school had fairly small flaps which moved over a smaller angle of deflection than the elevators. Typically, the elevators would move 50° each way while the flaps moved 30° each way. This resulted in a very manoeuvrable or 'twitchy' model.

Conversely, the 'Aldridge' school had large flaps with the same movement as the elevators — typically 45° each way on both surfaces. Models with this set-up were less manoeuvrable and flew much more smoothly (for further details, see 'From the Handle' Aeromodeller June 1981).

In an attempt to compare the two systems, a model was built which was very similar in layout to the classic 'Aldridge' design, the 'Nobler,' but which had 'Palmer'

type control movements. The result was a very twitchy model which, I suspect, combined the worst features of both schools and which was chiefly notable for its lack of competition successes.

After much head scratching, I eventually realised what the more astute readers will have seen several paragraphs ago, namely that the turning ability is inversely proportional to the flap movement — assuming of course, that all other factors, such as C.G. location, elevator area and movement, etc. stay constant.

It therefore seemed that what was needed was a system which had more flap movement around neutral, to reduce turning ability and less flap movement at the extremes to increase manoeuvrability.

First Prototype

The normal flap horn was replaced by an idler horn mounted above the flaps and operating in the reverse direction to normal. A slotted link on the flap joiner engaged on the end of the main pushrod with the result that flap movement progressively reduced as more control was applied (see Fig. 1).

This system was installed in one of my radial cowl designs which although of basically 'Nobler' layout, was inspired by Bob Palmer's radial cowed 'Thunderbird' prototype.

First test flights were rather disappointing as the model was very sluggish and tended to 'balloon' very badly. As originally set up, there was about twice as much flap as elevator movement around neutral with roughly equal movement on full deflection. It was fairly obvious that this was too much flap movement.

The only modification which was possible was to increase the elevator movement, and the rear fuselage was cut open and the pushrod moved in one hole. This produced a dramatic improvement and the model achieved some success over the following couple of years. Those people who managed to persuade me to let them fly the model, all came to much the same conclusion as myself — it was different, even interesting, but not necessarily better! One result of the modification made to the elevator movement was a sudden 'kink' in the control response where the model became suddenly more responsive. This point was just above the normal control deflection for a loop. When flying in turbulence, it was possible to reach this point when giving a control correction with a resulting kink in the shape of the loop. On

square manoeuvres, however, the model made very clean turns with no wobbling on the exits, presumably due to the elevator being over-ridden by the flaps as neutral was approached.

All this made it necessary to practice a lot in order to get the best out of the model. When returning to a conventional model, it immediately *felt* better.

The actual point at which the elevator takes over from the flap and the ratio of movements at neutral and full throw, depend on the lengths of the horns used, etc. However, for given sizes of horn, the characteristics of the system can be changed by altering the distance between the flap hinge line and the pushrod at neutral (distance 'X' in Fig. 1). In order to try the effect of this, a second model was built.

Second attempt

Having worked everything out on paper beforehand (see graph) for the first model, and got it wrong, the second model was built with the actual pivot point of the idler horn left unfixed until all the controls were installed and hooked up. After some experiment a point was found where, on full deflection, there was 50° elevator movement to 30° flap movement, while around neutral the flaps moved roughly 1½ times as far as the elevator.

In the air this set-up was just about spot-on, and the model was much easier to fly. However, the model itself was one of those models we all build from time to time which are completely unusable in contests. In this particular case, endless swapping of motors and tanks could never produce a consistent or reliable engine run.

About this time, I produced a modified Mark 2 'Thunderbird' which swept all before it in contests and so the non-linear flap idea took a back seat. When the Thunderbird's useful life came to an end, I was heavily into R/C Pylon Racing so the intended third model was never built. This was to have had an adjustable pivot for the idler horn so that the ultimate set-up could be found.

Conclusions

The system in its second version gave a model which was smooth and insensitive around neutral and yet very sensitive and manoeuvrable at full handle movement. It was harder to fly and needed more practice than a conventional model but with a little more development it could be a significant step forward.

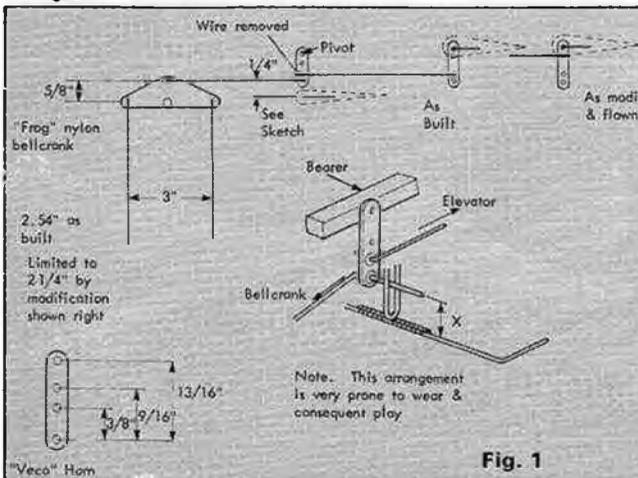


Fig. 1

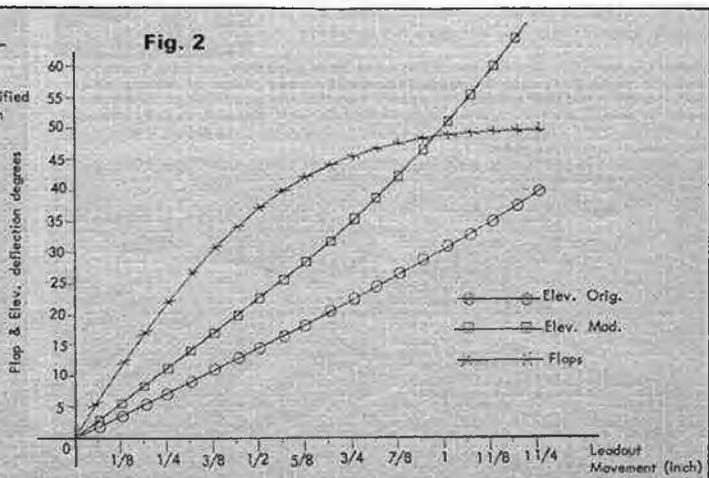


Fig. 2

JIM WOODSIDE reports

Technicalities at the 1981 European Champs

Team Racing

The main talking point was the very high airspeed of the Russians. Why this should be however, is not so easy to explain. At the 1980 World Champs, Onufrienko and Suraev spent a long time inspecting and measuring the FMV. The new breed of Soviet engine is very close in design concept, if not appearance, to the FMV but not even Rob Metkemeijer can offer a plausible explanation of why the FMV has a 19.2 best and the Suraev engine a 17.8 best for the 10 lap test (1 km). Perhaps they the pick of a bigger crop, or, dare I say, better made.

Suraev's Engine: Rather a mix of ideas. Has the BBF style case which bolts direct to the fuselage rather than to a metal pan. The AAC liner is of the integral fin design. The engine also has a very neat backplate which incorporates the filler system. Part of the high speed can be attributed to the use of a large carburettor — 4.3mm (0.169").

The engine was flown in a straight taper flying wing model — very light at about 300 gms. By present standards the prop had a generous diameter of about 168-170mm.

Onufrienko's engine: Broadly similar in concept using the integrated BBF type case. The front of the engine features a very large prop driver which forms the backplate of a spinner. Air inducted through the nose of the spinner is used to cool the engine crankcase via vanes in the prop driver/backplate. The model has a moulded fuselage in G.F. and is very light at 280gms all up weight.

Kutnesov's engine: this engine was in the older style of Kramarenko's 1977 engine. It featured a turned steel front housing, slip-in liner and front facing exhaust ports. This engine was flown with a very large single blade prop and had the characteristic deep sound of this configuration. The model was again a flying wing but this time with a curved trailing edge and a massive magnesium pan. One model had a retracting undercarriage and both models featured the superb building style of Kramarenko.

Speed

The discrete areas of speed flying — as in other classes — are model; engine; propeller plus tuned pipe and fuel systems that will adapt to the changing demands of the tuned pipe when it brings to resonate.

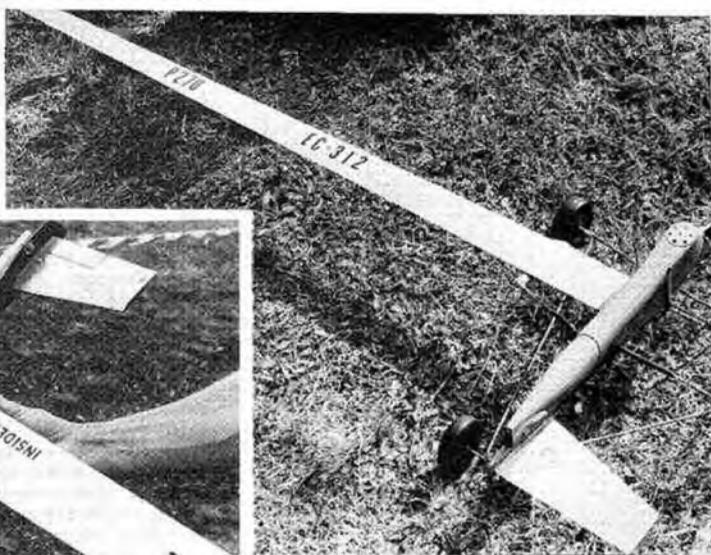
Models: no one clear preference for any one kind of model could be identified except that long wings are now quite normal. These not only reduce drag by enclosing more of the heavy 0.4mm cables at the point where they create most drag but also give a shorter take-off. This can be a help with fuel systems which have a wide variation between ground setting and in-flight setting.

The configuration of the engine (side-winder or upright) is mostly dictated by the choice between suction feed or C.F.S. (centrifugal fuel switching which increase the fuel supply as speed builds up).

The winning model had a 1 metre wing, outboard tail, upright engine, C.F.S. system.

Parramons winner - upright engine CFS fuel system.

Below: Bilat's Insider - has both wings and tail on inside of model. Fastest model using a Rumpel pipe.



Fuel systems: most fliers used the C.F.S. system despite its unreliability — it is always a delicate job setting the balance between the engine needle and the increase in fuel flow as the C.F.S. operates. Second to fourth place used suction feed although this gave only minimal power on take-off — including speed builds up the fuel flow hence the need to have the engine outboard of the tank. Paul Eisner used T.C.P. (timed crankcase pressure) and this gave perfect results every flight. Perhaps this is worth serious consideration.

Props: single blade props now hold sway — mostly made in carbon fibre. Favoured pitch was in the range of 5.7in.-5.9in. and a half diameter of 3¼in.-3½in.

Tuned pipes: definitely an important

area. All the fastest eleven except Bilat, used their own made pipes. Pipe designs seem to have specific ceilings and research centres on raising this ceiling.

The winner, Parramon, used a multi-cone pipe of three diverging sections and two converging sections going into a long tail pipe of narrow bore. Potential of this type of design seems to be in the 255-270 km/hr range.

The older Rossi and Rumpel type pipes with flat centre sections and long rear cones have a limit of 32,-33,000 rpm i.e. 240-255 km/hr approx.

Parramon's winning model had the pipe fully enclosed although opinion was divided as to whether this was a dodge to control temperature or prevent close inspection.

Right: inside speed winner Parramons workshop! Note test rig for horse power and torque tests. Strangely engine on stand is a Nelson diesel! Below: the new Rossi MkIII.



Engines and piston-cylinder sets: despite being available, nobody used the new Rossi MkIII. Complaints were voiced about the transfer port design which points backwards towards the exhaust port and also that the long inlet period on the crank (220° open) tended to spit fuel out rather than in.

Most people used modified MkIIs with a variety of home made liners in ABC or AAC systems. (Parramon used ABC).

Summary: 29 entrants
Suction feed 6
C.F.S. 20
Single blade prop:
28 (25 in carbon)

Combat

Two main trends could be seen this year (a) the search for ever less weight or wing



Left: Roberto Maestrelli. Three times Italian Champion. Model powered by OPS 2.5 speed SLA STD. 15mm bore, 14mm strokes.

loadings and (b) new engines.

Less weight: Edslev of Denmark had gone to considerable trouble to cut his foam wing blanks to the thinnest possible wall thickness. Strength was minimal but turning ability was very good indeed. To lower the inertia caused by the mass of the engine, the ST G20 had been severely attacked with a Dremel tool to remove any 'excess' metal. The engine is then recessed into the wing leading edge.

The Russian models of Dorochenko and Titov have very large area allied with minimal balsa structures for very low wing loadings. The home made engines, which are very light, are attached to the wing with light gauge aluminium bearers. Unlike most other teams the Russian models used pressurised metal tanks with the V wedge at the rear. Both fliers used carbon fibre props of about 7 x 3½ in. size.

New engines: the OPS Speed 2.5 SLA STD. This engine was flown by Vegetti of Italy. It is based on the 3.5 car engine case and bearings but with a shaft throw of 14mm and a liner with a bore of 15mm.

PAUL SMITH reports 1982 United States FAI Combat Team Trials

This year's team trials continued the trend of increased entries every year. Twenty one in 1977, 23 in '79, and 25 entries this year. Although ten flyers continued their perfect attendance record at combat trials, none of them made the team. We were pleased to have nine new first-time entries, including two of the successful team members. This is an all-new team, Richard Stubblefield and Tom Flucker of Texas, and Gary Arnold of the Detroit Combat Team. For the first time we have a team composed entirely of former national combat champions.

The competition started with a dinner meeting Friday night. Contest procedures and FAI rules were discussed and the first three rounds were drawn. This meeting went far smoother than those in the past, indicating a growth in understanding of the

Below: Ron Colombo standing by with a spare for Gary Arnold. Right: Colombo launching a "Triangle" for Gary Arnold.



rules by both contestants and officials. The team trials are run by a triple-elim system in which everyone flies one match per round regardless of the result and is dismissed after three losses. The score is the number of matches won before losing three.

Teamwork and the strength of numbers looked like it would be the deciding factor and the end result proved it. The Texas empire came in with six pilots, three full time mechanics, countless Force airplanes, and their patriarch Mr. Duke Fox. Everything they had seemed to match, their pacifier tanks, wood airplanes with clear Fascal covering, Fox 15 schneurle BB engines, and systematic pitting procedures. They had the manpower to field three complete crews, a capability they put into action during three matches they flew against each other.

If the Texans are the empire, then the Detroit Combat Team is the rebel alliance. We didn't have any two of anything that matched, but we did have five pilots, one

When equipped with either a plug or special glow head, it is claimed the engine will outrun a standard Rossi. It will be interesting to see how the engine shapes up. I wonder if its fairly high weight will suit the current trends in Combat. Time for a minimum weight rule in Combat?

Cipolla 2.5 Combat Special — not yet an observed fact but promised for September/October release for testing. The engine is to feature a lightweight case, front intake and ABC liner for an all up weight of about 125 gms.

Kjaergaard Integrated Backplate and filler system.

This is a high quality unit which is made to replace the existing backplates for either Nelson or B.G. engines. The main unit is made in high strength moulded plastic with a cast in bush to act as a bearing for the drum. The filler is a permanent fixture with the carb being a screw-in item. Carbs are available in the range 2.8mm through 3.7mm.

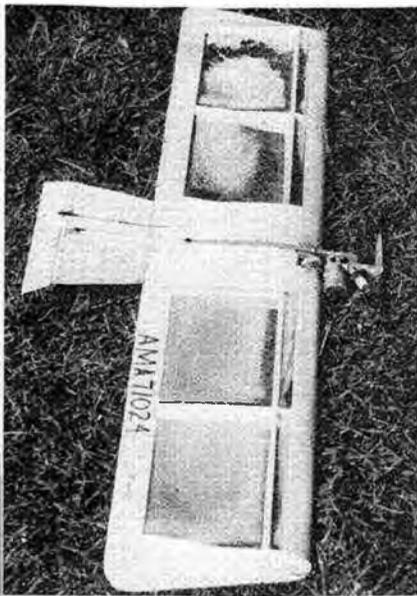
Cost of backplate and one carb US\$90
Spare carbs US\$5

Orders: J. Kjaergaard, Dalgas Alle 107, 7800 Skive, Denmark,

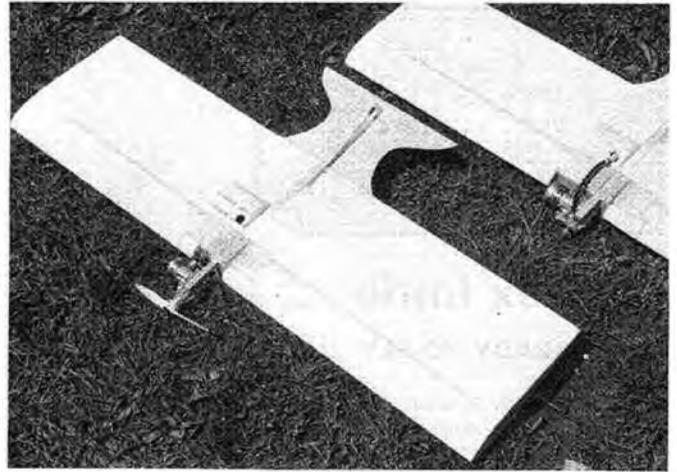
mechanic, and collectively enough to put a man on the team. Metal motor mounts is the new style among the Detroiters. Ron Colombo and Ed Brzys used ¼ in. aluminium plate profile-type fuselages bolted onto slide-in wings. Paul Smith and Dave Wallick of Cleveland had separate barstock mounts bolted on like the Russian world champ's. Gary Arnold had a radial RC style mount similar to those available in shops, although his was custom made for combat. All the metal mount fans agree that they give a smoother run and higher rpm.

Henry Nelson was in Nashville backing his team of customers. His best effort was the first alternate, Gary Frost. My observation was that the engine has superior power and speed, but it was not fully developed at the time of the team trials. The engines were rather hastily installed in existing models that did not fairly reflect their potential. Under these conditions engines such as the Cox, Fox, Rossi, and Super Tigre were able to beat the new





Left: one of Ron Colombo's FAI models with the 1/2in. aluminium fuselage and Cox 15. Right: FAI and fast combat models by Ed Brzys. Below right: Ed Brzys' modified Superstar.



Nelsons. Of course the engine is only one factor in combat so the Nelson glow is still an open issue. Perhaps Henry's problem this year was that the people who could have made his engine a winner already satisfied with their engines and saw no reason to experiment.

Richard Stubblefield is recognised by many, as America's top combat flyer. He has won the National Championship many times in the Open age group. In his part of the country his equipment is copied by everyone, it seems that no one believes that any improvement is possible. Richard won seven matches, losing only to Chuck Rudner and two-time US FAI champ Joe McKinzie.

Tom Flucker at about 19 is the youngest team member. Tom was won all classes of combat at the Nationals several times in the Junior and Senior age groups. Tom's equipment is (of course) the Force with the Fox 15. He used Master Airscrews at the team trials. Tom also won seven and his losses went to former US team members Gary Frost and Max Mearns.

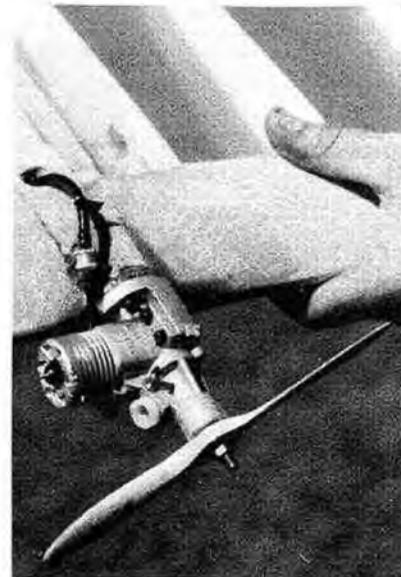
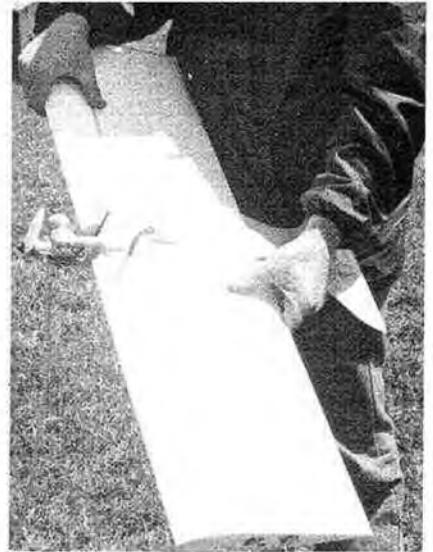
The third, and least known, team member is Gary Arnold of the Detroit Combat Team. Contrary to what many believed, Gary is not a beginner at combat. He won Junior Fast Combat at the 1965 Nationals. His first FAI matches were flown at these team trials, thereby blowing away the myth that fast combat flyers can only go for the kill. Gary was also the first person we have seen who could get competitive performance out of the Super Tigre X15. He also used the surgical tubing type bladder which generally is considered to be unusable because of its high and non-constant pressure. Gary's airplane is the 'Dan Hay Triangle,' a European style designed in Detroit about ten years ago. The team trials models were originally built and flown with 36 motors for speed then converted to FAI use. The wood mounts were sawn off and replaced with machined aluminium mounts custom fitted to the X15. These models flew fast and smooth and hit with the impact of an anti-tank missile. They weren't the tightest turning models around, but they surprised seven good opponents, including Cleveland and

Frost. Gary lost only to the other two team members and to Paul Smith on DQ in the first match.

Only one flyer that I know of used .012in. lines. He got cut loose two matches in a row. It seems that the under-sized lines cause the model to fly with less slack and therefore in a slightly bigger circle. This turns potential collisions into line cuts and flyaways.

This team trials was attended by a large delegation from AMA headquarters and the Executive Council. They were so impressed by the flying and pit crew work that they approved funding for three mechanics for future combat teams. In the past two World Championships we were forced to use unfunded volunteer pit crews. Our thanks to AMA and to the MACA members who helped lobby for this support.

Our team trials has become our biggest and most enjoyable event. Seventy-five matches were flown with only a couple of protests and one reffly. I'm sure that most of the people involved are looking forward to a bigger and better team trials in 1983.



Above: business end of Gary's model. A Super Tigre X15 on a custom made aluminium mount. Surgical tubing bladder keeps it up the whole time. Bullet resistant! Right: Gary Arnold, US team member, with his 'Triangle' powered by ST X15.



Vintage Corner

By Alex Imrie

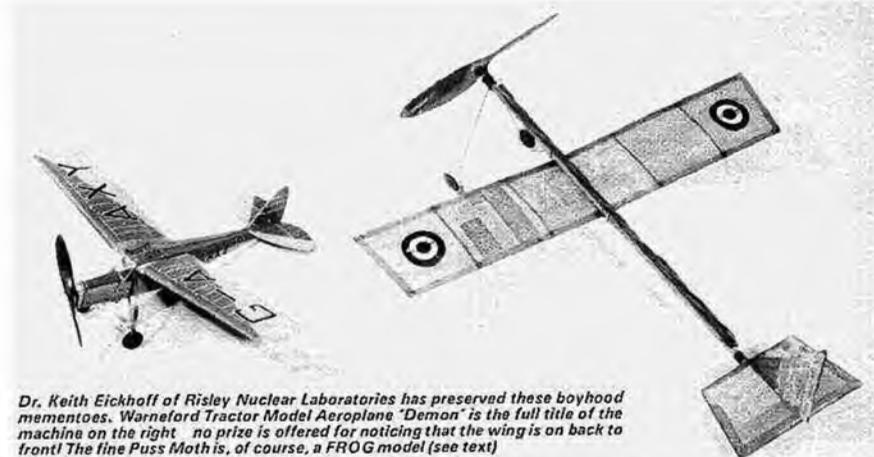
FROG READY-TO-FLY MODELS

The sight of Dr Eickhoff's Puss Moth is sufficient to bring various aspects of these models to mind, and a complete history of them is long overdue. Trevor Faulkner of 4 Birchitt Close, Broadway, Sheffield S17 4QJ is doing this very thing on the basis of a thesis covering the whole spectrum of flying toys and models, which includes FROG. Trevor will be grateful for any information that he does not already have on the subject, and it is possible that Vintage Corner will attract contributions that may fill the odd gap.

Group Captain J. E. Pelly-Fry has related how at a Model Engineer Exhibition (probably 1929) when he was talking to one of the Wilmot brothers, the conversation got round to small model aeroplanes. P-F disagreed with the view that small models could not fly well, and undertook to design and build a small model of around 20 inches span weighing less than 2 ozs. Fitted with floats, it was planned to fly this seaplane off the Welsh Harp lake at Hendon, but in the event the model's maiden flight was from the old Hendon aerodrome, when the machine flew out of the aerodrome and landed in a nearby field.

After this successful performance, P-F outlined his thoughts to the Wilmot brothers, on how a small commercial model should be made "... wings and fuselage of paper, hollow like a lobster's claw; and with a geared two skein, rubber motor, (2.5 to 1, like his little seaplane model) — you could wind it up in its box with the geared winder provided". So the seeds were sown and soon afterwards the FROG model Interceptor appeared. Although the abbreviation which became the trade name was later understood to mean Flying Rise Off Ground, when it first emerged its meaning was said to be Free to Rise Off the Ground.

Space does not allow a complete list of Frog ready-to-fly models, but mention must be made of the main types to follow the Interceptor which was in full production in 1932 and was available in several different colour schemes. The Puss Moth appeared early in 1934 and this was followed by the Hawker Hart biplane day-bomber early in 1935. In a world of Warnford stick tractors and flying card models by Wallis Rigby and William Appelby, the FROG was a revolution, very appealing indeed, but expensive



Dr. Keith Eickhoff of Risley Nuclear Laboratories has preserved these boyhood mementoes. Warnford Tractor Model Aeroplane "Demon" is the full title of the machine on the right — no prize is offered for noticing that the wing is on back to front! The fine Puss Moth is, of course, a FROG model (see text)

at the time since the depression was still with us. However, a great many were sold, and then with the importation of balsa construction kits for flying models from USA, the FROG lost a lot of its supporters. In the build-it-yourself atmosphere of the mid-1930s. Razor blade carpentry really caught on, and the ready-to-fly model slipped back into the toy aeroplane category.

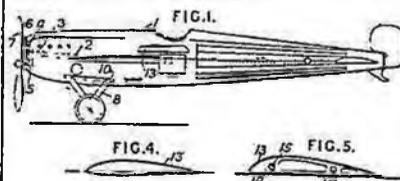
FOUND AT OLD WARDEN

Readers will remember that the Hardwick family have gained quite a name for themselves as model retrievers, well the total found now amounts to fifteen and Dick Hardwick advises that owners are still required for the following models.

- 1) Red Tomboy with DC engine
- 2) Blue and yellow Tomboy with Mills engine (found after Vintage Day)
- 3) Red Luton Minor (or similar) with CO₂ engine.

If you think that any of the above might be yours you are asked to contact Mr Richard Hardwick at 117 Clifton Road, Shefford, Beds. SG17 5AG.

353,927. Model aeroplanes. WILMOT, C., 50, Chepstow Place, Bayswater, and WILMOT, J. M., 71, Oxford Gardens, North Kensington, both in London. March 31, 1930, No. 10177. [Class 4.]



A model aeroplane comprises a hollow fuselage, an airscrew driven through step-up gearing from a twisted elastic motor in the fuselage, and hollow wings having no internal cross-spars. The motor 2, Fig. 1, is housed in a fuselage 1 of aluminium tubing and drives an airscrew 7 through gear wheels 4, 5 carried in a casing 8. Wings 13 are made hollow by bending paper double and opening it out at one end by means of a master rib 14, Fig. 5, the paper being afterwards painted or doped. The wings are secured to the fuselage by short cross-spars 16 which pass right through the fuselage. It is stated that with a master rib of the section shown the aerofoil section shown in Fig. 4 is obtained at a point two-fifths of the semi-span from the wing root. An undercarriage 8 is made from a single sheet-metal stamping and is secured by inserting its upper ends into holes 10 in the fuselage.

Above: a copy of the original patent for Frog model aeroplanes, a year was to pass before the patent for the unique winderbox appeared and the Interceptor was in full production in 1932.



The flying shot of this model in the November last issue was incorrectly captioned. Alwyn Greenhaigh at right, built the replica, seen in the hands of its 1927 designer, Group Captain J. E. Pelly-Fry. Was this one of the models that started the trend that gave us FROG? Dennis Fairlie in centre.

SUCCESS STORY

The following letter has been received from reader N. Peacock of Guildford and is self explanatory: "Returning from Manchester by train, I bought my October 1981 copy of Aero-modeller, and being a SAM member read your article and the section headed

"Chobham gives back its dead! Come in, Number 72, your time is up!" Realisation dawned — it was mine!

Thanks to your column, I have it back and in particular because of the sterling efforts of John Coates in writing to you in the first place and in making a box to transport it from Worcester to Guildford. I am



Little Vagabonds come in different sizes too! Double sized version 90 inches and has a wing chord of 16 inches. Builder L. T. Duffy from Somerset has fitted navigation lights and flown the model at night - three channel R/C with Enya 45 or two channel R/C only used when the Stentor Six spark ignition engine is fitted. Mr Duffy likes 'em big and is currently working on a double sized Norman Natsneel!

Right; Junior 60 size models seem to come in all sizes, here is a Telco CO2 powered one third scale version by Arthur Evans.



especially pleased to get my Mills .75 back.

The model was a consistent flier with a good glide in spite of its semi-symmetrical section wing, and had made 60 flights when I lost it on 7 August 1977. On that last flight, it was only a few feet up gliding-in, when it disappeared behind a rise in the ground. I expected to find it easily. One of our club members (Godalming & D MFC), Don Read, arrived whilst I was searching and together we combed the area for a long time to no avail. I often wondered where it went and to turn up in 1981 is surprising. The only part missing is the bubble canopy, but the 'pilot' of paper maché has not been reduced to pulp! Thank you for printing John's letter."

certainly took me back when I read it, since I had experienced similar difficulty in obtaining balsa cement at around the same time. In my case, in rural Scotland, there was no model shop to go to, also cost may very well have been a factor, since Certafix was probably only 2d (1p) per fairly large tube!

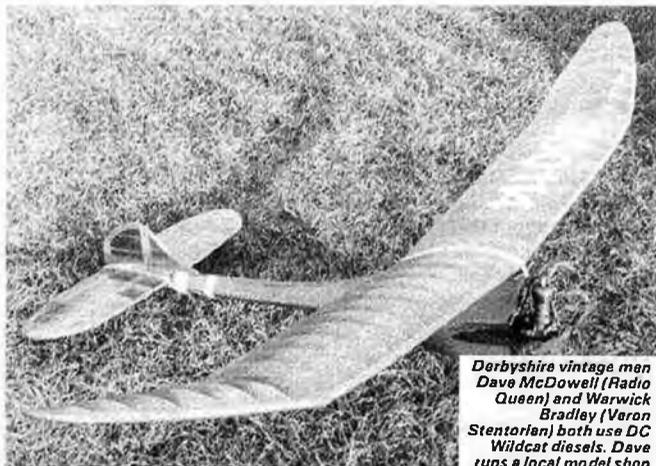
To quote Brian: "... it was some time before I found a sports shop which was importing, in small quantities, that miraculous material called balsa wood. Even then, they were unable to provide what the Americans called 'cement' ... and my first balsa wood rubber model was built with Certafix, the then up-to-date universal adhesive from Woolworths."

and cannot recall ever using glue at all, but says that he did once resort to Seccotine when he could not get to the model shop.

HELP!

Reader C. F. Smith of Cardiff has recently returned to aeromodelling after a number of years, and wonders where he can obtain drawings etc. of vintage models, being particularly keen on the Bird Wing design by George Evalenko which was illustrated in this column in October last. As mentioned in that issue this design was described in a book titled 'Air Age Gas Models' which is still available from Beaumont Aviation Literature 656 Holloway Road, London N19 3PD for £2.60 plus postage. This book, which contains the descriptions and plans of 21 gas models reprinted from Model Airplane News 1938/43, is a 'must' for any vintage enthusiast.

Should any readers be able to help with



Derbyshire vintage men Dave McDowell (Radio Queen) and Warwick Bradley (Veron Stentorian) both use DC Wildcat diesels. Dave runs a local model shop and claims that vintage has a good following in the area, but that they never get a mention in Aeromodeller - IF readers will send us material we will use it, this after all, is YOUR column, so the ball is in your court!

We have mentioned this model before, now here is Don Foote's Westerner powered by Super Cyclone, complete with masking tape repair to the rear fuselage. Sid Sutherland's model of course!



STICKY SITUATION

It seems that my comments on the mid-1930s availability of balsa cement in the December last issue caused some misunderstanding, and gave the impression that this commodity was not to be found anywhere in the United Kingdom at that time. This was, of course, not so. It really hinges around what is meant by availability. No doubt modellers with access to large model shops in the major cities could get this strange American "cement" much earlier and easier than modellers "out in the sticks". The following extract from Brian Hewitt's SAM 35 article, which actually relates to the 1934/35 period,

Recalling a slightly later period reader R. Wilson from Stockport tells in a recent letter that when Megow kits were imported from Philadelphia in 1936, each kit contained a small tube of balsa cement. To show that cement was by this time not only confined to the contents of kits, Mr Wilson goes on to say that he used to buy cement in 1936 for 3d (about 1.5p) per tube,

the following requests for assistance, please write to me c/o Aeromodeller and I will put them in touch with the appropriate party:

Arthur W. Freeman of Los Angeles USA urgently wants a copy of the plan for H. J. Towner's Spencer Larsen Amphibian which was described in this magazine in December 1940. A. J. Price of Oldbury,



West Midlands has a Drome Demon petrol engine missing some parts, and would be pleased to have details of these in order to have them reproduced. E. Russell of Belfast has recently obtained an old Ripmax Sky Queen kit without drawings and instructions, and wonders if anyone would be kind enough to loan him the necessary in order that he might be able to complete the model? D. M. Warren of Hastings was intrigued by the sight of Derek Camps launching his Kanga Dragonfly in the October last issue and wonders if any reader can help him with the loan of drawings? I am sure that many other readers would also be interested (including the writer!), so how about it Derek, do you still have the plan? I am sure that the SAM 35 tame draughtsman will carefully handle any loaned material. It goes without saying that any material loaned to help a fellow vintage enthusiast will be most carefully handled and returned per registered mail as soon as possible.

My own request in the September last issue for the sight of an original pre-war Kanga Kub drawing to be used to clear up certain anomalies has so far not borne any fruit, so c'mon you old timers, please have another look in your vaults!

Would the gentleman who spoke to me on the telephone at the Aeromodeller Offices, about the identification of his early petrol engine, please contact me again, since I have lost his name and address, but now have information of use to him.

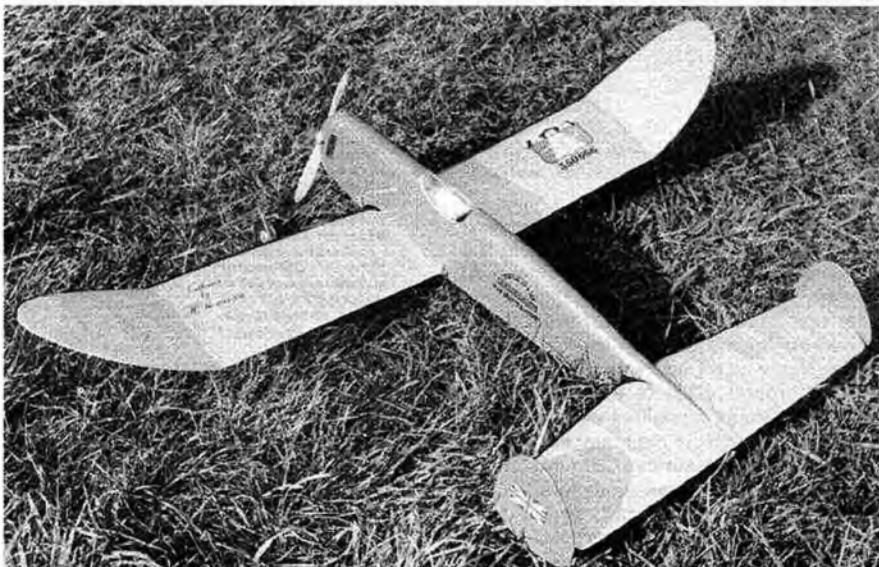
Many readers write in asking for sources

H. A. Thomas Southerner finished in Don Knight's style, note advertisement on fuselage side for Templaton and Sons, Taxidormists.

of various vintage items and where they can obtain airwheels, coils, condensers, HT leads and sparking plugs, etc. For the benefit of these enthusiasts and any other readers with similar wants, I can only advise them to carefully read the advertisement pages of this journal and/or join SAM 35!

JOIN UP TODAY!

By reading the regular News sheet and mingling with their own kind, vintage enthusiasts will greatly gain from joining SAM 35, and all their questions about the availability of vintage components, engines and plans will be readily answered. This



Mills .75 powered Wigdor Wasp built by SAM member Ming Tay from drawings in Vintage Corner (July '81).

will save them a great deal of time and trouble in searching for these elusive items, and they will be launched in the right direction by modellers having a similar interest to their own. The subscription for 1982 is £6.00 and proof of current model insurance is required before an application can be accepted. Those wishing to join are asked to send a PO/cheque for the above amount, made payable to SAM 35, a valid insurance certificate and stamped addressed envelope to the SAM Treasurer, Mr Peter Michel, 56 Lynwood Grove, Orpington, Kent who will be pleased to enroll them.

SAM 35 SPEAKS

The current issue is to hand and contains interesting flashbacks by Howard Boys, Laurie Glover and Brian Hewitt as well as reprints of Vince Bentley's Gas in General from Nov/Dec 1945 Model Aircraft and an easy to follow treatise on rubber motors from Flying Models magazine illustrated by Paul Del Gatto. Every corner of the 26 pages is utilised with news items, photos, 3-views and old ads etc., it is Dave Baker's intention to bring out this news sheet on a monthly basis, which is quite an undertaking and we wish him well. Two full-size plans from the old Flying Aces magazine are also given this month (Berni Schoenfeld's 24 inch span Gooch and Claude McCullough's 33 inch span Sparrow) and apart from delighting owners of small capacity petrol engines such machines when powered by replica Mills .75 engines possibly represent the least costly power models available today.

NEXT VINTAGE GET-TOGETHER

13.00hrs. Sunday February 14, 1982 at Downs Farm Youth Centre, Hatfield. See you there?

Find the balance point MODEL COMPETITION

The great
**Aero
modeller**
Give away
contest
£350 of
prizes must
be won



ONLY FIVE CROSSES

THE DECEMBER WINNERS ARE:

A. Healey, Padiham, Lancashire. Rolf Svensson, Vasteras, Sweden. M. A. Colyer, Chard, Somerset. Philip Heward, Acomb, York. D. Hayward, Cambridge. Paul Wheeler, Sevenoaks, Kent. D. S. E. Face, Birstall, Leicester. M. Foden, Burscough Town, Lancashire. D. W. Fern, Streetley, West Midlands. K. Malcolm, Manchester, Lancashire.

RULES

1. The competition is FREE and open to all Aeromodeller readers.
2. The model has been erased from this picture. Use your skill and judgement to determine not just the position of the model in the picture, but its exact balance point.
3. The first ten entries with the centre of a cross nearest the correct balance point will be judged the winners of this month's prizes. If you prefer not to cut the picture from this page a same-size facsimile (photostat) is acceptable.
4. Any number of entries may be made, but each entry must be

accompanied by a separate entry coupon, clipped from the page. The coupon must be the original — photocopies are not accepted.

5. Only five crosses per entry.
6. Entries in this February edition competition close after first post on February 18, 1982. Results will appear in Aeromodeller April 1982 edition.
7. The Editor's decision is in all cases absolutely final and no correspondence will be entered into nor responsibility accepted for late, mislaid or lost entries.
8. Employees of MAP Ltd. and their families are not eligible.

THIS MONTH TWELVE PACKS OF Balsa MUST BE WON

Each pack of balsa will consist of 18 sheets of $\frac{1}{16}$ in., 16 sheets of $\frac{3}{32}$ in., 6 sheets of $\frac{1}{8}$ in., 4 sheets of $\frac{7}{16}$ in., 4 sheets of $\frac{1}{4}$ in. and 4 sheets of $\frac{3}{8}$ in.



To Aeromodeller Magazine. Please accept my entry for your February, 1982 "Find the Balance Point" competition. I understand the rules of the contest and accept the editor's decision as final.

Signed.....

MODEL COMPETITION, PO BOX 35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS HP1 1EE

NAME

ADDRESS

.....

.....

NB: Coupon must be original — not facsimile c/r
Entry Coupon
Aeromodeller
Find the Balance
Point Contest
Feb. '82

Book Reviews



An illustrated Guide to the Air War Over Vietnam by Bernard C. Nalty, George M. Watson and Jacob Neufeld. Published by Salamander Books Ltd. at £3.95, size 220mm x 120mm.

This hardback illustrated directory gives most of the important aircraft that took part in the conflict in Southeast Asia. The book starts with a brief description of the air war over Vietnam, and goes on to describe the various types of aircraft used, technicalities employed and a map showing major US targets. There are over 140 photographs, many in colour, and over 120 three view line and silhouette drawings covering the 50 aircraft types described.

A technical description of each aircraft is given which includes its tactical employment. This is a well produced book essentially of historic interest, although there are a few subjects that would make flying model subjects.

Flying Colours by William Green and Gordon Swanborough, published by Salamander Books. Size 300mm x 215mm hardback, price £9.95.

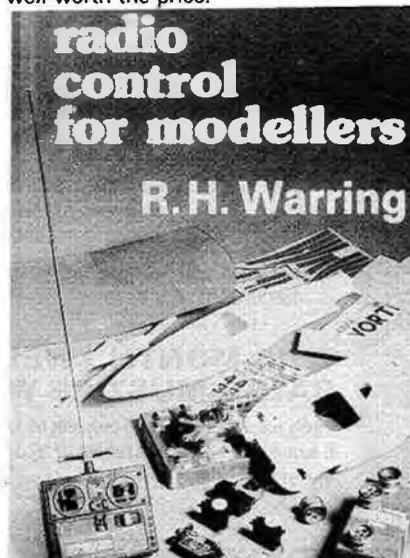
The large format and fine full colour illustrations make this a most excellent reference book of camouflage and markings. Aircraft of all type are covered



from just prior to World War I up to the present time.

William Green, Gordon Swanborough and Bruce Robertson have many years of aviation writing experience and although largely a pictorial reference book, there is a total of 50,000 words which describe many features.

The initial chapter entitled 'The History of flying colours' describes the development of markings through practical experience in combat. This shows very clearly how it is almost impossible to say this or that is the exact hue or colour for a particular type. Perhaps some scale enthusiasts that argue so much about this subject should take a look at this chapter; I am sure they will find many interesting points that they may not have considered before. A very fine book, well worth the price.

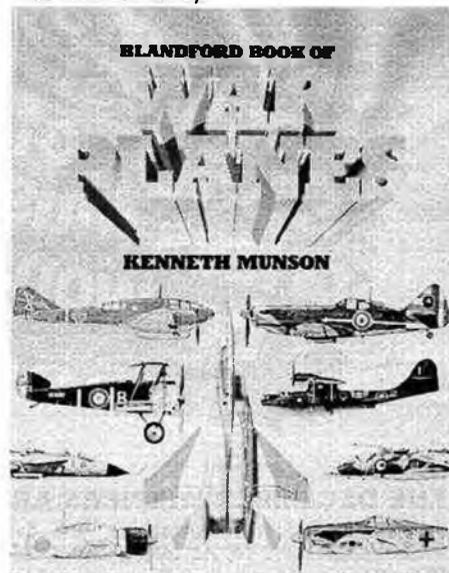


Radio Control for Modellers by R. H. Warring, published by Lutterworth Press at £6.95, size 145mm x 225mm.

This book fills a large gap that has existed for some time. Radio Control has made so

many developments in the past four years that most books on the subject have become outdated. Ron Warring with his vast experience of aeromodelling, electronics and writing about the subject, has produced a book that gives all the answers you need to select, install and operate radio controlled models.

Most beginners to radio control flying find the whole subject quite baffling with all the various types of equipment and models available and often end up with a disappointing result. The information given in this book should go a long way to avoid the many pitfalls and save a lot of wasted time as well as money.



Blandford Book of War Planes by Kenneth Munson and John Wood. Size 195mm x 200mm, hardback price £5.95.

This book covers 120 of the most important warplanes of all nations, from World War I through subsequent conflicts and periods of peace up to the present.

The production of the book is first class, and the full colour split plan and side elevations of each aircraft, by John Wood Associates, are clear and well detailed. The research by Ian Huntley on colour markings has obviously been of great help with the production of these drawings.

Although only one page is given to describe and illustrate each aircraft, the information is concise and packed with interesting material.

The price and range of types covered, together with the very useful colour reference markings, make this a worthwhile addition to the book shelf.

Book Reviews



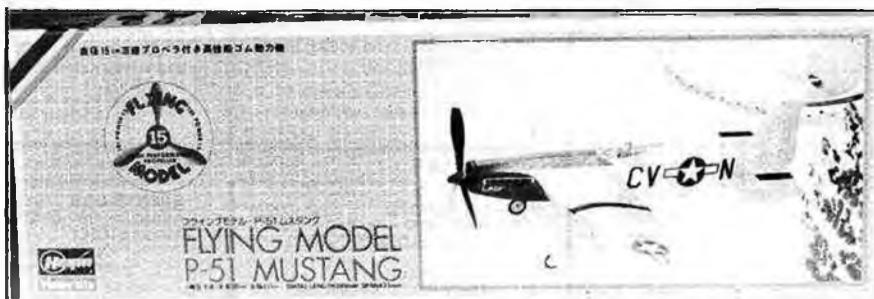
SHOP TALK

The latest in products for the modelling scene



Self supporting magnifier

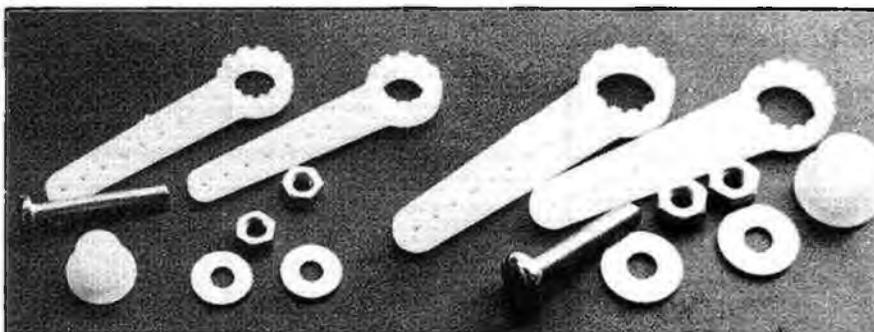
This item might be of interest to small scale builders. The lens is moulded in a frame which rests against the user's chest when suspended by a cord passing behind the neck. This of course allows both hands to be free. The Easi-View has an acrylic rectangular lens measuring 145 x 105mm and gives magnification of up to two times. The field of view will encompass a whole page of a standard paperback book. Available from most opticians, stationers and large stores. Price £5.95, including VAT.



Simple scale

Although far from true scale models, this range from Hasegawa have their own charm. They are all of conventional balsa construction with die cut parts and include a card building board, pine, tissue and a

tube of white glue for building. Just the job for RTP or the young modeller who is not too worried about scale detail. The range includes a Me109, Tony, Spitfire and P-51. Available from A.A. Hales Ltd., PO Box 33, Hinckley, Leicester. Price £3.95 each.



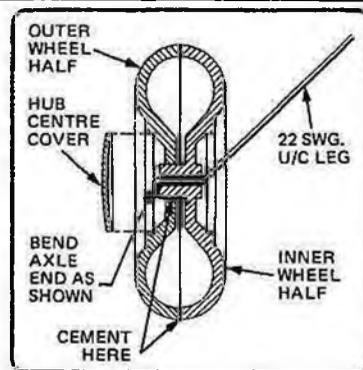
Adjustable crank

These 12 position adjustable cranks produced by Graupner are ideal for all moving tailplanes. There are two sizes available,

G2518/35 which has a crank of 33mm and G-G3518/45 with a throw of 39mm. Fixing bolt, nylon bearing bush and nuts are included. Distributed by Ripmax Models. Price £1.00 each.

Small scale wheel

Micro-Mold have introduced a new 25mm diameter lightweight plastic wheel (1/2 grams) to their range of accessories. As can be seen from the diagram, when assembled the axle is completely hidden by the centre cover. The pack O-W44 of two wheels also includes a 6mm diameter tail wheel. Price 49p per pack.



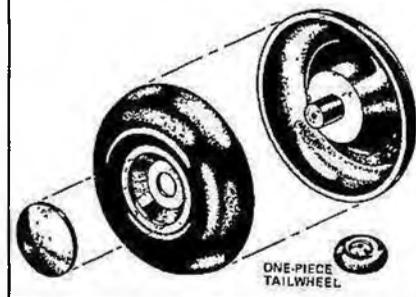
Sander and shaper

This Tantex sander and shaper has been designed to fit most two speed drills.

The unit comprises of a frame and two rollers, one that is adjustable for belt tensioning and an adjustable angle plate guide. The drive shaft is located in the drill chuck and the frame of the sander is then held onto the drill body by a clamp screw. A clamp is supplied for holding the unit down onto a bench, or alternatively it can be hand held. Various abrasive belts are available.

The machine is capable of shaping wood, plastic, and metal, also particularly useful for sharpening tools.

Specification: length 11 1/2 in., width 8 in. Weighs 6 lb. Price £39.95 including VAT available from Semco, Unit 3, Milbrook Industrial Estate, Southampton.



SHOP GUIDE

READERS PLEASE NOTE:

Due to soaring postal charges many retailers are unable to answer postal enquiries unless accompanied by a stamped addressed envelope.

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25 Years Ago in Aeromodeller February 1957

By Dave Day

"The plastic age has spoiled the modern junior and our days of flying, testing and pranging are gone. Today if a chap prangs his first model, he turns to rock 'n' roll or building plastic kits and watching others fly".

These opening words of the editorial of the February 1957 Aeromodeller were submitted by a 'keen aeromodelling correspondent' and were promptly disagreed with by the Editor, Harry Hundleby. Any second thoughts, Harry?

Interestingly, one of the articles in this particular issue was entitled 'Improve Your Plastics! Other articles included a working ejector seat (useful for your radio gear,

perhaps?) and 'Safe Power Prop Repairs' — perish the thought.

Plans included F. W. Biesterfeld's now classic 'Delta 707' for R/C or F/F and a pusher 1.5cc diesel; a F/F Scale 'Loening OL-9' for 1.3-1.5cc diesels by C. F. Stuby and the new RTP rubber powered Speed record holder (45-1 mph!) 'PDQ' R. L. S. Taylor.

Ron Warring contributed a full test of the Davis-Charlton 3.5cc 'Manxman', while part nine of the 'Know your Engine' series featured the controversial subject of silencers (some things *don't* change).

G. A. G. Cox's classic, 'Famous Biplanes' series featured the *Handley Page* 'Heyford' with 1/72nd scale drawings being squeezed into a two page centre spread.

In the 'Trade Notes' column, congratulations were extended to Henry J. Nicholls on

his tenth anniversary at '308' — Happy 35th, Henry.

Among the new items described were models of the *Hawker 'Hunter'* and *English Electric P.I. from Jetex* at 10s 9d each including augments tube and mounts for the 50B motor.

Other regular features included World News, RAF Gen(I), Motor Mart, Model News & Radio Control notes, the latter including notes on the Hill receiver (a state of the art, super-regen, design with valve and relay) and a motorised actuator based on the ubiquitous 'Mighty Midget' motor.

'Aeromodelling Step-by-Step' showed how to make wing ribs by the sandwich system — bang up to date.

The cover price was 1s 6d. What else has gone up in price by only a factor of 8 in the last 25 years?

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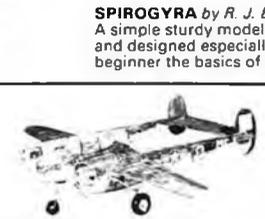
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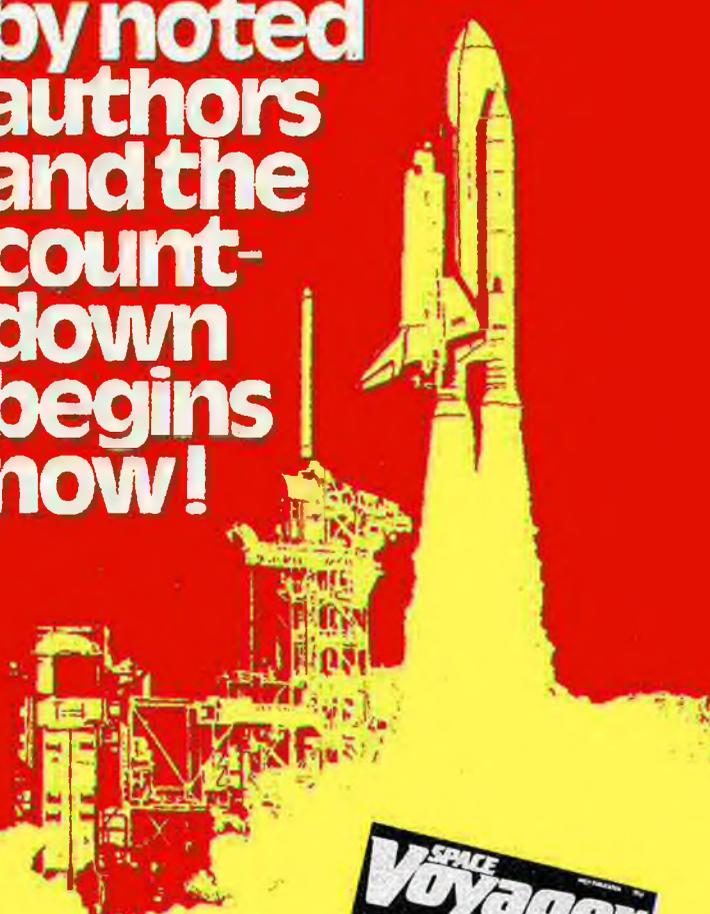
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