

Aero modeller

OCTOBER 1980 50p

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**1980
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WORLD
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Aeromodeller

OCTOBER 1980

EDITOR **MARTYN COWLEY**

Group Editorial
director **TONY DOWDESWELL**



MODEL DIVISION MAGAZINE

Advertisement director **M. GRAY**

Managing Director **RON MOULTON**

Comment

ONE OF THE DRAWBACKS with being Editor of *Aeromodeller* is that by the time the magazine reaches the news stand each month – I've already read it! Now however, after almost three years, I am once again about to rejoin the readership who eagerly await the monthly news of their favourite pursuit – model flying. As Editor, my reading matter has instead

arrived daily, in the form of readers' letters, photos and plans, literally from all over the world, many of which may appear later as magazine articles. One by one they piece together the enormous variety and challenge offered by the sport of model flying, in its many diverse forms from Microfilm to Combat, from Chuck Glider to Flying Scale. It is with some regret therefore, that I leave *Aeromodeller* with fond memories of a job which has at times, been too interesting and enjoyable to seem like work. The most stimulating aspect has been to meet aeromodellers of every nationality, linked by the common brotherhood of aeromodelling, to learn

from them by exchanging ideas and techniques on model flying. The hardest part of being Editor has been to make a limited monthly selection, representative of the diverse readership from schoolboy to senior citizen, for whom *Aeromodeller* may be an introduction to the hobby, a source for the latest technology and a permanent reference. Above all, the theme we maintain is one of variety, and if I leave with any recommendation to readers, it would be to experience for themselves and enjoy as many of the different challenges as possible that model flying has to offer.

Martyn Cowley

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On the Cover

At the 1980 World Control Line Championships, the Japanese were runners-up in the Team prize. Renowned for their elegant designs, finished to a high standard of craftsmanship, T. Hara poses with his famous Super Hurricane design, first featured on P309 May 79 issue. For full report turn to P562-571. Photo: Roger Baker.

Next Month

British R/C and C/L Nationals Report plus European F/F Championships. APS Plans feature for Claus Maikls' *Winglet*, a profile C/L Novice Stunter for 6.5cc motors. Centre spread plans for unique rubber powered helicopter from China. Plus news and views on all aspects of model flying. On sale October 17th.



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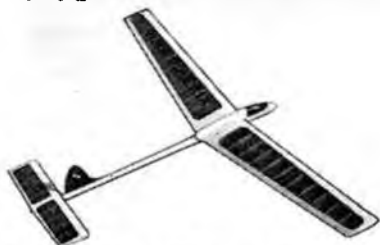
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[illegible]

October 1980

There are over 200 aircraft kits in the Ripmax range – all from world-famous manufacturers. Here we have picked some kits from GRAUPNER – not bettered anywhere for quality. Check out the other kits, engines, accessories, etc in the RIPMAX MODELLERS HANDBOOK (price £1.95 at your model shop or £2.50 post paid (UK) ex Ripmax).



QUICK and EASY!



When Graupner produce a 'QUICKBUILD' kit it really is quick and easy to build! And every prefabricated part fits with fabulous accuracy. Shown here is the 43" span **PILOT** (£8.55). Die-cut balsa and ply parts. Shaped and notched leading and trailing edges. Moulded plastic parts. Shaped wire parts (even a ring for the towline). COMPLETE down to lead shot for ballast! Other simple Graupner gliders for quick-and-easy assembly are the 35" span **BEGINNER** (£8.50), 27" span **SONNY** (£5.30), 45" span **JOLLY** (£10.75), 63" span **DANDY** (£22.25) & 33" span **PENNY** (£7.25).

F/F or Radio



Shown here is the 43" span Graupner **AMATEUR** (£24.90). A classic high wing design with conventional construction (the kit includes preshaped fuselage sides as well as other die-cut parts, hardware, etc). A superb R/C Trainer – and stable enough to fly without radio as a sports model. Again the kit is very complete (even to wheels). Other models in this category include the 32" span **TOPSY** (£10.85), 59" span **TAXI** (£38.75) and 41" **TERRY** (£26.76).

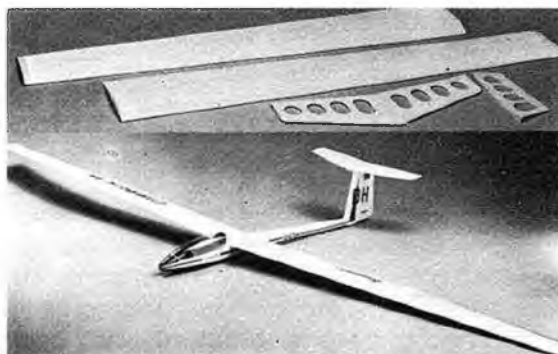
ELECTRIC FLIGHT, GLO . . . or GLIDER

Latest Graupner model here is the 56½" span **ELECTRO-MAX** which you can fly on electric power or .049 glow motor. Ample payload capacity for radio – and it handles superbly on just rudder and elevator control. Kit price £37.60. Jumbo motor to match £9.95. Companion model is the 70½" span **ELEKTRO FLY** (£36.85). Matching Jumbo 550 motor (£6.20). Other Graupner electric flight models are the 90½" span **ULTRA FLY** (£39.40) and the 98½" span **MOSQUITO** (£42.95); all of which readily convert to towline gliders.



PYLON POWER or SAILPLANE

Frankly, our choice for sheer enjoyment of pure flight. A high-performance sailplane. With the option of fitting it with pylon power to climb to soaring heights from flat ground without the hassle of tow launching. Model shown is the new 111½" span scale **CIRRUS 75** (£103.00). Moulded fuselage with integral fin, veneered foam wings, tail and rudder. Fly it with 2-channel radio.



Pylon-power is our recommendation for a first R/C model, too. It does not have to be a large, high-performance sailplane – just a good, stable glider. There are several different models in the Graupner range which fit this bill. Fly them as free flight or R/C gliders – or with pylon power. There are other, larger models too if you want absolutely top soaring performance.

models for PYLON POWER

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Cirrus	118" span	£55.95
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*AMIGO II is also an outstanding A2 class contest glider.



SCALE . . . and even AERO-TOW

Here Graupner de luxe kits are virtually unrivalled for detail, accuracy and design engineering. Modern kits using wood and moulded plastic parts to full advantage – to save you building time.



There's the 61" span **CESSNA CARDINAL** (£83.50) with a truly superb flying performance. The 62" span **MONSUN** (£73.25) with exhibition-standard realism. The 47" **PIPER SUPER CUB** (£35.75) and the 63" span **PIPER CHEROKEE** (£92.50). And for the ambitious aeromodeller – the 66" span **JODEL ROBIN** with flaps and aero-tow release – shown here as a tug for launching the **MINI NIMBUS** (£155.50).



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*Nicad conversion recommended when using these servos.

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2-ch is for GLIDERS →

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If you are thinking of additional glider controls for future models – ailerons and spoilers or airbrakes for example – then spend a little more and invest in a 4-channel Combo. You can still SAVE on initial costs by buying only the number of servos you need for a start.

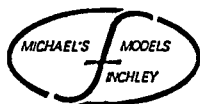
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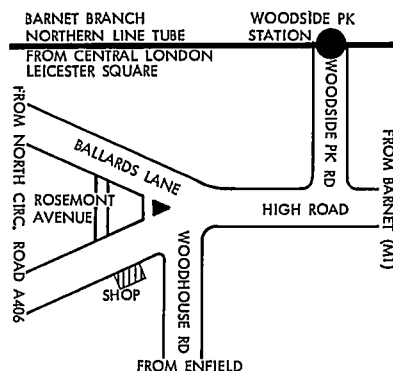
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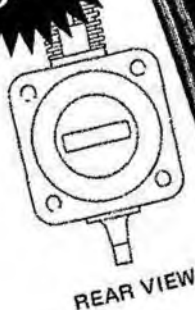
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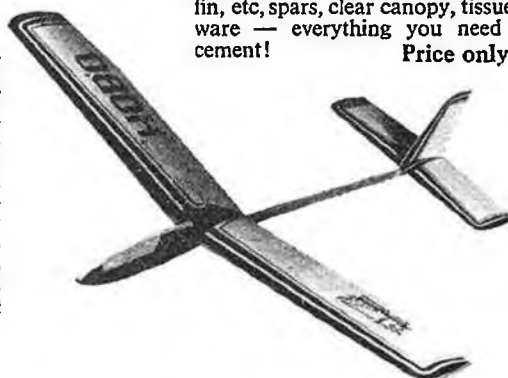
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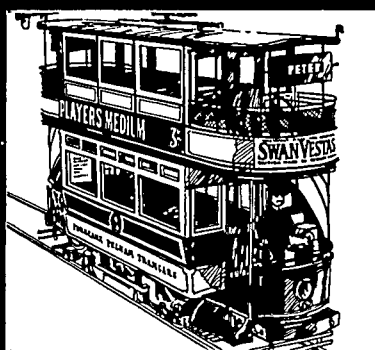
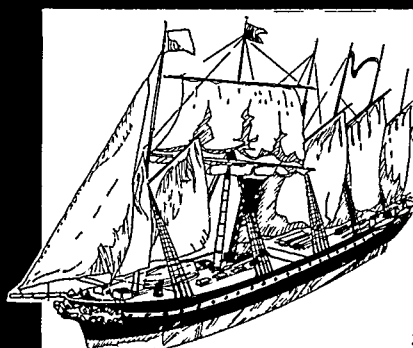
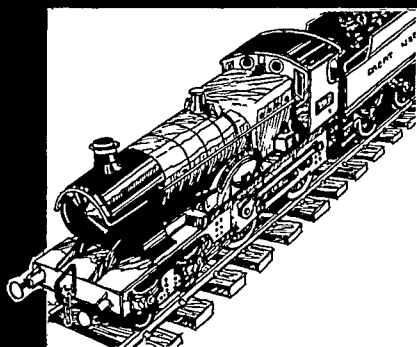
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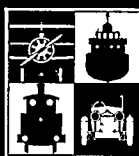
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NEW R/C FREQUENCIES

As has already been announced, the Home Office has indicated that a portion of the 35MHz spectrum will probably be made available for additional exclusive use by Radio Control model aircraft operators.

Final details are being discussed, with the Society of Model Aeronautical Engineers and the Model Hobby Trade Federation, representing the interests of the model flyers of Great Britain, regarding precisely when and how this will come into operation.

The key issue concerns how this prospective frequency allocation should be used, and in an endeavour to consult all R/C modellers, the SMAE/MHTF have issued a joint statement and questionnaire in our sister journals *Radio Modeller* (September) and *RCM&E* (October).

Current operators of 27MHz equipment will be reassured to learn of the continued use of this frequency for model operation, which will remain protected in law from use by illegal CB transmission and other unauthorised usages. Further announcements will be made in due course.

STOLEN SPITFIRE

A beautiful model of the Mark 1 Spitfire as flown by Sir Douglas Bader during the Battle of Britain has been stolen between 29th May and 23rd July from Skyland Models.

Tony Datkiewicz who has been making models for airlines and the industry over many years at his company in Slough, tells us that this 1/12th model has great sentimental value and is a very treasured possession which has been used for years in a fund raising capacity for the Royal Air Force Benevolent Fund.

Any information leading to the recovery of the model, sent to Skyland Models c/o the editorial office would be welcomed and treated with greatest confidence.

Eddie Cosh (right) here was his great pal, the Eddie Keil, died on August 1st after a brief illness. His passing, along with Glen Sig (below left) severs links with the great days of aeromodelling.



GLEN SIG

Aeromodellers throughout the world have grown to know and respect one rather special name in the balsa business — that of SIG. Now, the originator, Glen Sigafoose is dead. An air crash on the 20th July, has robbed us of this personality who built up the largest business of its type throughout the world, at the small township of Montezuma in central Iowa.

Sig's involvement in flying, full size as well as models absorbed his every waking hour. His leisure was taken up by full size flying and he built an airstrip which became known as "Sig International". The employees in the growing company absorbed similar interests and the air fleet was modelled in kit form with true scale markings so that they became world famous.

Sig's origins in printing enabled him to establish a huge press in one of his buildings which he personally operated to produce kit plans.

When frustrated by supplies of epoxy glues from the great corporations, he set about his own formulation and built up a glue factory. The same was also done for dopes and paints, for toolmaking, and especially so for screen printing of water-slide transfers or decals.

But the staple diet was balsa, and it says much for Sig's personal supervision that the standard of his wood has never wavered, nor too has the process he uses for cutting, which remains unchanged from the bandsaw technique used in the original basement operation. With the arrival of alternative materials, foam for wings and A.B.S. and other plastics for vacuum formed cowlings and fuselages, Sig simply set-to and invented his own machinery. The tool room at Montezuma is one of the best equipped we have ever seen. Over the 29 years of trading the expert staff have in their way contributed to the expansion under Glen and Hazel's encouragement.

Although the master has now gone, it is comforting to know that the business will be in such hands now that it is so firmly established and will continue to operate under the direction of Hazel to whom we extend condolences of modellers worldwide.

EDDIE COSH

One of the original council members of the S.M.A.E. Eddie Cosh was a Founder of the present administrative system plus the vital link of communication through the Newsletter. In fact Eddie, along with his contemporaries, were at the very beginning of the launch of *Model Aircraft* which is now incorporated in *Aeromodeller*. As Secretary of the Blackheath M.F.C. he was responsible for the organisation of many London Area competitions especially Wakefield and was a contemporary of Copland and Chasteneuf the great rivals of the late 30's. Always a keen aviation enthusiast, Eddie became a senior instructor for elementary flying training throughout the war years and his name is still revered around Marshalls at Cambridge, being one of the world's most experienced Tiger Moth pilots. Post war he joined Percival Marshall in London, publishers of *Model Engineer*, *Model Aircraft*, *Model Railway News* etc. and in the course of time became Managing Editor of that company until its dispersal to other sectors of the publishing trade including M.A.P. Eddie then joined his great friend Eddie Keil at Wickford as General Manager and since that time despite the fact that he was retired at least twice in our memory, Eddie has been a mainstay of the Keil Kraft factory as General Manager. In SMAE affairs he was always the delighted, rotund even cherubic, charming social organiser. No dinner function was complete without Eddie and his always active wife, Eve who supported him so well throughout all of his years of voluntary work in service of others in the model making field. Eddie had been team manager for Gt. Britain on many occasions. The most famous of which, was possibly the trip to Czechoslovakia with the A2 team. A meeting full of incident in which Eddie shone as a true ambassador of the old country. We shall never be able to tot up precisely how much is owed to those stretched initials of EFHC, for he did so much in his long period of service. Our sympathies go to Eve, Wendy and Peter and their families in a great loss.



Letters

IN A FLAP

Dear Sir,

At my request you recently sent me various plans, including one of an ornithopter entitled *Flap Happy*. (D/333 price £2.35 inc P&P) I have recently been reading a book entitled "Feathered Wings" — a study of the flight of birds by Anthony Jack and published by Methuen and Co. Ltd. of London. It has struck me studying the plan of *Flap Happy* that this ornithopter is deficient in two important respects compared with the average bird.

1. The wings do not have a root to tip airfoil section. Only the centre section has this.

2. There is no forward or rearward motion of the wings, only an up and down motion.

Your Plans Handbook describes this design as one of the few successful ones. I wonder in what respects its competitors were deficient? I don't pretend to be an expert on bird flight. I have simply read this book "Feathered Wings" out of a general interest in the subject. From what I have gathered, bird flight can be divided into the following two main stages: (I am sure this is a simplification)

1. The bird sweeps its wings forward such that the tips meet in front of its head (I have seen photographs of birds in flight achieving just this). Since the birds wing has an airfoil section from root to tip, the whole wing is generating lift at this stage.

2. In this forward position the bird rotates the whole wing approx 45° about the leading edge axis and then flaps with wing rearward and downwards. This creates both forward speed (or airspeed) and increases pressure beneath the wing. The first stage is then repeated.

From the foregoing it can be seen that bird flight is not restricted to the flapping up and down of the wings which

would simply create a self-cancelling increase in pressure above and below the wings, and the function of the airfoil section would be excluded.

I think that an area of aerodynamics that is ripe for ornithopter development is the kite. I do not think that the kite should be knocked by aeromodellers and generally regarded as a child's toy. The aircraft of today was arrived at from kiteing experience. After all, the biplane was created partly by a gentleman called Hargreave from his experience with box kites. An ornithopter kite need have no special drive — its drive might be analogous to an autogyro. I am interested to note that no aircraft manufacturer appears at present to be doing any development work on any form of ornithopter.

My interest in ornithopters derives in part from my recent near fatal accident, when I crashed my hang glider by stalling it. I am not without experience. I used to be a Transport Command pilot in the RAF and I have also done a lot of glider flying, gaining my "Silver C" soaring badge. It has occurred to me that the bird has an excellent insurance against stalling (quite apart from its leading edge slots). It can effectively increase its flying speed by flapping its wings forward rather than have to increase the forward speed of its body and all I think we still have much to learn from the birds!

This has been a very meandering letter but your *Flap Happy* plan gave me a very strong inducement to write. I may say that your *Aeromodeller* magazine is a constant source of interest and stimulation to me.

Edinburgh, Scotland.

Michael Jacob

Ornithopters though rare, are still flown, as witnessed by this model which flew indoors at the record trials at West Baden held after the 1980 World Champs. Light weight and flexible wing surfaces are the secret to reciprocating wings.

YOUTH PROJECT

Dear Sir,

I am leader of a youth club here on the Island of Bute. As you might guess, one of the continual headaches is trying to find new and stimulating projects for the young folk. Recently I picked up one of your magazines from a newsagents and found it very interesting. Although I am not an aeromodelling buff I was fascinated, and decided that if I was attracted to aeromodelling then so might the young people.

The problem is how to get started!

We have limited cash and even more limited expertise. But, I don't want them to end up assembling little kits. There would be more sense of achievement in constructing a simple glider from the rough materials.

I was wondering if you could give me any assistance at all. e.g. advice about materials, plans, helpful books, and so on. I realise this is rather a vague request but I will be indebted if you can help me out.

Isle of Bute, Scotland.

Jim Mc Gillivray

Perhaps some of our readers in the North can come to Mr McGillivray's assistance with an offer of practical help. All information will be forwarded

What's Happening?

Events

October 3rd-5th
ROTHERHAM SCALEDOWN EXHIBITION. All type of flying and static models on display. Venue: Central Library and Arts Centre, Rotherham.

October 5th
BFKA KITE DAY. See hundreds of kites airborne simultaneously all day and bring yours along too. Venue: Old Warden, Beds.

October 26th
BRITISH BOOMERANG SOCIETY flying meeting. 2 p.m. Venue: Dulwich Park, London.

CONTESTS

September 13th-14th
FF TEAM TRIALS TWO DAY. F1A, F1B, F1C. Venue A: Sculthorpe. Contact: Mike Fantham Tel: 01-736 7163.
September 14th
CL TEAMS TRIALS. F2A, F2B, F2C, F2D. Invitation only. Venue to be announced. Contact: Bob Horwood Tel: 0272 48769.

September 14th
ULSTER PROVINCIAL C/L CHAMPIONSHIPS. F2B + NOVICE, GOODYEAR, F2D, 1/2A COMBAT. Venue B: Nutts Corner, Co Antrim. Contact: Colin Johnson Tel: 0232 645466.

September 21st
FF 5th AREA CENTRALISED. TEAM POWER (KEIL + PLUGGE), F1B (GUTTERIDGE), A/1. Venue: Local area. Contact: Mike Fantham Tel: 01-736 7163.

September 27th/28th
FF TEAM TRIALS. F1A, F1B, F1C. Venue A: Sculthorpe. Contact: Mike Fantham Tel: 01-736 7163.

September 28th

CL TEAM TRIALS. F2C. Invitation only. Venue to be announced. Contact: Bob Horwood Tel: 0272 48769.

October 5th
SOUTHERN GALA O/G, O/R, O/P, A1, C'DH, 1/2A, HLG, F2B + NOVICE STUNT. F/F STAND OFF SCALE. Preliminaries 20th September to N. Couling, 7 Green Walk, Willingdon, Eastbourne, Sussex. Tel, Eastbourne 53118. Venue C: RAF Odiham. Contact: R. Taylor, 2 Engale Cottis, Copthorne Bank, Sussex RH10 3QZ. Scale Contact: Eric Coates Tel: 0329 832713.

October 12th
FF 6th AREA CENTRALISED. TEAM TUBBER (FARROW + PLUGGE), F1A (SMAE), 1/2A. Venue: Local area. Contact: Mike Fantham Tel: 01-736 7163.

October 18th
WIGAN 70. 11am start. Venue D: 3 Sisters site. Contact: Pete Farrimond Tel: 0942 34068.

October 19th
THE OPEN RUBBER TROPHY. Venue F: Bassingbourn. Contact: Dave Hipperson, 35 Anthony Road, Boreham Wood, Herts. Enclave SAE.

October 19th
ELLIOTT AUTUMN RALLY. F2B, F2C, GOODYEAR, SPEED, 1/2A TR, 1/2A COMBAT. 1st-3rd Trophies all events. Venue G: Marconi Avionics, Rochester. Contact: Pete O'Neill Tel: 0732 57899.

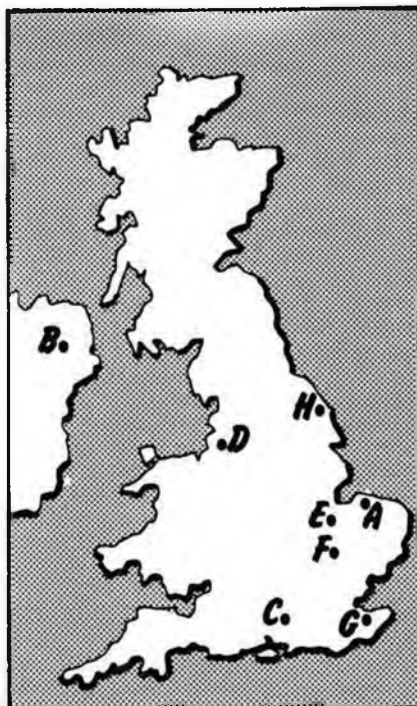
October 19th
AUTUMN SCALE. C/L SUPER SCALE. Venue E: Upwood. Contact: Vic Willson Tel: 073-522 3743.

October 26th — Now cancelled.
INDOOR SCALE FLY-IN. PEANUT, CO2 OPEN RUBBER. Contact: John Blagg Tel: 0707 52779.

November 2nd
FF MINI CENTRALISED, A/1, C'DH, 1/2A, HLG, CO2 DURATION. Venue: Driffield? Contact: Mike Fantham Tel: 01-736 7163.

NEW ANNOUNCEMENTS

December 7th
AEROMODELLER COUPE d'HIVER INTERNATIONAL 80 gm Aeromodeller Cup — 100 gm Bernard Bouillier Trophy. Plus substantial prizes donated by Model Hobby Trade, Venue: Provisionally RAF Halton. Contact: Aeromodeller Office Tel: 0442 41221 ext 283.



On MoD property, model aircraft may ONLY be flown by FULL SMAE members or contest entrants. All SMAE members (Associates and Juniors) and their families are welcome as spectators, and non members may be admitted by prior arrangement with contest director. For SMAE membership details Tel: 0533-58500.

MOONBEAM

RADIO CONTROL GLIDER

**1800 &
2400mm span**

Vee Tail configuration not only looks different, but offers very responsive controls, using one of the many commercial 'mixers' to link the action of the elevator and rudder servos.

MOONBEAM SEVEN is a 2-channel slope soarer for the sports flyer. It is simple and stable enough to be a first radio model. The vee tail was not chosen just to be different. Earlier single channel versions had magnetic actuators and I found that the vee tail offered the most responsive control with the limited power available. Moonbeam Two using this type of system was published in RCM & E in 1967.

The wings are a form of Jedelsky construction which has been used in two versions, 1.8m and 2.4m span, to allow flying in a variety of conditions, the plans show both versions, so chose what you wish. The choice of balsa is important and care should be taken to match the sheets in both wing halves for weight and grain, especially those used in the wings. The model is not built on the plan, but directly on the balsa sheet. In addition to the usual modelling tools, a set-square and a 900 or 1200 mm straight edge are required. The straight edge need not be expensive; I use a length of aluminium channel section. It can also be a help to have two block-boards, 900 x 300 mm, so that the building can continue while the other part is drying. These can be bought fairly cheaply as off-cuts from the timber yard, but first check that the surfaces are not warped.

If you are a newcomer to aeromodeling, read the building notes two or three times, in conjunction with the plans to avoid mistakes, as balsa is expensive.

Fuselage: Start by tracing out the fuselage sides on 3mm sheet and cutting out. At this stage glue only the top 3mm sq spruce longerons. Add 0.8mm ply doublers at the front and 3mm balsa sheet at the tail, using contact cement.

The fuselage is built directly on the bottom 900 x 75 mm sheet. Pin the sheet to the building board and note that the first

225mm of ply is butt jointed to the balsa sheet. Draw the centre line and mark the positions of all the formers. Cut out the formers as shown on the plan, mark the centre line on each and glue in position. Starting from the tail, pin and glue the 3mm sq spruce longerons in place and add the shaped hardwood nose block. The fuselage sides are now fitted in two stages – from the tail to former 2, which is a straight taper and, when dry, the curved nose section. Note the fuselage sides are glued to each side of the nose block. When dry remove from the building board and trim the bottom sheet to shape.

by John Kay

At this stage consideration must be given to the type of servo mixer to be used, as it is necessary to combine the elevator and rudder actions to a single surface of the vee tail. The original had an American EK Logictrol mechanical mixer.

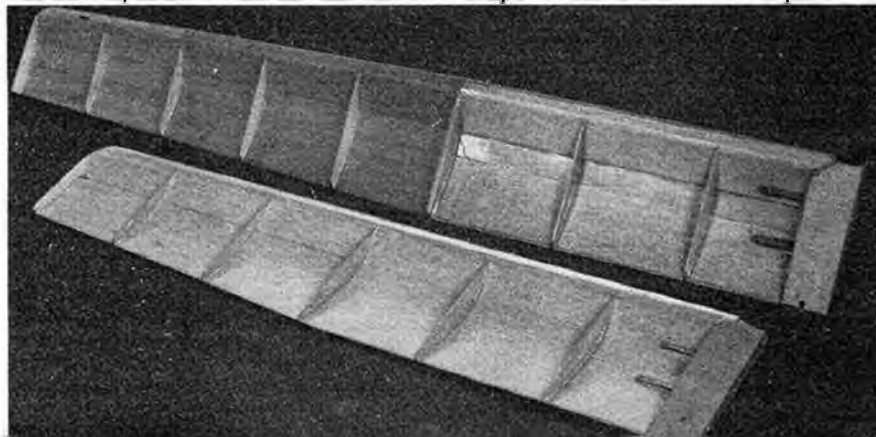
The conventional sliding servo system has the rudder and elevator servos in tandem. The front elevator servo is fitted to the fuselage in the usual way and the rudder servo is mounted on a sliding tray so that the output arm of the elevator servo

can move the rudder servo backwards and forwards. Both sides of the rudder servo are used to connect the controls to the vee tail.

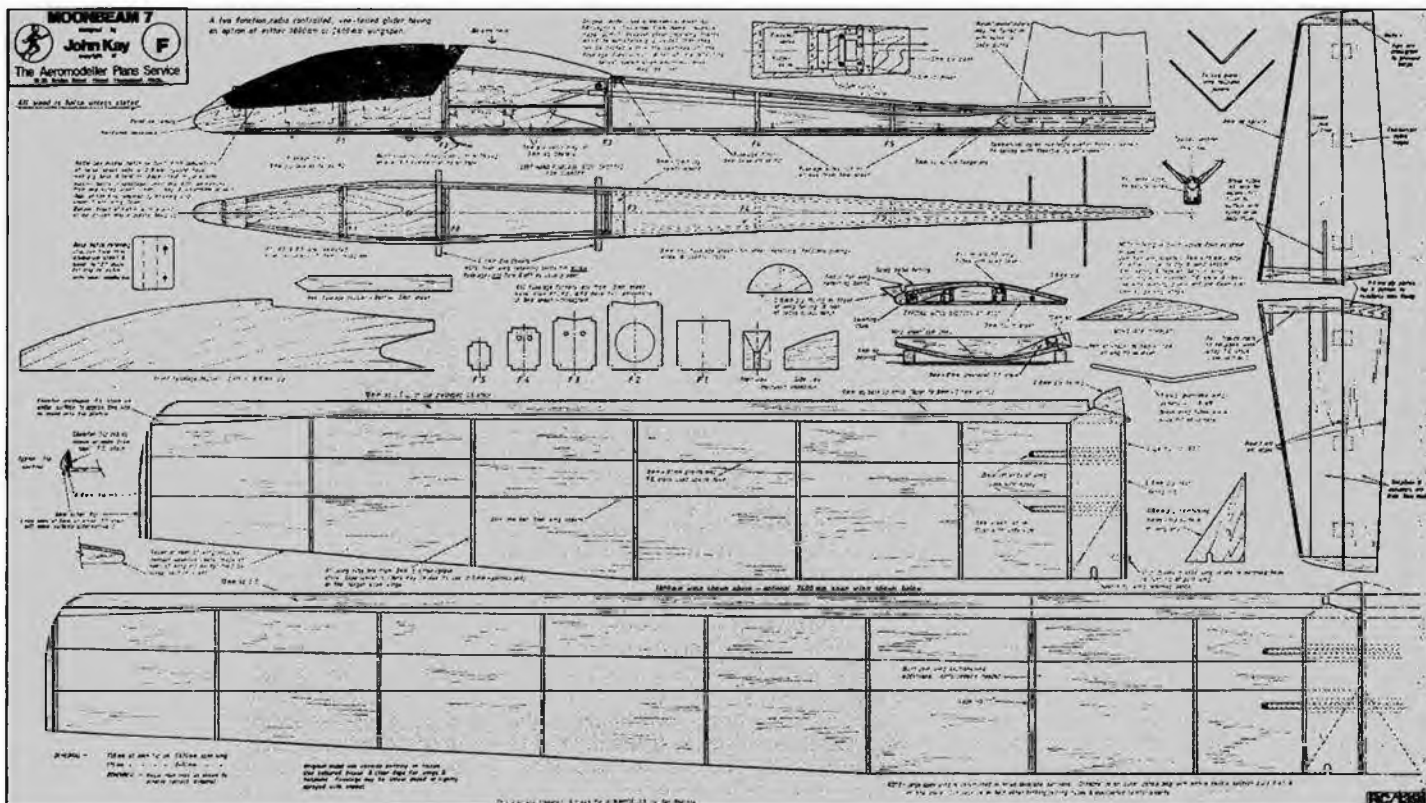
The original had the servo, mixer and radio switch mounted on a 3mm ply tray built into the fuselage. The template is shown on the plan. The servo cut-out shown will fit Horizon, MicroMold and McGregor, but may have to be modified to fit other makes.

Control surfaces are operated by flexible push rods. I find them the easiest to fit and they have been arranged so that they can both be made from a standard 900mm length. Make two holes in former three and then slot the remaining formers four and five from the top to locate the outer cable in position, ensuring the minimum of curvature to cut down friction and lost motion. Rough the outside of the cable to ensure good key and epoxy in position.

The front hatch has a 0.8mm ply base and is tacked in position with about six blobs of balsa cement to hold it in place, whilst the top curved position is laminated from scrap pieces of 3mm sheet using contact adhesive. When dry, trim roughly to shape and cut away the back as shown on the plan and add the ply former. The shape for this is shown on the plan. The



A two function, radio controlled, one seated glider having an option of either 1600mm or 2400mm wingspan.



Full size copies of the plan, reproduced here to 1/7th scale are available as Plan RC/1398 price £2.40 plus 35p postage and packing. Overseas readers may obtain copies from their local agents, full details of which can be found on page 357 June issue, or from Plans Service, PO Box 35, Bridge Street, Hemel Hempstead, Herts HP1 1EE.

front portion is cut above the nose block section, as shown on the plan, and then the cabin top can be lifted off with a little help from a balsa knife. The clip is made from soft aluminium sheet and bent to locate on the front wing dowel. The front is located by self-tapping screws into the nose block that has a plastic wall pug epoxied into it.

Wings: Match your 3mm sheets in pairs with the straight grain for the front section and the quarter grain, if possible, for the rear. Choose two sides of the sheet with the minimum gap between them and then, using *Sellotape*, join the panels in two or three places and then a further long strip is used to cover the whole length of the joint. By folding back the balsa, using the *Sellotape* as a hinge, squeeze a bead of white PVA glue along its length and close, remembering to wipe off the surplus glue with a damp cloth. If you prefer using balsa cement, then pre-cement the joints.

The panels should now be left to dry, weighted down on a flat surface, for six to eight hours before sanding.

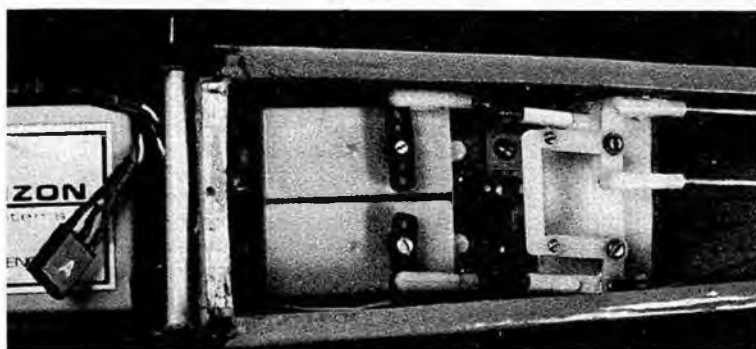
The underside of the wing is made from a trailing edge section, 38 x 9 mm and 12mm sq, or use 12mm preformed L.E., chose medium weight balsa. Glue together and sand the trailing edge section, so that there is a sharp edge. It may be necessary to sand the other side to be glued to stop bowing. This section is glued to the underside of the wing, so that it tapers from 48mm at the root, to 38mm at the tip. When dry, remove the overlapping portion of 9mm sq balsa from the wing sheet and butt joint the hard 12mm sq leading edge. See the plan for detail. Remember, when making these panels, that they are both left- and right-handed. A triangular portion is removed from the leading edge underside, as shown on the plan 12mm back from the leading edge and to a depth of 7.5mm, measured from the top of the wing sheeting. After sand-

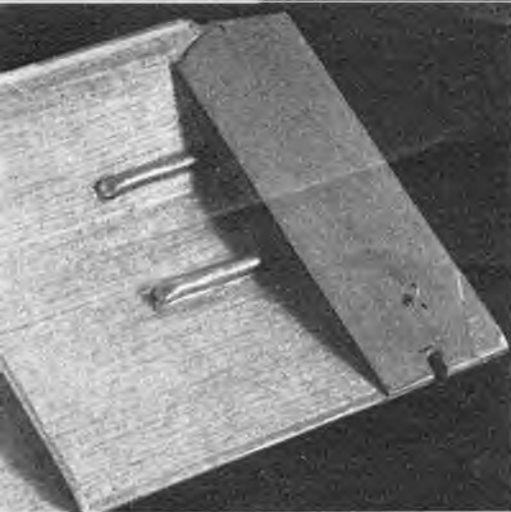
ing, dope the underside of the wing and sand again to remove any raised grain. This saves time later and gets over some of the awkward sanding between the ribs. Mark out the positions for the ribs on the underside of the wings. The wing is built upside down, using packing at the leading and trailing edge—see sketch. The ribs are cut from a hard 3mm sheet balsa, using the template shown on the plan. Glue ribs in position using non-shrink adhesive, such as white PVC. When dry, cut away the portion of the trailing edge shown on the plan, to give wash out at the tips.

The wing joining dowels are fitted at this stage. Mark out the positions of the dowels and make clearance holes between ribs one and two of each panel. The front and rear dowels are fitted in one piece with the ends flattened to stop the epoxy entering. Re-pack both wings again, leaving approximately 4.5mm between each adjacent end ribs and epoxy liberally in position adding also the vertical webs each side of the dowels, between ribs one and two. Allow to set overnight before removing from the board. Don't forget to rough up the outside of the dowels to ensure a good key. After removing from the board, trim ribs one and two, so that they are flush with the trailing edge of the wing sheet and infill with 3mm sheet. Ribs seven and eight are trimmed so that they are 4.5mm deep at the trailing edge. They should not be trimmed flush with the trailing edge, otherwise the wing sheet can reflex with time. The tip ribs are left full depth and faced with 0.8mm ply and 6mm balsa and shaped as shown on the sketch.

Far left: *Jedelsky* type construction utilising exposed ribs underneath, maintains aerofoil curved top sheeting, and transforms this glider into a rugged quick build model.

Left: Commercially available servo 'mixer' shown neatly mounted behind two servos, automatically combines 'rudder and elevator' movements to butterfly tail by simple principle of levers.





Above: Rod and tube wing half fixing simply couldn't be easier, with tubes literally expoxied to underside of wing sheeting and boxed in at centre section to sit on fuselage.

The 2.4m wings follow the same construction. The centre section is a flat 875mm panel. This is made in one piece with firm grade balsa, as previously described and cut in half after the joining dowels are fitted. The two outer panels are 750mm each. Use a lighter grade of balsa here and this wing will weigh only 30–60 gm more than the 1.8m version. Join the flat centre section to the tip panel using epoxy. There is no need for extra reinforcement, just butt joint the two 3mm sheet ribs together with 175mm tip dihedral.

Tailplane: The tailplane is also cut from 3mm sheet balsa with 3mm sq spruce leading edge. Again the dowels are fitted in one piece before the tailplane is cut in half. Mark the positions and cut the slots to take the aluminium tube. *Sellotape* over the slots and block each end of the tube with soft balsa, before epoxying in position. When dry, remove the sellotape and you have a smooth, flush surface. Add 12 x 13 mm trailing edge section to the top surface at the root before cutting the tailplane in half.

Make both sets of wing and tailplane joiners from piano wire and bend as shown on the plan. The tailplane should be checked with the wings in place before epoxying the tailplane joiners from the top of the fuselage. Take care to centralise the

joiners in the fuselage, or otherwise you can end up with tailplane halves at different incidences. Finish the wings by gluing 3mm sheet to the centre section root ribs and chamfer to the correct included angle. This can be checked by fitting the wing dowels. The wing fairings are shaped from laminations of 3mm sheet and trimmed to size. Now add ply root ribs, wing fairings, and underwing sheeting panel. The templates are shown on the plan. The wings are fitted by small rubber bands across the fuselage. This method is tidy and allows the wing to break away on heavy landings without further damage. Note that the rear slots in the wings are approximately 1.5mm wider than the fuselage, to ensure that both panels are pressed together. The front wing fairing has a groove cut in it to allow the bands to be flush with the surface. After a little use the wing dowels do not always centre correctly, so that both wing panels can have different incidences and even revolve in flight. To overcome this 4.5mm stub dowels are fitted as shown on the plan.

Now the rear fuselage sheet behind the wings can be finished. Note the strip of 12 x 3 mm ply behind the wings to prevent damage on heavy landings. Sand fuselage all over, filling cracks and dents with fine polyfilla and give two coats of a mixture of banana oil and dope. The fuselage on the original was covered with nylon in one piece, starting from the bottom of the fuselage with a joining seam on top behind the wings. A cheaper but equally

effective method is to use a nylon stocking. Turn the stocking inside-out and fit so that the toe seam and the strengthening area cover the nose block area. It will again be necessary to have a joining seam behind the wing. Two coats of dope should be sufficient to make the nylon adhere. Cut away the toe seam and cover again with lightweight *Modelspan*. This method provides a strong finish with good surface for painting. Cover the wings and tail with *Modelspan* for strength. The easiest method of applying the tissue is to lay it on the surface and brush thinners to dissolve the previously doped surface that acts as an adhesive. The only awkward part is the underside of the wings. Cut the tissue about 2in wider than the wing panel and attach the tissue to the leading edge with thinners. When dry, cut along the top of the rib while holding the tissue under tension. Only cut and dope one panel at a time. The ribs on the original model were also covered using the rib template as a pattern for the tissue.

Turbulators are fitted 9mm from the leading edge and are made from household thread approximately 0.8mm diameter, doped under tension.

The tailplane can now be hinged, using either four strips of Mylar cut to 18 x 12 mm, or commercial nylon hinges. Care must be taken to slot the balsa in mid-depth, so that when fitted the tailplane and elevator stay level. Epoxy into position.

Finally, finish the wings and tailplane with a thin coat of varnish or fuel proofer.



Above: Butterfly tail emphasises the elegant silhouette of this super simple RIC glider. Although primarily designed for slope flying, excellent glide also allows flat field flying, especially with the larger 2400mm span wings.

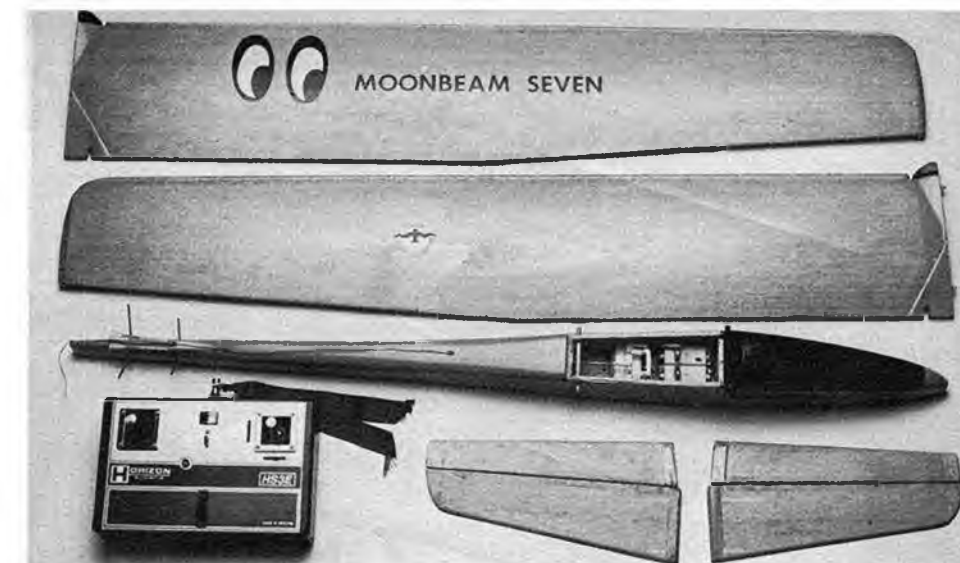
Left: Close up of control linkage to butterfly tail, with nylon rods exiting neatly through top of fuselage. Each tail half plugs onto wire rods for easy transport. Note RIC aerial taped to rear of fuselage.

Radio Installation: Fit your radio gear, mounting the servos with grommets and radio and receiver with stiff foam. Suitable materials are the dense rubber lagging used for waterpipes or rubber underlay for carpets. There should be at least 6mm under the receiver and battery and 12mm in the front of these parts to absorb shock in heavy landings. Connect up the servos to the push rods and join to the elevator horns using quick links. The elevators should be in line with the tailplane surface in the neutral position and have a movement for both rudder and elevator, measured at the trailing edge, of ± 12 mm. This can be reduced to ± 9 mm by moving the

quick link to one hole further out on the elevator horn, if this is your first radio model. The tailplane halves are just a push fit on fuselage and no retaining bands are necessary.

Assemble the model and check CG position. This should be on the front wing joining dowel 50mm from the leading edge. The original weighed 950gms, including 33gms of nose ballast.

Flying Notes: Test glide over long grass and this will help sort out any major trim changes. It is best to go to your local slope site and get an experienced modeller to check out and adjust before handing over to you. If possible take over flying when the model has gained sufficient height and then hand back to your helper to land. You can teach yourself, as I did with *Moonbeam*, but expect to make mistakes and repairs while learning. Try and choose a day with a light breeze directly on the slope. Use the 2.4m span wings, as they make the model more docile and slow enough to give you time to think out each control. Launch into wind and allow to gain height away from the slope, before any turns are contemplated. Fly the model in a figure-of-eight pattern, along the slope, doing alternate left- and right-hand turns, always away from the slope. The most common mistake is to fly the model towards the slope and forget that the rudder action is reversed when the model is coming towards you. With more experi-



Layout of finished components for 1800mm span version, testify the economy of design using standard wood lengths. 2400mm wing option offers more surface area for thermal soaring.

ence, turns can be tightened and this will tend to drop the nose, but applying elevator will raise it again. The tighter the turn the more elevator can be used, as it acts as a rudder in a steep turn. Later on you will be able to perform all the usual manoeuvres of an intermediate model.

To fly in stronger wind conditions, the 1.8m wing can be ballasted. I used 180 or 360 gm pieces of sheet lead, fitted over the centre section of the wings. The lead was made 60mm wide and 90mm long and contoured to fit over the centre of gravity and held in place by rubber bands. The

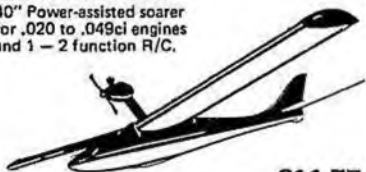
wing loading can be varied from 30gms/dm² with the 2.4m wings, to 45gms/dm² using the 1.8m wings with 360gms of ballast. With this ballast the wings had dowels to flex in turbulent conditions. For calm conditions a tow hook can be bolted to the ply floor for bungee or tow launch. It is made from 150mm of 2mm dia wire that is folded in half, then bent as shown on the plan.

A last thought, don't forget to put your name and address on both wings and fuselage for a radio model can go missing on occasions!

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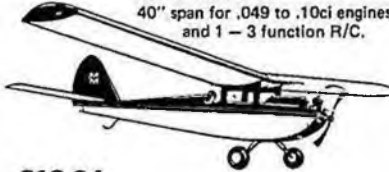
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AIRCRAFT
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"PARNALL ELF"

by David Ogilvy



David Ogilvy, general manager of The Shuttleworth Collection of Historic Aircraft at Old Warden, Beds, at the controls of the restored machine, built in 1932 and once owned by Lord Apsley, which made its second 'maiden flight' on June 24th 1980.

TO FILL A newly-found demand for aeroplanes, for private and club ownership during the late twenties and early thirties, tandem two-seat biplanes with engines of about 100 h.p. were produced in Britain by a number of makers. Hordes of *Moths* and *Avians* were joined in smaller numbers by such types as the *Spartan Arrow* (see April 1980 *Aeromodeller*) and the *Parnall Elf*.

George Parnall and Co, originally shop fitters in Bristol, produced Service aircraft during the 1914-18 war and these included *Avro 504s* and their own (not very successful) *Parnall Scout*. Subsequently they built the interesting *Parnall Peto* seaplane, which was designed to operate from a submarine, and the single-seat *Pipit* naval fighter. In the civil light aeroplane field, however, they began with the little *Pixie* — a low-wing monoplane with a 736cc Douglas engine that achieved 76.1 mph and won the Abdulla speed prize at Lympne in 1923.

A two-seat development followed in the *Pixie Mk III*, which flew in both monoplane and biplane forms; then came the *Imp*, powered by a Genet of 80hp, which flew from the company's aerodrome at Yale in 1927.

From this assortment, many of which had been designed by Harold Bolas, the *Elf* was evolved. The first of the three to be built made its public debut at Olympia in February 1929, later to fly from Yate as G-AAFH. Several improvements were incorporated into the mark II, including a reduction from full to half-span ailerons and a change from a tailplane with a facility to adjust the angle on the ground only, to a unit with in-flight variable incidence. A production run of G-AAIN and G-AAIO completed the *Elf* line. The Mk 1 flew behind a *Circus Hermes I* of 105 h.p. while

the two later machines boasted the additional 15 h.p. of the *Hermes II*. The lone survivor, G-AAIN, reverted at some time to the lower powered engine and flies with this today.

Although broadly conventional at first sight, the *Elf* has several novel features, some of which are good, but others of which are distinctly less bright. Among the former must be counted the wing bracing, for instead of the usual vertical interplane struts towards the tips, with landing and flying wires inboard of those struts, a system of Warren girders provides the necessary rigidity and even eliminates the need for a jury strut when the wings are folded. The maker's booklet claims that in this condition the *Elf* is 1 ft. 6 ins. narrower than the other existing machines, to facilitate transport through gateways when being retrieved after a forced landing!

This brings thoughts to the fuel system, which has caused problems in the past; the main supply of 18 gallons is in the fuselage and therefore pump-dependant for its flow to the carburettor, with a capacity of only 3 gallons in the top (gravity) tank in the wing centre-section. This leaves a very limited safe endurance for take-off, landing and circuit work, at which times it is unwise to rely on a pump. Both the other *Elves* ended their lives prematurely following pump failures.

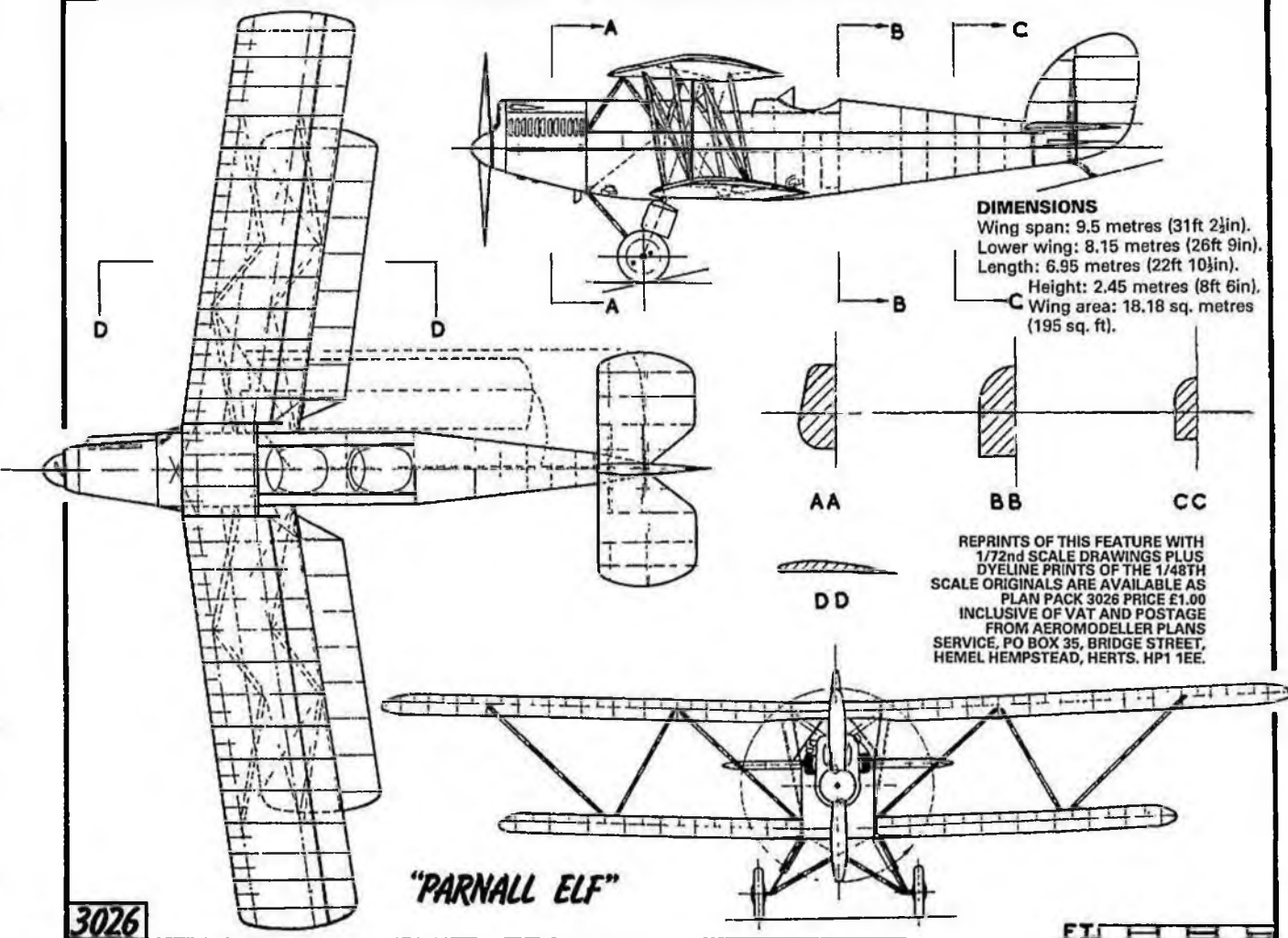
A bonus feature on the *Elf* is the way in which all vibration is damped between the engine and airframe. Although the upright 4-cylinder *Hermes* is itself a smooth-runner, it has a minor lumpy spot at the low end of the power-scale, but even this is not transmitted to the occupants. Possibly it is the smoothest piston engine and airframe combination of any aeroplane that I have met. This applies both on the ground

(where it is most noticeable) and in the air.

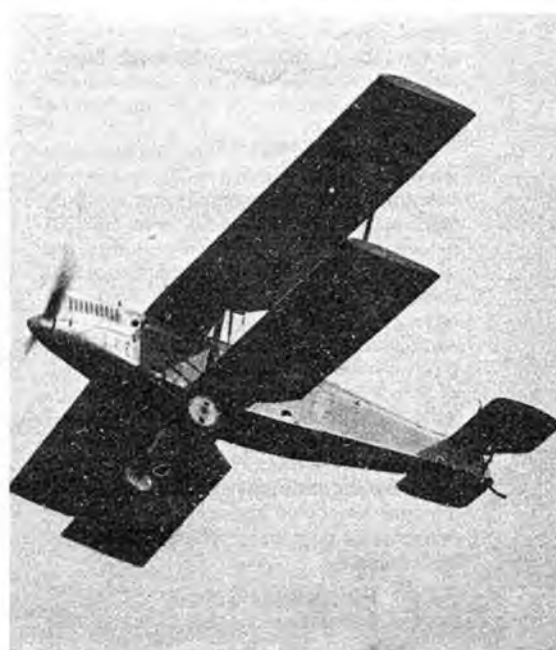
The *Elf* is flown from the rear cockpit, which is further back than on most designs, for even the front seat is well behind the centre of gravity. The layout is pleasant, but a baffling feature to find is the duplicated fore-and-aft trimming facility. A large geared handwheel on the right cockpit wall alters the tailplane incidence, while a small lever near the floor, just ahead of the control column, adjusts the stick pressure by a bungee. I was unable to find anyone who could advise on the need or use for this unique combination, but as G-AAIN had not flown for 34 years when we launched her on 24th June, this may not be surprising! By starting with each device in the neutral position and experimenting in the air, we learnt fairly quickly that even with all this help the *Elf* is not over-endowed with usable trim range.

There is insufficient space here to describe all the *Elf's* features in depth of detail, but points that should not be missed are the large slotted ailerons which have no cables or tie rods, but which are moved by external steel tubing; the small wing gap which brings the upper wing very close to the top of the fuselage at little above eye level to therefore offer a better view than on most biplanes, and the designer's aim to eliminate all technical jargon, with ignition switches marked 'stop' and 'run' and the trim lever with its range limits marked 'top speed' and 'stall'!

The *Elf* is an interesting addition to the range of exhibits at Old Warden. It is pleasant to fly and has an attractive appearance in the air. While not a world prize-winner, it incorporates several unusual features, and experience with these must have had some influence on the design of light aircraft from other manufacturers.



Early photographs of Parnall Elf show distinctive Warren girder wing bracing in head-on flying shot above. Full length top wing ailerons clearly visible at right, with full length hinge on lower wing to permit wings to swing back for storage. Left: fin and rudder hinge line differs from restored machine at Shuttleworth, "Air Portraits" & "Flight" photos.



THIS MONTH:

CARE OF EQUIPMENT SERVICING SERVOS AND NI-CAD BATTERY CONVERSIONS

AFTER EACH AND EVERY flying session and especially after 'heavy' landings, the whole Radio Control installation in your model should be checked. Make sure that the components are still in their appointed positions and that the foam packing is still capable of performing its task of cushioning any unwanted impact force and damping engine vibration on powered models. The securing clips or screws for the servos should be at the correct tension, not so tight that the servo cannot move on its rubber grommets but tight enough to hold the item securely. The function of the rubber grommets is to protect the servo from unwanted vibration and it should be possible to 'rock' it using just a little force from one finger. I generally use wood-screws and washers through the mounting grommet into hard wood bearers, and find that if the screws are tightened down to contact the washer, then given an extra half turn the holding force is just about right.

Servo arms must be closely inspected for any sign of wear, or cracking. The retaining screws should be checked, do not over-tighten since this can distort both the drive spindle and the output arm. The screws are simply to retain the arm and do not take any drive force, this being transferred by the output spindle and arm. Control linkages, either tube in cable or push rods, should also be inspected and the latter disconnected, removed and carefully checked for splitting.

Wiring should be tucked away neatly without kinks and sharp radius bends and held in position by scraps of foam or lightly fixed to the fuselage sides with self adhesive tape. By carefully inspecting the wire to plug connection, you can check that soldered joints are still good. Plug pins often slacken in their sockets and whilst some would suggest bending of the pins to give an interference fit, I am not in favour of this. It is better by far to bind the plugs with insulating tape to ensure that a good contact is made and that plug and socket do not separate in the air!

The switch assembly can be cleaned with a 'cotton wool bud' and methylated spirits, then given a short burst of WD40 or similar silicone spray.

FAULT FINDING

First and foremost check that the battery state is good and if necessary, clean the

by Chris
Pinchbeck



R/C Sport Flyer

sprung terminals in the battery box. Then make sure that matching crystals are fitted. The next step is to take the switch out of line by connecting the battery direct to line receiver, to identify if it is at fault.

If only one servo is not functioning properly, disconnect all servos and plug the faulty one into a different channel on the receiver which is known to work. If it works properly then the chances are that the receiver or less likely, the transmitter is faulty on that particular output. If it continues to malfunction the servo is probably at fault. But before taking any further action, recheck that wiring is in good condition with no breaks and that the plug is making a good contact in the socket.

If all servos are faulty the aerial lead from the receiver should be checked for breaks, and that it is still properly connected and secure in the receiver.

If there are no obvious faults after the above checks have been completed — twice! — then carefully pack all of the equipment and send it to the recommended service agent with a brief description of the fault or how it came about.

The only item which is reasonably safe for a novice to partially dismantle is the servo. As explained in an earlier article, the output arm is activated through a gear train by a small electric motor. Pulses from the transmitter via the receiver are put through a potentiometer which determines for how long and in which direction the motor should turn the geared output arm. This potentiometer consists usually of three carbon 'brushes' in contact with a track. Inevitably the track becomes dirty and only

intermittent contact is possible so the motor gets confused and the output arm 'twitches'. In this case the track has to be carefully cleaned using a 'cotton wool bud' and methylated spirits.

The method is to undo the screws holding the servo case together and gently separate the bottom, electronic section from the mechanical top part. Most servos will also split to reveal the gear train but it is not usually necessary to take this apart. By splitting at or near the point indicated the potentiometer will be exposed. Before proceeding, mark a line with biro or felt tip pen across potentiometer and outer case to ensure that upon reassembling the centring will not be affected. Remove the holding screws, withdraw the pot, and clean the track and contacts using cotton wool and methylated spirits. The contacts should also be wiped. Reverse the procedure to assemble but do ensure that the reference marks line up. Before finally closing the case, dust out the interior of the servo; it is not usually necessary to oil the motor since sealed bearings are used which require no maintenance. Once the servo case is bolted together, test the centring of the servo arm and tune if necessary by moving the pot, a little way each side of the marked position to correct.

After a season's use it is a good idea to have your radio gear checked and serviced by the agent or manufacturer. Even at today's prices this can be done for about £15 plus any new parts, and the 'insurance factor' set against possible destruction of flight pack, model and engine is well worthwhile.



Left: Having first removed the servo output arm or disc, remove the screws, usually four, which hold the outer plastic case together.



Right: With all screws removed carefully open plastic case, taking care not to break or strain wires or damage internals.



Far left: Mark the position of the potentiometer with relation to case using Biro or pin scratch before loosening two retaining screws.

Left: Carefully remove pot, to expose track and contacts which are usually the cause of twitching servos due to accumulation of dirt.

Right: Use cotton wool swabs moistened with a little methylated spirits to carefully clean all contacts, not forgetting one in centre.



NI-CAD CONVERSION

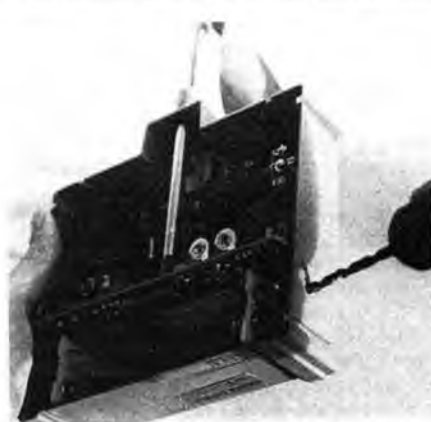
Undoubtedly many of our readers will have purchased radio control sets which are powered by dry batteries. If only occasional use of the set is envisaged then this makes good financial sense, but if you intend flying anything more than once every two or three weeks, it is more economic to use rechargeable Nickel Cadmium batteries. Most equipment manufacturers offer conversion packs but for those of you who are more adventurous or economically minded, we offer the following advice.

The dry cells can simply be replaced with rechargeable 'pen cell' ni-cads of 1.2 volt 0.5 AH size and these may be fitted into the existing Battery holders. Make sure that they are securely held and make good contact or even better, solder wire across the terminals then bind securely with insulating tape. Cut the plug from your existing battery holder and solder this as indicated to the airborne pack.

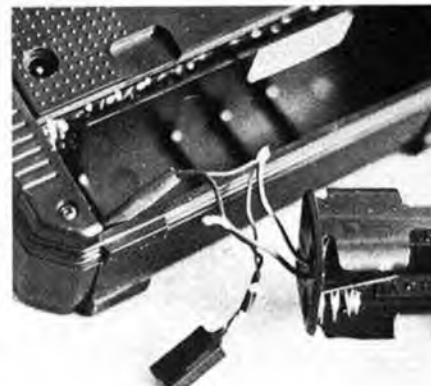
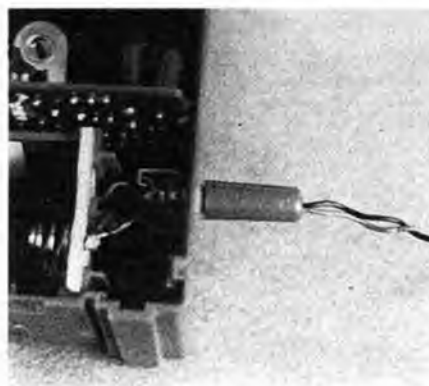
For the transmitter power pack more pen cell Ni-cads are used plus about twelve inches of insulated flex, a jack plug and socket to facilitate recharging. Remove the transmitter back plate usually held by two self tapping screws. Drill a hole in the side of the main case to accept the jack plug socket, and after fixing this in position, solder wires from the socket to the output contacts of the battery holder. It helps to ensure that the positive (red) lead connects with the centre pin of the jack and the negative (black) lead to the outer section. Wires are then soldered to the plug itself and terminate in a suitable plug or socket to match up with the charger. Spare plugs and sockets for your set may be purchased from any good model shop or from the manufacturer or his service agent.

An alternative to using a jack plug and socket is to obtain a standard plug and socket to suit your equipment and fit these in line between the transmitter battery holder and switch. They can then be separated for charging purposes. Do ensure that when joining wire to plug and socket, correct polarity is maintained i.e. positive red to red.

Suitable chargers are readily available, and you should be able to purchase one which is matched to your equipment.



Above: Remove back of transmitter, usually held in place by two small screws. Above right: Start by drilling hole in transmitter case to suit diameter of jack socket body being used. Below: Jack socket with plug which can be fitted to case of transmitter permitting simplified recharging with ni-cad cells left inside transmitter. Right: Carefully wire the socket into the existing battery pack circuit, paying particular attention to polarity of wiring. Bottom left: Modifications completed, show external jack plug used for charging, fitted to socket mounted in transmitter case. Bottom right: Alternative modification on this Sanwa 2 equipment uses charging socket added to battery pack which simply tucks inside transmitter during use.



TWO RUBBER SCALE MEETINGS:

Barkston Heath 6.7.80

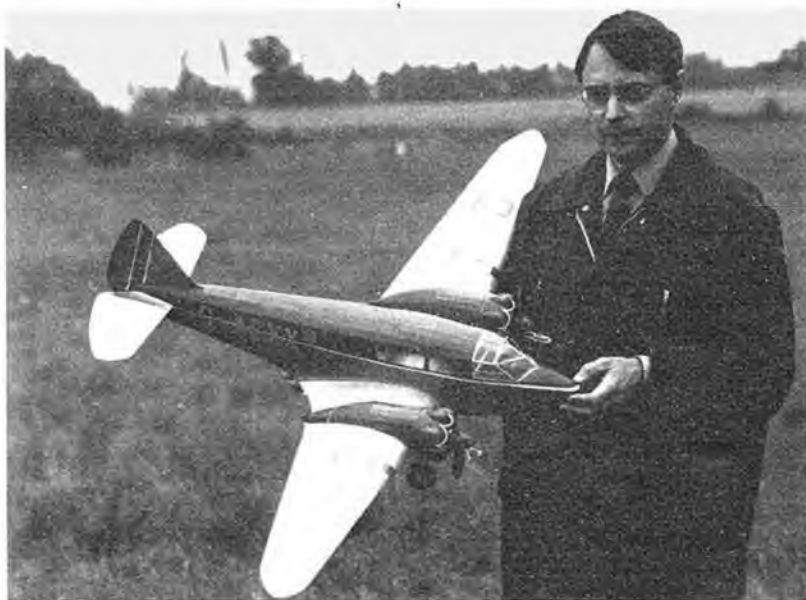
Approximately twelve months ago the editor of the SMAE newsletter *Model Flyer*, David Parker, took the initiative to organise an informal contest for outdoor Rubber Scale models having realised that a genuine interest in these models existed within an enthusiastic group of flyers. David's first comp was scheduled to take place at the Autumn Southern Gala at RAF Odiham but a day of somewhat foul weather meant that the event was postponed. After much deliberation the comp was held back right until this SMAE Scale "Fly-in", and at the more central venue it was intended to try to spread interest a little further. The informal nature of a Scale "Fly-in" rather than the out and out competitive contest atmosphere also seemed to be the ideal setting for these particular models.

A goodly number of entries materialised, many of which came from the London area showing that enthusiasm is strong – in FF Scale model terms, that is! The uncertain weather forecast probably kept others away but the contest was held before conditions deteriorated too badly.

The eventual winner turned out to be Barrie Hotham flying his very colourful *Heath Parasol* resplendent in its complicated yellow, silver, and black livery. This model has turned out rather heavy for its size due not only to the paintwork but also to the wealth of detail incorporated in the engine department which gave Barrie a lead in static scale of 184 points over nearest rival clubmate Mike Hetherington's *F-W Stosser*. Top of the flying section came John Blagg's *Heinkel 100* with 902 points although this model was let down by a low static score, and consequently could only manage fifth place in the end. Interestingly, the final scores from second to sixth place show a spread of only 63 points which is remarkable in a scale competition

SCALE MATTERS

by
Alan
Callaghan



of any kind especially when the variety in the static and scale scores is considered.

With five German, one American, and one Swedish aircraft being chosen, it seems remarkable that only one of these types, the *Stosser* would normally be

regarded as the ideal Rubber Scale subject. The *Storch* is a deceptively complicated model, the *Heinkel 100* a dreaded low-winger, the *Heath* has no dihedral, a very short nose, and a small tail, and Richard Falconer's *Saab 21* nothing less than totally unique! It's nice to see such a variety being successfully built and flown.

Above: M. Cook with his rubber powered Altspeed Envoy in Kings Flight colours built from a vintage design by Harold Townner.

Old Warden 20.7.80

This meeting was the second to be organised at this venue with the helpful co-operation of Mick Staples, secretary of the Shuttleworth Vintage Aircraft Society. The first meeting, last year, took place in quite perfect weather conditions — a warm sunny day with virtually no wind to contend with. This year was the exact opposite, the forecast was dire, and to make matters worse it was correct! Constant rain and wind with only the occasional calm spot while the next shower built up to full strength made the fliers who stayed at home seem the most sensible, but as with many model meetings there are always a few hardy types who will be determined to get in a bit of flying come what may. Such enthusiasm is greatly appreciated.

Nine fliers actually braved attempts at

Aeromodeller



Left: This Bristol Scout by Vic Driscoll is from Vintage scale design by Eddie Riding. Beautiful model features near-scale propeller.



the competition but many more than nine Rubber Scale models were in evidence. Two very interesting subjects that did not take part but which were very gingerly test-flown during the odd little calm patch were a *Bristol Scout* by Vic Driscoll, and an *Airspeed Envoy* by M. Cook. In these far from ideal conditions Mr. Cook was limiting the *Envoy*, resplendent in the colours of the King's Flight, to gentle powered glides and the model will in fact need a pair of much more powerful motors to be fitted if real sustained flight is to be achieved. The model felt very light for its 1275mm wingspan despite the elaborate colour scheme. Vic's *Scout* managed a few successful test flights but was running into problems due to the very large lifting section tailplane. Putting on extra turns and increasing the power caused the model to dive in quite deliberately so a fair bit of patient trimming on a really calm day will be required to sort this one out.

Turning to the contest itself, as previously mentioned nine entries materialised but only six returned flight scores good enough to take them through to static judging which was carried out at the end of the day in the shelter of one of the flight control buildings in the centre of the field. The winner, Chris Chapman, flying the same *Heinkel* he used at Barkston Heath had an almost perfect balance between his flight duration, flight realism, and static scores. His flight durations of 37 and 39 seconds were very good in such bad conditions. They were only rivalled by another low-wing subject (do people still claim that they don't fly?) in Don Knight's *Boulton Paul Defiant* — another vintage design, this time from an American Earl Stahl design. Don could not make the most of these good flights due to a lack of scale documentation for the model. Third in the flight duration section came John Blagg this time flying his *Isaacs Fury* scoring 25.5 seconds but the model was badly damaged in a very rough landing. A worthy second place went to junior Andrew Hewitt flying a neatly built and original *Morane Saulnier Monoplane*. The model scored well in static and in flight realism but the durations achieved were somewhat marginal. In third place came Geoff Spencer with his beautifully-constructed and painted *Fieseler Storch*. This accurate model was also let down in flight duration, but in really calm weather will perform superbly. It seemed to me that the low-wing subjects had the advantage of being aerodynamically cleaner than the more complex biplanes, parasols, and cabin monoplanes with their various struts, wires, and drag-inducing appendages, and so could cut through the unsettled air much more efficiently. If you are thinking of building a Rubber Scale model for all-weather flying this may be worth bearing in mind.

Two other models that did not feature in the results due to being withdrawn by careful owners were a large *Andreasson*

BA-4B by David Kew, and a 1909 *Caudron* built by Gerry Ketchell which looked like yet another vintage design. What a great pity it was that the weather spoilt our chances of seeing them fly, but there's always next year, chaps!

C/L WORLD CHAMP?

It is not every month that this column receives news of World Championship class control-line Scale models, but this month details of a quite superb subject came in from Keith Trostle of Upper Marlboro, Maryland, USA. Control-line enthusiasts with wider interests will know Keith from his Aerobatic flying activities, amongst other things he has been American National Champion once and also was a judge at the World Championships held at Woodvale in 1978. His new *Martin-Baker MB 5* qualified for the US Scale Team for the Control-line event at the World Championships to be held in Canada, but which did not eventually take place.

The model is built to 1:10 scale, which brings the wingspan out at approximately 1070mm (42 ins), and the weight at 14.3kg (6½ lb). Power is supplied by an OS 60 rear induction motor that has been specially modified to accept the piston/cylinder head assembly of the improved OS Max H 60 GP R/C motor, and a home made exhaust muffler. Although the undercarriage does not appear to be retractable the model incorporates many other working features such as split flaps, working radiator shutter, castoring tail-wheel, and the ailerons and rudder are connected to the throttle control to give greater offset trim for slow speed flight. For display purposes all the control surfaces can be operated by the control column and rudder pedals from the cockpit. The counter-rotating prop is for static display only and a conventional one is used for flying.

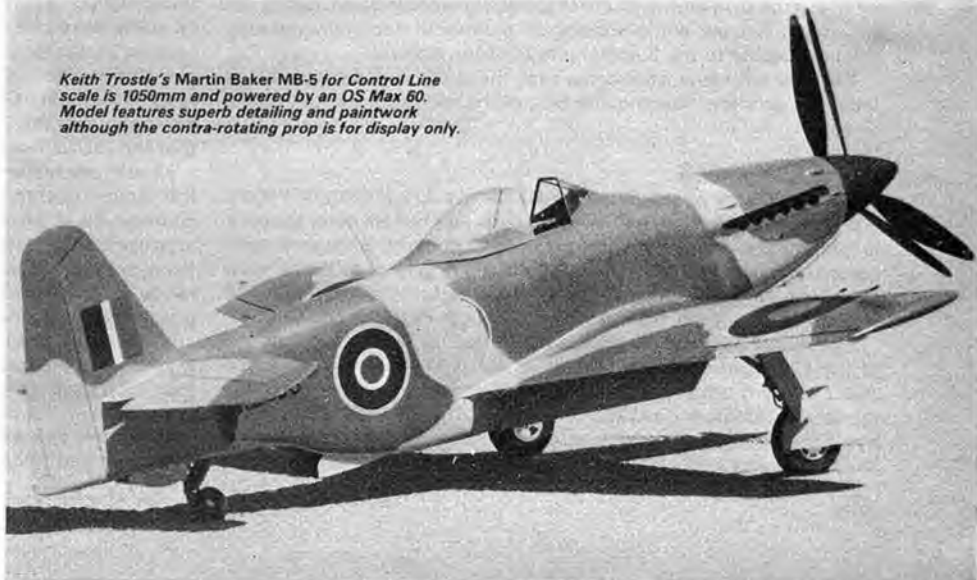
Close inspection of the photographs supplied shows that Keith's workmanship and finishing techniques are of a very high order indeed and the model must have been quite a challenge to an American builder

especially in the acquiring of the relevant scale documentation. No mention is made as to whether the model is aerobatic or not but with a fixed undercarriage it would seem to be unlikely as well as the fact that the wing loading is rather high which will limit performance to some degree. The rakishly handsome proportions of the *MB 5* with its underslung radiator and long slender nose are reminiscent of the *Mustang* to a certain extent. Whether this accounts for the subject's attraction to an American builder one can only imagine but Keith's efforts have certainly done justice to one of the best of Britain's prototype fighters.



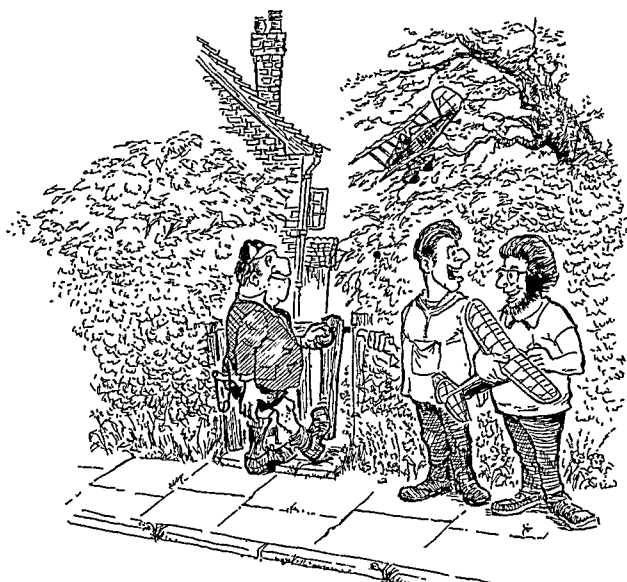
Above: Chris Chapman flying this FLYLINE KITS Heinkel 100 won the rubber scale events at Old Warden flying in terrible weather conditions.

Keith Trostle's Martin Baker MB-5 for Control Line scale is 1050mm and powered by an OS Max 60. Model features superb detailing and paintwork although the contra-rotating prop is for display only.



TOPICAL TWISTS

by Pylonius
illustrated by Sherry



"Old Bloggs always dresses like that when going to ask for his model back".

RISING COSTS

We are informed that balsawood, far from outsoaring everything else in price, has remained very consistent, much on a par with a bar of chocolate. It is also possibly tastier than the chocolate nowadays, and no doubt more nutritious. Not that I would know personally, as the only one to ingest balsawood in the family is the cat, although it is not always the choicest cuts which find their way into the kit!

Again, contrary to popular belief, aeromodelling is a relatively cheap hobby. It is true that the products of the modelling den do not enjoy an antiquarian survival, unlike trains, boats and other earth-bound models; so that the replacement factor is likely to be on the high side. Even so, that is in the way of a bonus, as life with the same old set of models can become something of a bore. Not only that, but model planes do not age gracefully — getting faded and brittle with the years, like an old mummy. If you did keep all your models instead of crashing and losing them, you would have to fight your way into the house, and with all that decaying dope lying around you'd need a lot of insurance.

Some modellers spend very little on the hobby, although even the big spenders are apt to economise on club subscriptions; the average club losing more subs in a year than the German Navy in World War 2. The true hobbyist, though, has a healthy reluctance to spend good money on anything he can make or improvise, and if the Trade had to rely for its champagne and scampi on the blokes who do most of the flying they'd be in the queue for fish and chips.

You could say that expenditure can be related in an inverse way to actual model flying time. The big spenders are the ones who whack out on all the glossy goodies that rarely see a flying field, whereas the true enthusiast is stripping up his own balsa, coring out his own polyfoam, and practising all manner of non-spending arts, totally immune to the blandishments of the adverts.

We may not know what came first, the chicken or the egg, but at least we do know which came first of the modeller and the model shop.

PIPE DREAMS

If you see a large pipe floating across the sky do not imagine we are about to be invaded by a horde of bronchial giants from outer space; it is just an advertising puff of another kind of giant, a tobacco company; the pipe being merely a hot air balloon. Where do the tobacco firms get all this money for such advertising you may ask? The answer is, of course, from their deep coughers (coffers).

Should not this though, give us flyers inspiration? Are we not tired of the same old shapes that float so boringly over our heads. We could kill two birds with one stone, as it were, by disguising our models as threatened wildlife. These would be very appealing to the eye, bring forth delighted mating calls from the bird sanctuaries, and keep the preservationists happy. Or am I just talking a lot of hot air?

COUNTRY RETREATS

Ever since the first model flew off Wimbledon Common ("What the Deuce!" exclaimed the tennis umpire) we have had flying field problems. And, like the models themselves, they have been getting bigger and bigger. It wasn't so bad in the old days when the enthusiasts gathered on the local green for a model session. There the assembled models would be mutually admired, and the various lift attributes discussed, with perhaps a dubious look at the model with a large spring under the fuselage. Then comes the treat of the day when someone actually gets a model airborne. The flyer is too well mannered to overdo things; the model staying aloft just for a few seconds. Whereupon there is congratulations all round and general rejoicing, with due consolations to the lady whose large hat has come adrift in the excitement, even though the flotatious piece of millinery outflowed the model plane by a handsome margin. And a blush or two spared for the young lady who momentarily forgot from whence the elastic came which powered the triumphant model. Anyway, all would adjourn to the nearest inn for a celebratory drink — the only space problems being those of internal capacity.

When however the model plane, began to outfly the local open space, our troubles really began. The sedentary life was over. You could no longer win a handsome trophy presented by the President of the Royal Aero Club just for a low level zoom over Hampstead Heath; it was now a question of hitching a lift on a passing thermal and getting on those size seven league boots. And, as for the prizegiving — well, if there was any sort of ceremony you'd still be out searching for your model. Thus the law of diminishing returns had come into operation — and were those returns diminishing! It was a jolly good thing that some clever johnnie had invented the dethermaliser. Even so, there were problems in getting back the models in the urban open spaces, particularly in a *toys for boys* society. "Can I have my model plane back, please?" presents the mature model flyer with an embarrassing situation. One way out was to take a small boy along and to generally give the impression that the model belonged to him and that the model flyer was merely keeping a fatherly eye on things.

Mostly our history has been one of retreat into the vastnesses of the remote countryside, like rebels taking to the hills. Not that the countryside is all that remote any more. Model complainers are strategically situated over the whole of Britain, so that at any one flying point there will be at least three apoplectic complainers within range. And the remoter you get the more likely are you to come up against the conservationists. It appears that our shrinking wild life shrinks away from even our peaceful passes over the pastures. Nothing, we are told, upsets the mating habits of the Great Creak or the Holed Toad more than the sight of a model plane, and the merest whisper of an engine is apt to frighten the fauna away quicker than you can say five minute epoxy.

We just can't win.

Flanders F3

by W.D. Binns

I HAVE BEEN LOOKING for some time for another suitable design for CO₂ and eventually in Kenneth Munson's book *Pioneer Aircraft* found the *FLANDERS F3*. Flown at Brooklands in 1912 with a 60hp Green Engine, it achieved 65 mph and was only prevented from service with the Royal Flying Corps by the famous "Ban on Monoplanes". In fact, four were ordered, and should have been much better than the Biplanes put into production. The machine was 12.6 meters span and 11.7 meters long with very simple construction, so this design was scaled up from Munson's drawings as accurately as possible bearing in mind the small scale drawings in the book. You can eliminate the detail and build it as a simple sport plane, or go into full detail, when it still flies well enough to make your name and address very necessary.

Fuselage. Build two sides on top of each other in 2.5mm medium balsa, steaming the first 150mm of the longerons by sticking them down the spout of a kettle for 10 minutes. Glue on the 0.4mm ply sides and the internal 0.8mm sheet doublers with their grain vertical. Join the two fuselage halves from the tail to the tank bulkhead and when dry complete, including the nose



former. Cut out the cockpits, and glue on the top ply. Glue in the undercarriage basic "U" and the bottom ply after cementing in the tank mounting. Cement soft 2.5mm sheet over four sides of the nose and sand off to give a slightly rounded nose. Cut the slot for the tailplane. Now if you wish, cross brace the fuselage, on all four sides, back from the ply with black thread and edge the cockpits with insulation, split from wiring.

Tailplane. Cut from 0.8mm medium sheet to elevator line, then add elevators with the grain at right angles. Add 1.5 x 0.8mm ribs to top only. Weight down and leave to dry.

Rudder. 0.8mm sheet outline with 1.5 x 0.8mm ribs both sides.

Wings. Pack up the spars to allow for the undercamber of the ribs and assemble wing. Fit skeleton ribs and rigging blocks if required.

Covering. Use lightweight white tissue and make sure it has dried before water shrinking or it will pull away from the undercamber. Only cover the open section of the fuselage. Damp the tissue with water stained a faint brown with coffee for realistic ageing. Draw on the elevator hinge and the wing stitching with Indian ink. (every 4th rib). Give fuselage ply four coats of banana oil, sanding down to a fine finish. Paint nose aluminium colour and fit dummy cowl slits from 1.5mm masking tape. Solder the axle to the first frame and the supports to the axle. Fit card fairings to first frame and both axles. Drill holes in fuselage and spring the supports into them.

Give the wings, rear fuselage, tailplane

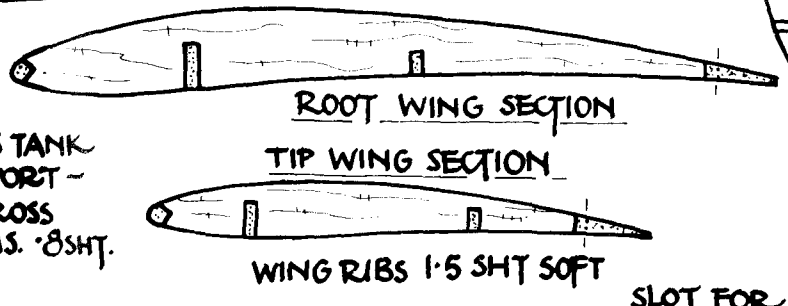
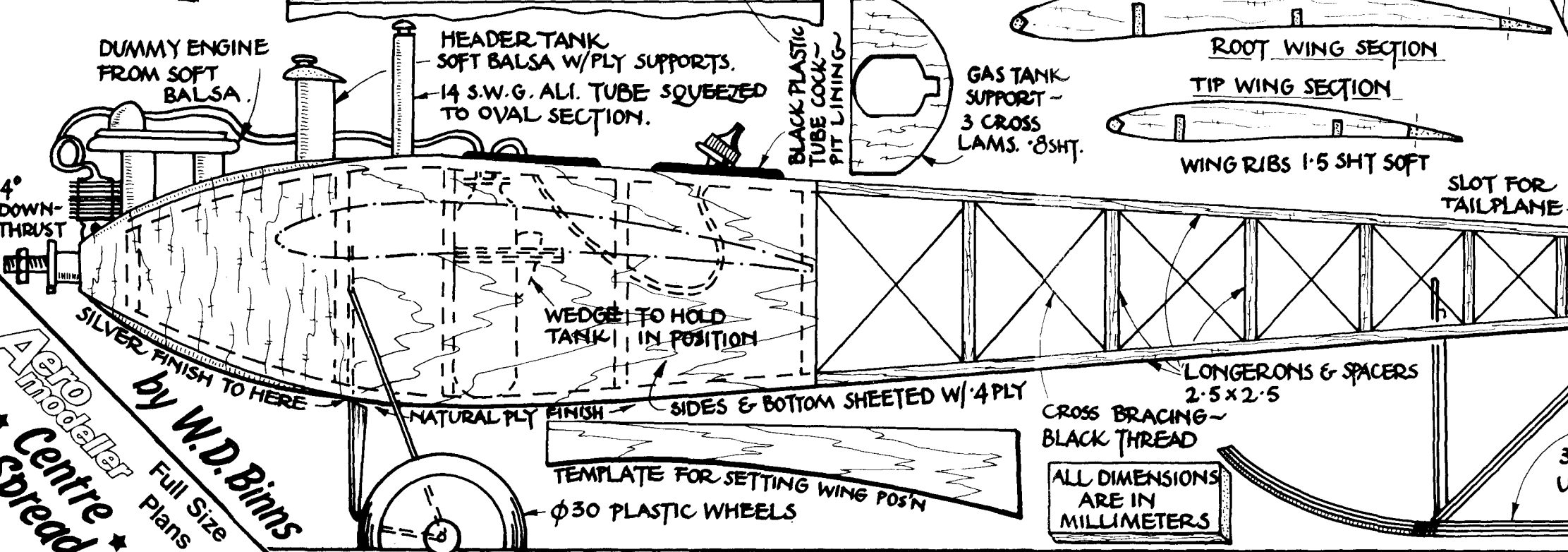
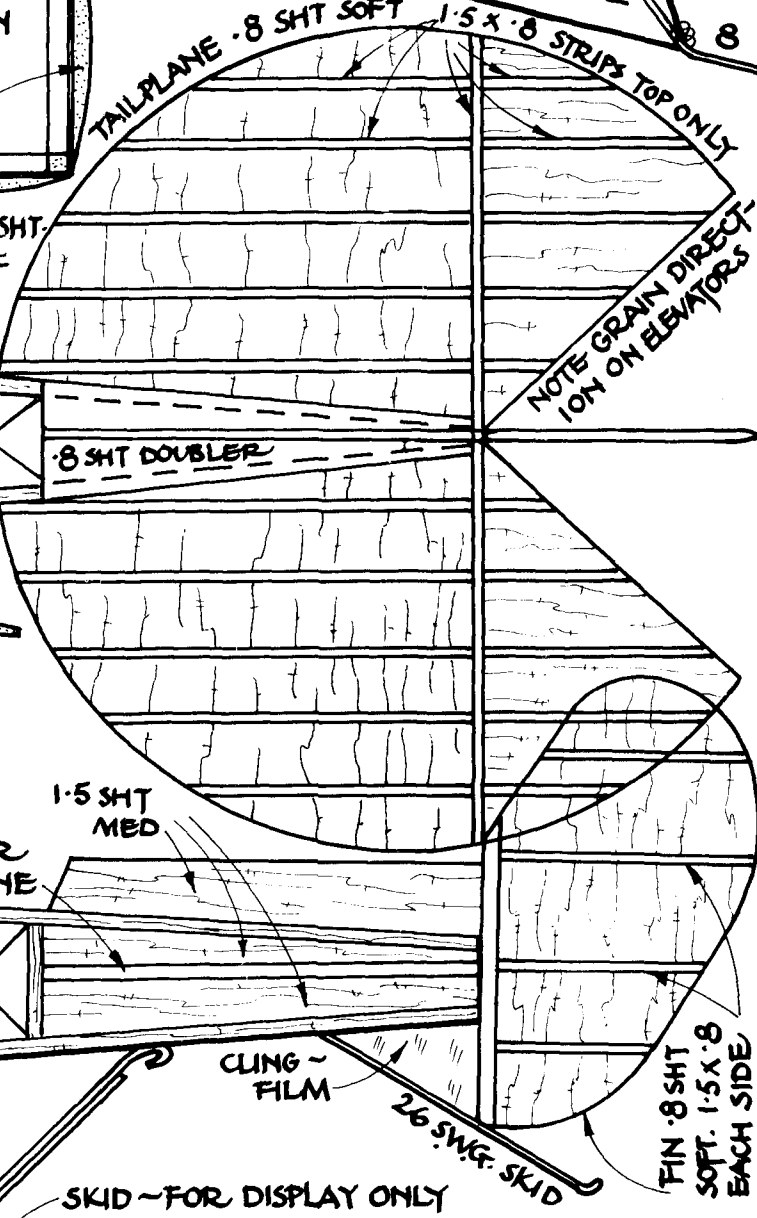
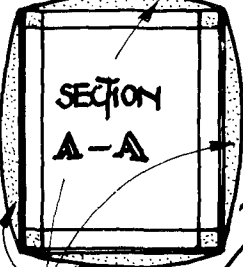
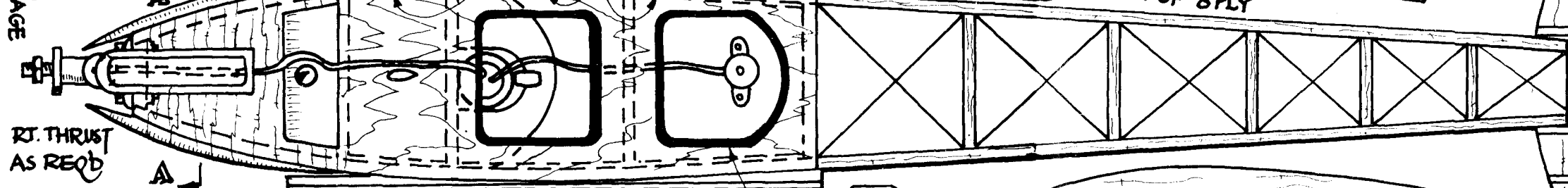
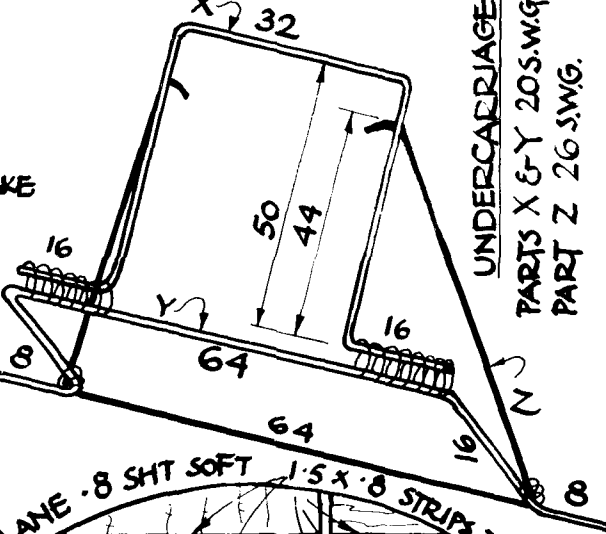
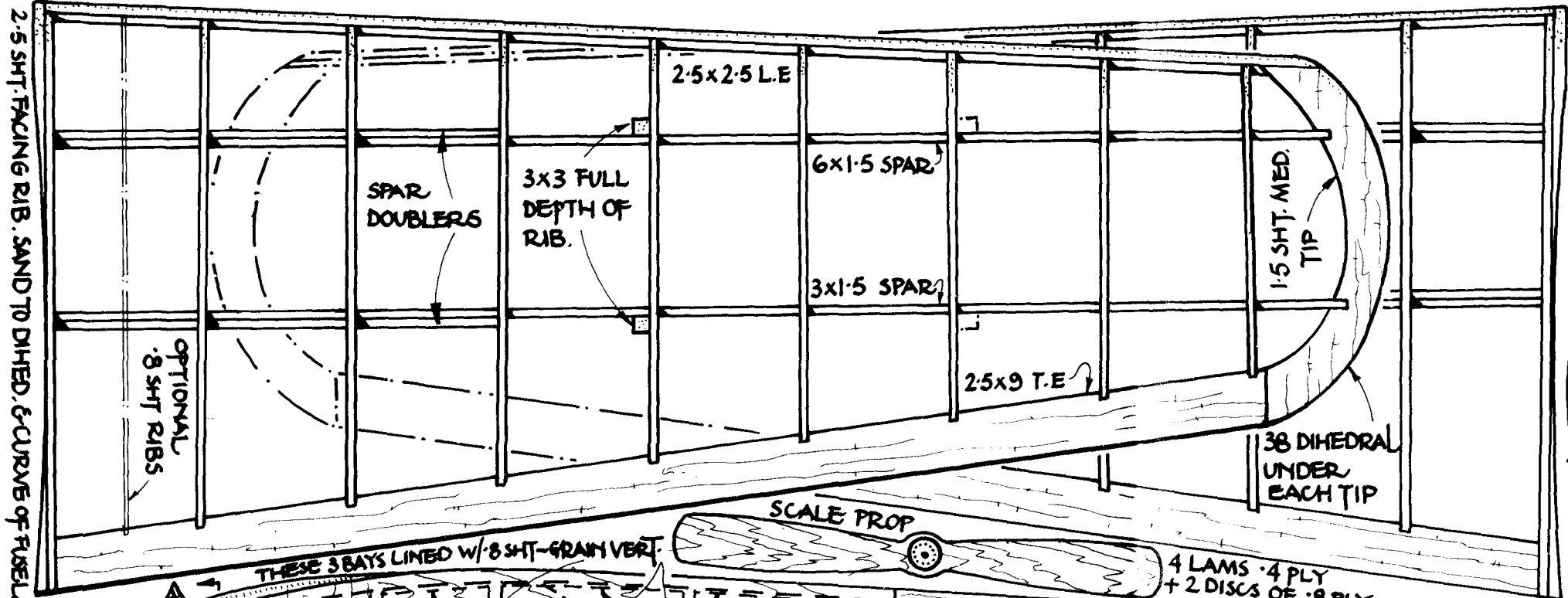
and rudder one coat of 50/50 dope and thinners followed by two coats 50/50 banana oil and thinners, pinning down between coats to give the wings 4.5mm washout. Don't try to give the aluminium a coat of anything! Prop up each wingtip by 35mm and with sandpaper glued to a small block, sand in the dihedral, and the fuselage curve. Glue the wings to the fuselage, using a template, letting the first one set properly before you fit the second. Slot in the tailplane and glue in the tailskid and rudder. Fill in the tailskid with *Clingfilm* or equivalent. Finish with a pilot, rigging post and rigging (I used shirring elastic), a dummy engine and condensers. Don't forget your name and address label! Bolt in the Telco engine, coil up any spare tubing and wedge in the tank.

Flying. Check the C.G. balance position is correct, give a gas charge only and launch into wind on a calm day. Correct up and down trim by bending the elevators. This is why you reversed the grain. Adjust the motor sidethrust for a right hand circle. On glide you will get a fairly vicious left hand turn if you don't do it this way. I assume it's the breeze, merrily whistling through that very large propeller. Without the *Clingfilm* in the tailskid it can turn into a spin, though it flies fine without it under power.

I have built two and apart from having to glue a wing back on, they have suffered no damage and between them I estimate now they have put in 7 hours flying time!



2.5 SHT. TRACING RIB. SAND TO DIHED. & CURVE OF FUSELAGE



ALL DIMENSIONS ARE IN MILLIMETERS

Aero modeller
Centre Spread
Full Size Plans
by W.D. Binns

1980 CONTROL LINE WORLD CHAMPS

12-18th JULY
CZESTOCHOWA

Above: Superb purpose-made flying facilities at Czestochowa show F2A Speed circle in foreground with segmented F2C Team Race circle behind. Football stadium used for F2D Combat seen in the background with F2B Aerobatics being flown out of picture to the left.

THE SOUTHERN POLISH town of CZESTOCHOWA was the venue for the 1980 Control Line World Championships from the 12th-18th July. The contest site was of high quality, with three purpose built circles for F2A Speed, F2B Aerobatics and F2C Team Race. This latter had illuminated electronic display elapsed time and lap counter boards, similar to those at the Dutch Utrecht site. F2D Combat was held inside a stadium normally used for football and motor cycle speedway. One detail much appreciated by the competitors were the individual 'cabins' in which modellers could store their gear and relax between flights.

The Polish Aero Club must be congratulated on providing a Championship of very high standard, which included good food and accommodation, regular bus service between hotels and contest. Practice facilities were available but as is usual, rather distant, and not of good quality. Lack of practice facilities is a perennial moan. Adequate training areas should perhaps be considered by the FAI as a necessary qualification for application to run International Championships.

Interest in the 1980 Champs was more than usually high, since it would be the first time since 1977 that Eastern European and Russian teams would be competing in open competition. This was of particular interest to the team racing fraternity. Russia has dominated this event for many years. However, the availability of powerful racing diesels in the West, particularly the Nelson 15D, has given an edge to many teams who previously lacked only airspeed. Times have tumbled worldwide. Albritton/Perkins of the USA had done 3:33.6 previous to the contest, and several European teams had bettered 3-40. As the results showed the balance of power has shifted away from the Russian experts at the moment.

The power of co-operation between Individuals was amply illustrated by the French in Speed. Faced with the universal shortage of Rossi parts they have been busy making their own 'innards'. Consistent 275kmh consolidates his European win of last year.

Aerobatics is still a US benefit. Their models still stand out as magnificent examples of line and decoration. The intense rivalry in the US must be a fine breeding ground of

champions. Surprise of Stunt was the very good showing of the Chinese. Good to see them competing in Stunt, Combat and Speed. They have it is believed, payed for and ordered eleven Nelson diesels for TRI.

Finally Combat, which GB has thought of as it's own benefit so far. Standards are rising worldwide with many able pilots around. The winner, Doroszienko of Russia, amazed all with his skill, speed and equipment. Much admired was his 90gm high revving glow engine. Comedian and combat pitman, Dave Willis, was overheard trying to persuade Pete Halman of Irvine Engines, to make a copy of this remarkable engine to be sold six at a time in polythene bags — any takers?

Phil Granderson came through into 3rd place, thus upholding the rather independent line the USA has followed in design and equipment. It was interesting to note that Phil had a number of Cox TD 049 powered mini-models which he used for practice rather than his Fox 15 powered ships — Mmmmm!

Final reflections and high points before turning to the individual reports? The impressive hour of song and dance provided by the National Polish Ensemble on the opening day and the pomp of the prize presentation, which had flags, anthems and podium. Again our thanks to the Polish Aero Club.

F2A SPEED by Pete Halman

This year's Championships, looked on paper, to be one of the most open events for some time, with France, U.S.A., Italy, Hungary and Switzerland, all able to send flyers capable of speeds in excess of 260kmph (160mph).

The top British hope was Gordon Isles, who had achieved 253kph during 1979. Brian Jackson had been busy throughout the winter preparing engines hoping to get a good one, but Peter Halman had the misfortune to have both his engines go down on him, just a month before the championship. Peter had built up a new engine, but was not confident of its potential.

Left: The people's Republic of China fielded full teams of experienced modellers in F2B, F2C and F2D, for the first time at a Control Line World Championships. 5th Team place in Aerobatics suggests that it will not be long before they reach top standards with their flying.

Aeromodeller

Round 1

With some 57 competitors to fly, it was necessary to start early, so Round 1 was scheduled to start at 0805 hrs. Dave Smith of Australia had the honour of getting the championship under way recording an opening speed of 236kph; Gordon Isles was the first British flyer to go, at 0905. He took off only to find the needle was set too rich, but on landing there was still enough time to reset the needle and go again. This he did, to record a time of 237kph. The run sounded good and clear, but the motor just would not pull enough R.P.M. This was a problem, which was to trouble all the British flyers, and also a good many others over the next three days.

Peter Halman was next to go flying first after lunch. He also made a good clear flight recording 238kph but this was to be his only score during the contest. Brian Jackson flew last and with his usual calm style he put in a flight of 233kph. He had plenty of RPM, but this had been achieved at the expense of propeller blade area, hence the slow time.

The first day ended with mixed feelings for the British, they were all pleased to have recorded times, but all three felt they could achieve more. The leader at the end of round 1 was Fontana of Italy, with a flight of 265kph — potentially a winning speed.

Round 2

For round 2 the flying order was started midway through the list, at competitor 36. This put Peter Halman on first of the British team. He took off quickly, but the needle setting was just too rich. He shut off for a quick pit stop, but due to a dolly error his model bounced out, breaking a propeller and therefore did not record a time in this round. Brian Jackson was next up using a new and hopefully more efficient propeller. Once again the motor sounded quite good but the watches did not agree and he recorded 219kph.

Gordon Isles was away last. This time he was set a touch too lean on the ground needle and as a result the engine died just as the model left the dolly resulting in a propeller breakage. By the time Gordon came to make his re-flight there was torrential rain, but he still managed a steady flight of 234kph.

It was early in this round that Patrick Constant of France made his winning flight, at 275kph (170mph). This was a truly magnificent speed, and was the crowning achievement for many years of hard work by all three members of the French team. This result again illustrated that success in speed comes from a team effort more often than from one individual's work.

Round 3

Overnight between rounds two and three, Peter Halman suffered a severe attack of "Czestochowa Tummy", (a bug which affected many fliers). Due to this he was unable to make his first attempt at 0700 hrs!

Brian Jackson therefore flew first, but his time was disappointingly slow. As Brian says if the motor does not produce the horsepower the plane will not go. Gordon Isles was up next. He suffered the same fate as many other competitors had before, with a model which jumped out of the dolly too early. The circle must take part of the blame for this, as it was far from flat, and at one point had a distinct "bump" on it. The problem was aggravated by the wind, which although not strong, contrived to blow in two directions at once! Gordon's motor unfortunately suffered a short shaft run, which damaged the model. So a rapid repair session and a re-fly were called for.

Peter Halman was at least able to make an attempt during his re-flight. The motor sounded quite good, until the moment he entered the pylon, when it suddenly stopped — yet another connecting rod had seized onto the crank pin. This was the fifth rod Peter had broken at the championship!

When Gordon Isles came out to re-fly, it was discovered on the final pre-flight check that the push rod had seized as a result of his earlier shaft run, so he was unable to fly. This was doubly disappointing for him as his motor was really beginning to go, and this was to be his last World Championship as a flyer, since he has decided now to retire.

Gordon is a flyer who has worked very hard at his sport over the years with some success, notably in 1977 when he placed 3rd in Europe and his presence at future speed events will be missed by all competitors.

The British team flyers however, were not the only ones to struggle. Switzerland's Louis Billat the reigning World Champion, had been achieving speed in excess of 260kph quite regularly before the Championships, but now his motor had gone off tune and 246 kmp was all he could manage. The West German team which contained two former World Champions also failed to reach their



Above: On the winners' rostrum after the FZA Speed event the victorious Frenchman Constant, flanked by Italians Fontana 2nd place on left, and Ricci 3rd. Right: Gordon Isles starts up Brian Jackson's motor assisted by Peter Halman. This will be Gordon's last Championships before he retires from serious competition.

potential, finishing well down the field. When Emil Rumpel gets his new home-built engine going, he says they will again be a force to reckon with.

The weather in Czestochowa was far from what we had expected. Instead of hot dry stable conditions, the contest was flown in conditions of continually changing temperatures and pressures, with regular heavy rain storms.

Technical Details

Although most models were the same as usual at Woodvale in 1978, detail changes had been made to many. Several flyers, notably the Italians and Hungarians models featured large ram air scoop intakes. Both were using unflown tanks and suction feed. These air scoops, coupled with tank vents so 10mm inboard of the thrust line, helped them to run with larger air intakes.

The Hungarians are setting the pace when it comes to wingspan. Mult having a wing no less than 1.5 metres long! He runs his engine with 200° exhaust period giving a flight RPM of approx. 34,000! He turns a very unusual low aspect ratio propeller the blade being only 70mm long.

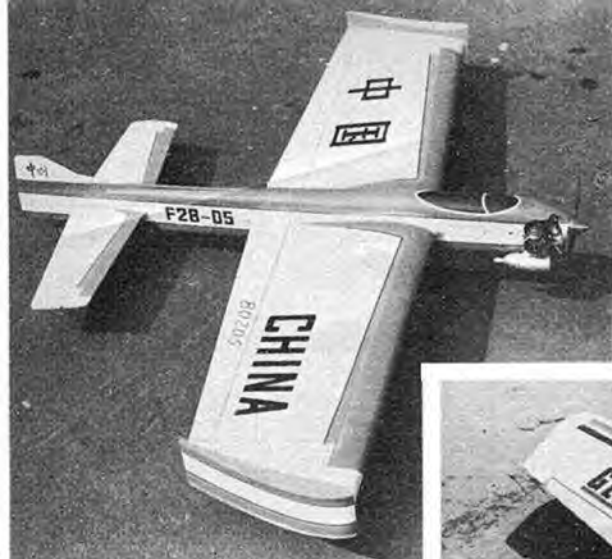
Single blade propellers were used by all except the Chinese who were using beautifully hand carved propellers made from laminated wood.

The problem with the supply of new motors is growing. No successor to the Rossi has yet appeared, and the much rumoured new Rossi has again failed to appear. The most successful teams, i.e. French, Italian and American, replaced or extensively modified the working parts of their engines.

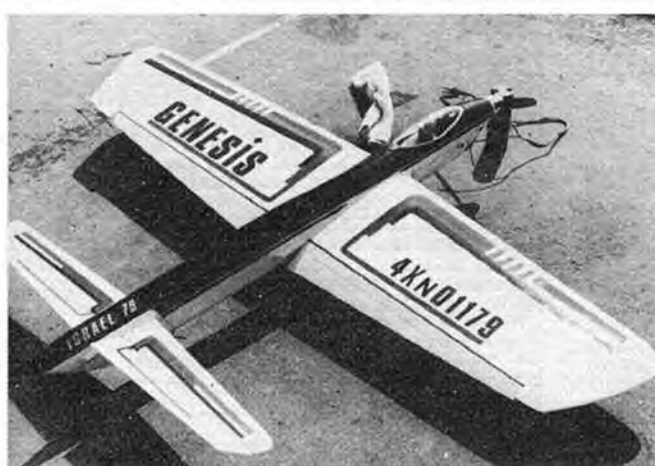
The winning French engine was an A.A.C. unit, as was the motor of runner-up Fontana. It would seem in speed, as in Team Race, that aluminium liners are quicker, due to their better expansion coefficient, and heat transfer.

Right: Fontana of Italy releases his wife's model (I) who always flies under her maiden name Horvath. Below: They'd rather be Hemmelling — but flying their toys comes a close second. Some of the British Team in Poland, wearing sponsor's tracksuits from Hemmelling Lite Lager and T-shirts from Vladivar British Vodka.

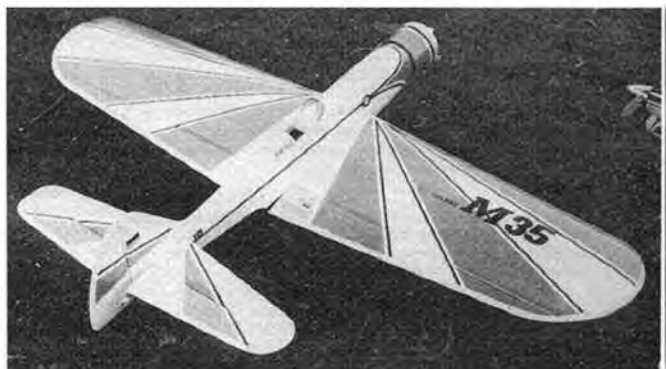




Top left: Unique aerofoil shaped wing tip fences on model of Chinese flyer Wu Dazhong, offset to produce increased line tension and flown on very long lines. Above: America's Bill Werwage takes the strain during the 20kg line pull test, which came under criticism for over weight pulls by administration! Below: Now we've seen everything - a control line flyer who doesn't even use a handle! Chinese competitor simply used rings on his fingers.



Left: Australia's only Aerobatic entrant Neal Correy gave his model away after the contest, due to high cost of transporting it home. Above: Boaz Trudler of Israel, 3rd place flyer at the 79 European Champs, failed to reach his form flying his stylish Genesis. Right: Famous for his very attractive and individually styled models, West Germany's Claus Maikis flew this radial cowl open cockpit design.



Right: Regarded as the most attractively decorated model at the Championships, Suemoto's team was finished in white with trim in shades of turquoise and red. Bottom right: Fred Telfer of Canada with his Snowbird design, which featured attractive airbrush decoration with a patriotic theme. Below: New faces in the British team, Barry Robinson, Peter Coates, assistant Paul Concannon and Bill Draper.



F2B AEROBATICS

by Bill Draper

Twenty six countries competed in F2B Aerobatics, including once again teams from Eastern Europe with long standing traditions in aerobatics, such as Czechoslovakia, Hungary, Poland and Bulgaria, and for the first time a team from China. Missing compared with 1978 were flyers from Mexico, Egypt and Ireland.

The sports stadium boasted a tarmac circle specially laid down for F2B. This was outside the main stadium bowl, and could have been very turbulent under the wrong conditions. However the wind remained reasonable, and blowing from an open side throughout the contest, and therefore did not cause too much concern. Accommodation was several kilometres away at the Students' Hotel, and the organisers had laid on a regular quarter hour bus service between site and accommodation through the flying periods, which proved very successful.

The practice facilities provided were very limited, situated about 2 kilometres from the Students' Hotel, in the opposite direction from the contest site. The site was not large enough for normal length lines in one direction, necessitating flying over rising steps on one side and rough scrub on the other! This required much running around at landing periods — just not good enough for a World Champs. Official practice was held on one day only, and flying was divided between the three circles at the Sports Stadium.

Due to the large entry, the first two rounds were spread over three days. The British Team — Bill Draper, Barry Robinson and Peter Coates, flew on the first day. All three had been experiencing overrun problems during practice, due no doubt to different weather conditions, and had been withdrawing fuel to obtain correct runs.

Joseph Gabris flew early, in third spot, with a nervous flight for an ex World Champion. His model is a 16 year old Supermaster, which had been re-covered and looked very attractive, now HP40 powered.

Mark Lavalette opened round one for France with his usual fast crisp flying style, and his score of 2,601 remained the first round leader for some time. Bill Draper flying sixth, was first British entrant to fly, at the still early time of 0755 hrs! Atmospherics were obviously difficult to allow for, despite the carefully measured amount of fuel extracted, the flight was ruined by the motor dying in the first loop of the clover leaf. Bill continued the manoeuvre and the motor spluttered into life at the bottom of the first bunt, and continued half heartedly for the rest of the manoeuvre. However the high 'K' factor manoeuvre was ruined, and quickly followed by a hurried landing.

However we still had another life left. Barry was the next Briton, about an hour later. Alarmed by Bill's earlier short run, he filled his tank, and had a clean flight, but obtaining his landing points with only one second to spare, notching up a few more points on Bill.

Karma of Finland suffered an erratic flight, losing line tension due to wind turbulence. This caused him to run back several paces, and although he recovered tension, the model flew into the branches of a tree adjacent to the circle, then fell to the ground, fortunately without serious damage!

First American to fly was Bill Werwage in sixteenth spot. His OS40 powered, 1575mm span model was flown big and smooth and went into the lead with 2804 points.

Much interest was focused on the opening Chinese flyer, Wu Dazhong. His model featured wing tip fences with high lift aerofoil sections, heavily offset to increase line tension. Powered by a Chinese made 35, the model was flown slowly on long lines with the motor running very fast on a low pitch prop. Pull-outs were consistently very low. Even more surprising is the fact that he did not use a Control Line handle! The lines were simply attached to steel rings which were then slipped over the first and third fingers!

Flying mid afternoon America's Les McDonald put in a useful score of 2,722 points for second place, using his 1976 model now K & B 40 powered. The motor is a front induction model, with a new liner and modified port timing, running fast on a 275 x 125 prop.

Boaz Trudler of Israel, who had been third place man in Europe in 1979, called off an attempt due to starting difficulties, thereby putting Britain's Peter Coates in a few minutes early. Peter suffered no mishaps with motor runs, although just a little slower than he would have liked for 2135 points.

Suemoto of Japan followed up with a score of 2,616, putting him 3rd behind Les McDonald, but Trudler could not find his previous form on his second attempt. Hara started with a clean flight and strong challenge for Japan, rising to second spot behind Werwage. So the first day ended with USA, Japan, USA, Japan in the top four



Everyone a Champion — Winning American Trio, 1st Les McDonald (1976 & 80), 2nd Bob Hunt (1978) and 3rd Bill Werwage (1970 & 72) who was the last minute replacement for Bob Geseike (1974)!

positions, with reigning '78 World Champ Bob Hunt and Italy's Luciano Compostella among the top challengers yet to fly. The British team, Barry Robinson, Bill Draper and Peter Coates were lying respectively 16, 19 and 29 after day one. The completion of the opening round changed the top order after Bob Hunt's mid morning flight went into top spot with 2,817, and Compostella flying very fast, was only 5 points behind Werwage, to hold third place.

Bob Hunt's new *Genesis* is some 90sq. ins smaller than his earlier model but with a larger tail area, still OS40 powered with home built three blade prop. wing flaps are larger in area, and the flap hinge line is swept forward. The wing is reminiscent of Al Rabe Influence. A small baffle fence is mounted on the outer wing leading edge some 50mm short of the outer wing tip — The theory is to drag the outer wing and increase line tension, particularly in high manoeuvres.

The second round started in the afternoon of Day 2, in the same flying order as round one, with Mark Lavalette's fast, sharp cornered style picking up a few more points for 2,673. Joseph Gabris could only improve slightly, still appearing a little nervous. Bill Draper had developed symptoms of some form of food poisoning with stomach pains, extreme weakness and dizziness, and was feeling very sick when his turn came to fly. Consequently, despite a healthy motor run this time, his score was slightly down on his first round score, but still a useful addition to the team score.

Barry had been complaining of poor line tension, and had put in some practice using lines 600mm shorter improving his score in the second round to 2,443, but still short of the Fly Off. Bill Werwage again climbed into first position with the highest score so far of 2,883.

Fred Tellier, the big Canadian, had put in a useful 2,448 in round one with his *Snowbird* design and at 49oz it is 5oz lighter than his 1978 model. The HP40 had been re-worked, with the liner dropped to reduce the timing and the compression ratio adjusted accordingly. The motor is run rich, but with plenty of nitro, still providing a lot of power. However, in round two, dirt in the jet caused the motor to go lean and very fast in the inverted section. The rest of the flight was a very high speed affair, with a considerable overrun to add to Fred's despair. China's Wu Dazhong with his unusual model and "handle", was getting the feel of the contest, adjusting his pull-out heights nearer to five feet and obtaining a useful 2,592 for the last flight of the day.

Scores were beginning to rise on the third day, as round two progressed, and Les McDonald's flight of 2,931 recorded the highest score yet of the contest. Boaz Trudler still could not get in on the act, tending to pull-out too high for really good scores. His model is *Genesis* style but with a *Stiletto* wing, and he had a clockwork timer fitted to guarantee the engine cut out. However, the judges ruled this out of order (all controls must be via the lines) and so the timer had to be wired off, leaving Boaz to the time honoured method of metering his fuel.

Peter Coates made a point of settling his engine run rather leaner than in his first flight, and put in a clean schedule for 2,465 points, the highest British score.

A very heavy rainstorm in mid afternoon caught Andy Fakla of Canada by surprise. He struggled through the schedule barely able to see the plane above 45° elevation due to the force of the rain. A prompt application by the Canadian Team Manager obtained a sensible re-flight, but Andy was too wet and miserable to take full advantage of his second opportunity.

Bob Hunt's schedule earned him 2,887 but he was still short of McDonald. Gerard Tayeb of France, Claus Malkis and Stephan Ratsch both of West Germany and

Compostella all increased their scores as the round came to a close. Stephan's new model is a very attractive 42dmsq job weighing in at 1.8kg whilst Claus was using his last year's model with the radial cowl.

The first Fly Off was opened on Thursday morning at 0705 hrs by Rossi of Italy. Top score of round one was 2,782 by Les McDonald with Compostella close behind on 2,782.

Following a re-draw, Sbragia, also of Italy, opened the second Fly Off round still at only 1005 hrs. He was troubled by turbulence and had to abort the clover leaf, due to lost line tension.

Mark Lavalette was unfortunate to have the elevator push rod break during his wingover, resulting in a high speed "vertical landing". The *Olympus* was a complete write-off, but his first round score was sufficient to earn him ninth place.

Wynn Paul, the third official member of the USA team, held a steady pattern during a windy patch, although had a nasty moment in the overhead eight due to loss of line tension.

Compostella's second round was marginally less than his first and so the battle now seemed to be between the remaining three Americans. Werwage's score of 2,774 was short of McDonald but then came Hara of Japan with well controlled flight for 2,797. Les followed with 2,871, and all eyes were on the last man to fly — Bob Hunt, competing as individual Champion in addition to the three man USA Team. With the OS running fast on the 125mm pitch prop, the flight was big and smooth for the highest score of the Fly-Off 2,880 points, but not quite enough to offset Les's lead from the earlier rounds.

So Les McDonald, the Champ in '76 is again World Champion in 1980, with fellow countryman Bob Hunt the '78 Champ in close second and Bill Werwage, himself a past Champion, in third position. Highest placed European was Luciano Compostella in fourth place, whilst the Japanese and Chinese had made their presence well and truly felt in 2nd and 5th Team place place respectively. The British Team achieved a creditable 6th place out of 26 countries.

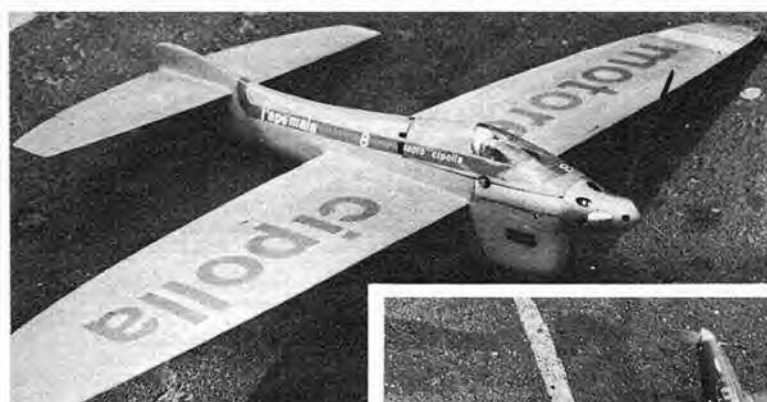
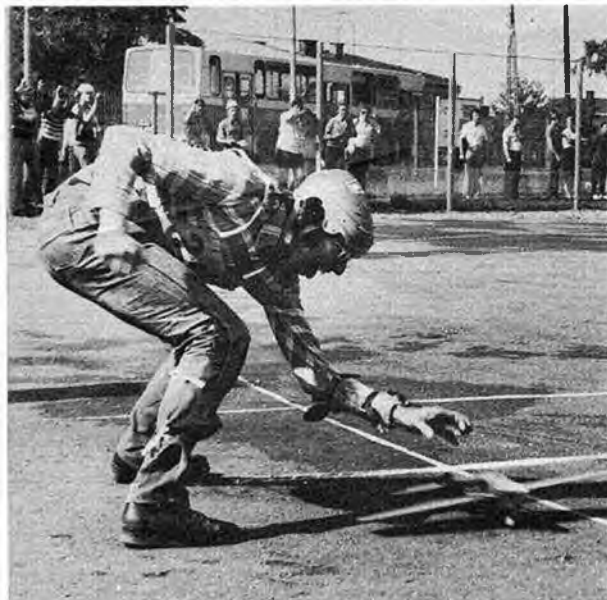
Some other interesting facts and figures: Wyn Paul's model *Pampawagon* 1500mm span, weighed 1.7kg with ST.46 motor swinging a 300x150Zinger prop. Model has a 42dmsq foam *Genesis* wing (not the latest one), with nose moment of 250mm and flap hinge to elevator hinge of 400mm.

Karma's model, from Finland was fitted with detachable wings which plugged into the fuselage slides, and bolted into position.

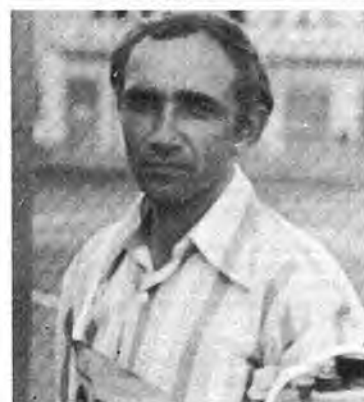
Ostrowski of Poland was using a tandem undercarriage similar to the early Russian designs, and he also used an electric starter. In my view this should not have been permitted under the current rules, with time limits for starting and finishing. If starters were to be permitted, then timing should commence from a signal given by the pilot after his engine is running.

Neal Correy, the sole Australian competitor, also used a single track main undercarriage with wingtip wheels. Due to the cost of transporting his plane home again, he gave his immaculate model away after the contest — less the engine and hardware!

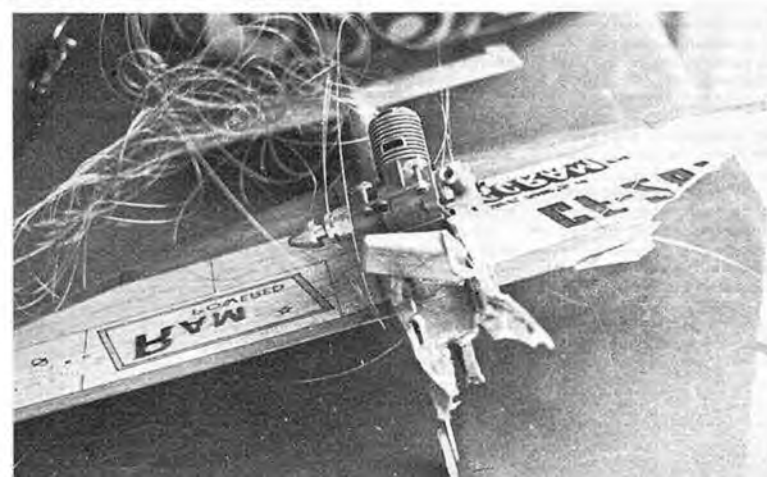
The pull test was being applied in a vigorous manner. Most models were being pulled to the 20kg point, but the line tester would often pull his balance well past that point unless checked. After Bill Draper and Barry Robinson were almost pulled off their feet in the first round, the British Team had a member at the handle end during tests to observe, and prevent overpulling. Not surprisingly many sets of lines were broken.



Top left: Metkameijer brothers established an incredible new World Record heat of 3:29.5! Above: Colin Brown warms up the motor in Steve Smith's Wing Thing. Right: Team Manager Jim Mr-Fix-it Woodside, helps Stevie Smith prepare for F2C Final. left: Cipolla brothers, from Italy, failed to survive the rigours of the Semi-Final - Note single blade propeller.



Left: Victor Onofrienko, World Champion in 1974, had to be content as spectator with the very fast performances put up by Western teams. Above: Hungarian model of Balough/Dorant, infamous for their robust flying style, use large fairing fillets between wings and fuselage. Right: America's Walt Perkins steadies the model as "JE" Allbritton cleans the lines in preparation for what turned out to be a dramatic final. Bottom left: Canadian Kelly/Parent model, after they had been "Rammed-up-the-Tail" by British duo Gray/Haycock during second round heats. Bottom right: The Perkins/Allbritton Smitty Wing Thing was favourite to take the title after 3:33.6 heat time.



F2C RACING by Bob Horwood

With the official practice times for F2C Team Race not scheduled until the Monday, Team Race fliers had a long wait to use the excellent official contest site. A wait which was not helped by the rather poor transport between the training sites, which were well separated from the main stadium, and the accommodation and stadium. The official practice sessions proved interesting in that the majority of teams were circulating at similar times of about 20 — 21 secs for ten laps. Only the Metkemeijers from Holland with their F.M.V. motor, and Albritton/Perkins from the U.S.A., with their A.B.C. Nelson powered 'Stevie Wing' complete with retracting undercarriage, circulated significantly faster at about 19.5 secs. All the British fliers were at or about 20 secs for ten laps and therefore relatively pleased with their performance. By the time we arrived at processing we were somewhat apprehensive about the standard, having heard stories of some tanks being measured at 5½cc which we considered unlikely to say the least! But we found the model processing efficient, with the tank measurement apparently accurate, and for the first time ever the wing area of each model being accurately determined!

The first round started on Tuesday morning with British hopes high, for the team prize at least. The first race however gave cause for concern, as the Hungarian team of Balogh/Dorant recorded a time of 3:36.5 despite, or perhaps because of, a somewhat robust piloting style! Our first team to fly was Smith/Brown flying their now familiar ABC Nelson powered wing to a time of 3:42.3, second fastest time to date, with one of the favourites, Denmark's Geschwendtner/Mau, only able to turn in a 3:56.2. The first Italian team to fly was Cipolla/Cipolla who, after last year's European Champs victory were expected to do well, but again there were to be no spectacular scores with only 3:48.2 resulting. Gray/Haycock, the second British team to fly, performed in the eleventh heat, but a hot motor which was somewhat reluctant to start limited them to 4:04, a good 15 secs behind their potential. During this same heat we at last saw a *really* good time, put in with Albritton/Perkins producing a 3:33.6 despite, by World or even British standards, somewhat leisurely pit stops! Could it be that we would yet see the first sub 3:30 flight? In the first heat after lunch Barkov/Surajev were the focus of attention, as the first Russian team to fly, but they could only manage a 4:07.5, very much a disappointment after the Russian domination of the event in 1976. Three heats later, we at last saw that elusive 3:30 flight when the Metkemeijers flew faultlessly to record 3:29.2, four seconds *faster* than their nearest rivals and 13 secs *ahead* of our own Smith/Brown's time, which by now was looking good enough for the semi-finals. In the next heat Heaton/Ross recorded a somewhat disappointing 3:48.5 which was still going to be tight for the semi-finals. The 18th race saw the man himself America's Henry Nelson in the circle, but as with many motor manufacturers before him he could not achieve the same power from his own engine, that others are able to achieve, and could only put in a 3:53.9. So with the first round completed the British trio were in 4th, 7th and 18th positions, and well in the lead for the team prize.

Wednesday dawned with not a cloud in the sky and Gray/Haycock in the first heat of the second round and this time no reluctant start. However, all was not well as one of the pilots, a Cuban, decided he was going to simulate man mountain, and would *not* be moved. This left both John Gray and Dave Kelly from Canada unable to see their models, and with John comfortably faster than the other two, trouble was not long in coming when John recorded the length of Dave Kelly's model with his prop — "Whoops!" Luckily the Jury had seen what happened and granted a re-run for both John and Dave. The rest of the morning's flying was somewhat uninspiring, with only Geschwendtner/Mau significantly improving their time to 3:46.7 pushing Heaton/Ross down to 8th place.

During the lunch break, in the words of the song 'the rains came', and as it was still raining hard at 3 o'clock several teams were seen to start preparations for building arks! Heaton/Ross were scheduled to fly in the opening heat of the afternoon, and with the rain still falling they put in a magnificent performance, to record 3:45.2, in appalling conditions. The third British team Gray/Haycock still did not have lady luck on their side, and recorded a disastrous 4:47.7 in their re-flight from the morning. Despite this the British Team ended Wednesday in fine heart, having got two teams Heaton/Ross and Smith/Brown into the semis, and having taken the team prize for the second championships in succession, by 11.5



Above: A hollow victory for Danes Mau/Geschwendtner, only ones to finish the Final after a first pitstop pile-up. Credited equal second Albritton/Perkins USA on left and Brown/Smith from GB.

seconds from the Danes with the Hungarians third, a further 5.3 seconds behind.

The draw for the semi-finals was unkind to the British with Smith/Brown getting two third choices for pit segment, and Heaton/Ross a third and a second choice. It also looked as though the semi-finals would be rough, with at least five teams involved, noted for *centre hogging*. The first race of the first round proved our worst fears, with the Hungarian Balogh, hogging the middle for most of the race leaving Derek Heaton and John Albritton to manage as best they could. The blame for this, and the resultant bad conduct both in this and other semi-finals must be placed at the door of the Team Race Jury. Up to the start of the semi-finals they had done a reasonable job, though they were perhaps tending to watch the fast teams, and ignore the antics of the slower teams, which in many cases were the root cause of problems. In the semi-finals however, they were just not quick nor strong enough, to stamp on some of the worst flying I have ever witnessed, turning the event into something of a lottery.

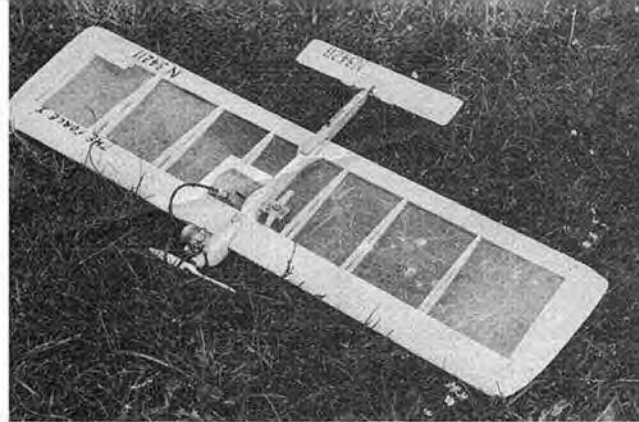
Returning to the first semi-final however, Heaton/Ross were going well despite the *heavy* tactics of the Hungarian, and were leading by at least a lap at their second pit stop, over the favourites for a final place Albritton/Perkins. Then disaster, the motor coughed and cut on take-off, but a quick restart by Malcolm Ross still left them with a chance, but this was not to be, as the model ran in leaving Albritton/Perkins to record a 3:41.7, Balogh being disqualified. The conduct in the second semi-final was no better than that of the first, the Metkemeijers being disqualified after Rob had released their model when Geschwendtner's model was gliding in. The disqualification was somewhat superfluous, as by this time the Metkemeijer's model was in pieces spread across the tarmac. Rough justice for a stupid mistake on Rob's part. Italians Cipolla/Cipolla, were treated very harshly, having been granted a re-run following another incident earlier were also disqualified some ten minutes after the race had finished! This is certainly not the sort of indecision one expects from a World Championship Team Race Jury. This dithering also affected the third semi-final, delaying its start by some 15 minutes. In this race, the jury obviously decided enough was enough, and was handing warnings for offences which up to then would undoubtedly have gone unpunished. Again not what one should expect at this level of meeting.

After the prevarication of the jury over the Italian's case in the second semi-final heat, the Italians, not without cause, protested to the jury! This is the 2nd time this has happened in the past three Championships, but the FAI

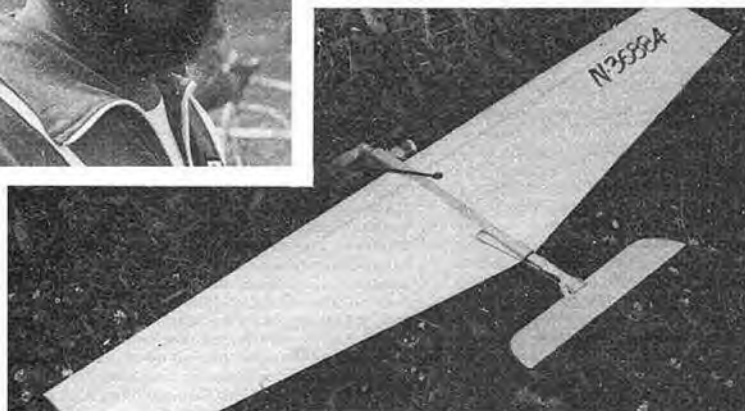
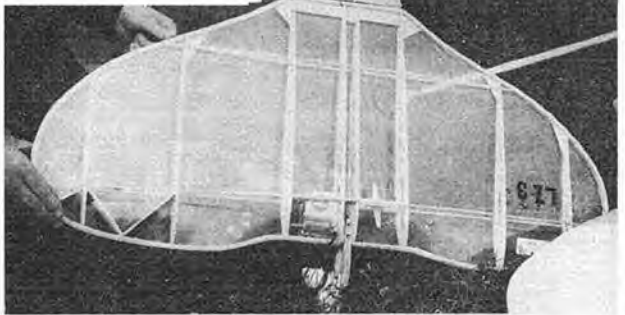
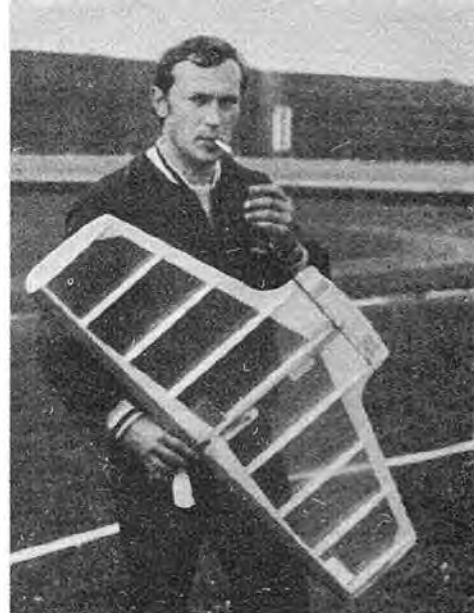
jury was unwilling to change the Team Race jury — so the second round of semi-finals started some 1½ hours late, with the same jury in the box!

The first race of the second round semi-finals was clean, being two-up from start to finish with Cipolla/Cipolla not taking off, but again Heaton/Ross were in trouble when forced to make an extra stop at lap 96, ending with a time of 3:52.4. Stevie Smith and Colin Brown had their last chance in the second race but were matched against two of the prime *centre hoggers*, Visser from Holland and Balogh from Hungary. Stevie flew very well, despite not seeing his model for much of the race, to record 3:40.9 — the fastest time recorded in the semi-finals, whilst the other two cut on lap 98 (yes, both of them) only to blame Stevie for their failure to finish! By this time we thought we'd seen and heard it all, but how wrong can you be. The last semi-final saw the Metkemeijers put in a disappointing 3:44.6 flying their reserve model and Geschwendtner/Mau finishing 2 seconds ahead of them to end up third fastest qualifier for the final. The final started at about 3 p.m. and finished about 1 minute later! No it wasn't really that fast, it's just that at the first pit stop, Smith/Brown and Albritton/Perkins got tangled on landing, through nobody's fault, effectively putting them both out of the final. So they sat down and watched, as we all thought, Geschwendtner/Mau wearing out their engine (a 'wolf in sheep's clothing' or was it a Nelson in B.G. Crankcase) for the next 167 laps, all duly recorded and timed. At lap 200 the Danes stopped, to the thunderous applause of 20 other Danes, but no one else, and everyone waited for the re-run to be ordered — and waited ... and waited, for over an hour. The decision? Geschwendtner/Mau were placed first and Smith/Brown and Albritton/Perkins equal second, neither team disqualified! Immediately the British and American's protested, claiming the refight that they were clearly entitled to according to the rule book, only to be told by the organisers that the protest was too late and anyway they had this *wonderful* closing ceremony planned!

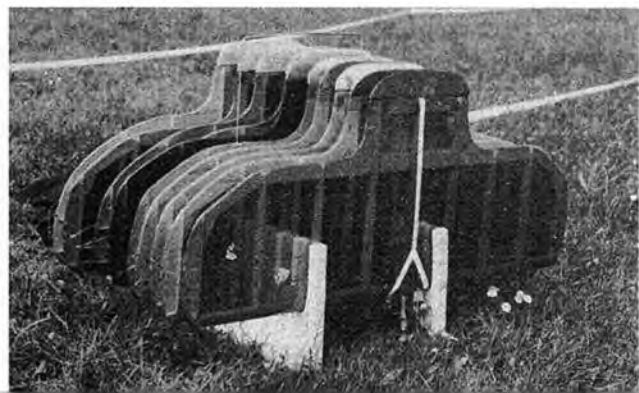
To sum up, success for the British Team in winning the team prize twice running and thanks to the organisers for a Team Race event which was run perfectly (up to the final). But, and it's a big one, the performances generally were poor, the jury was indecisive and variable, and finally there are as yet no real winners. The result is now under protest to the F.A.I. from both the British and American Aeroclubs. The final can never be refloated, so the *best* outcome is that the final that was flown will be declared void and that will mean no 1980 World Champion!



Left: *May The Force be with you. It wasn't with America's George Cleveland — he placed Zott. Below: Unbelievably complicated shape of Bulgarian models. Certainly unusual, but one is tempted to ask — why? Right: Member of the winning Russian Combat team, Titov with taper wing design, reminiscent of British models of the last decade. Below right: Derosienko's winning model, based on Richard Evans Vertigo designed in the '70s. Prime difference being the superb hand-made lightweight racing glow motor.*



Far top left: *Phil Granderson, lived up to his predictions (see P41 Jan 1980 Aeromodeller) by reaching the finals — looks as though it's us Brits who need the practice now Phil. Upper left: Phil's taper-wing, all-foam monoboom design, typical of US foamies. Flew using Super Tigre X15s. Lower left: Pile of Mexican models, reflect American design influence, by Morge who placed 9th. Bottom left: Ten-Pack of models, in neat stacking rack, from Russian Champion Derosienko. Below: Czechoslovakian flyer Horta with yet another taper-wing design and unusual spar layout. Bottom right: Mu Gang, like other Chinese flyers, used tissue covered models, but flying ability certainly showed some experience.*



F2D COMBAT by Richard Evans

Well, it has finally happened. The British have relinquished the title of World Champions which they officially acquired at the first World Championships for Combat in 1978. But as anyone with any knowledge of control line will tell you, until now they were always the best at every International event for two decades!

The Russians have now taken both the individual and team prizes in Combat. Before 1975 they rarely participated in international combat competitions, and then with little success. However, in that year a full team was entered for the European Champs in Verviers. Their models were then to be polite, not in the current mode, and featured box fuselages and tiny built up wings. They were fast but not manoeuvrable or reliable.

However the Russians have always been quick to learn and in 1977 they returned to the Euro Champs with virtual copies of the model which had won the 1975 event — Richard Evan's *VERTIGO*. They had also developed an unbelievable lightweight 2.5cc glow motor which made Rossis look positively slow. This combination was awesome to watch in practice but had one fault — it was very unstable in level flight and virtually impossible to fly "eyes off". To the eyes of the designer the problem was easy to spot — they had mounted the engine right up against the leading edge, so creating too rearward a centre of gravity.

At the 1977 event again all of the Russians lost in early rounds.

Due to the presence of the South African Team at Woodvale, none of the Russians arrived at the World Champs in 1978. Neither did they come to the Euro Champs in Marville in 1979 but they were back with a vengeance this year.

With one of the original pilots and two new ones all competitors who watched them practice realised that they were the ones to beat. Their models had changed little except that they were now larger, and Titov was using a taper wing platform. The engines were as good as ever but now mounted ahead of the leading edge. In the air, there was nothing to beat them. Acceleration, turning ability and stability were all superb. Doroszenko was frequently seen flying consecutive laps inverted at a height of 5-6 feet. At such speeds, this alone was remarkable.

THE ORGANISATION

The event was held in a large sports stadium adjacent to the other FAI events. Potentially excellent, there were in fact many problems particularly during the first two days.

On arrival, the international jury of Paul Tupker (Holland) Klaus Kosmalla (W Germany) and Richard Evans (GB) had to contend with crepe paper streamers which shredded to nothing after 4 minutes airtime. No other crepe was available and thus the event was started with streamers strengthened with Sellotape. These were then too strong and could not be cut without the whole length ripping off! At this point it was decided to send a car to Czechoslovakia 100 miles away, to buy better quality crepe! The goods arrived but by then it was raining and so narrow strips of masking tape were used down the full length of the streamers. Incidentally this did work very well even in heavy rain.

Cut counting and timing were also erratic resulting in several unaccountable scores. Dave Wood (GB) for example was one whose official number of cuts was disputed by many who watched his bout against Edslev from Denmark. The resulting protest by the British was rejected by the jury although there were several points that could not be explained to the satisfaction of the Team Manager.

THE CONTEST

The 51 competitors represented 19 countries, from literally all over the World. Most countries had sent teams to this event before but for some it was a first time. There were also many new team members from each country — an unknown factor!

Of these "first timers" many people were impressed by the friendliness and ability of the Chinese team. Although only Zhu/Yongjian made it to the last sixteen, their flying style and professional approach made it apparent that they could become a real threat within the next few years. Their current models were inadequate but it is unlikely that they will continue with these high aspect ratio, tissue covered "Tiernan" wing plan creations, as they were observed measuring every detail from the Russian planes.

Several teams seems not to be of world class status. The Bulgarian models performed poorly which was not surprising considering the very low aspect ratio and depth



Combat winners — and not a Briton in sight! Doroszenko USSR, who scored seven cut to one victory over runner up Gysbertsen from Holland, with Phil Granderson USA 3rd.

of section. One or two (old) Combat flyers were reminded of the AFS *Unlimited*. The amount of control of these pilots seemed very limited!

The Italian team was very strong, with two young flyers alongside regular team member Benincasa. By consensus of opinion one of the very best bouts of the whole meeting was between Giandrin and Pete Tribe (GB). In the grand old British style of following to the bitter end, Pete beat the Italian by 5 cuts to 2, but both received an ovation from the spectators.

After disappointment at being disqualified at Woodvale, George Cleveland lead the American team with two new members Phil Granderson and Paul Curtis. Famed for his "robust" flying style, George impressed with his very fast *The Force* design, typical of American FAI models. Will someone now come up with a design called *ALIEN*? These models are now nearly as big as the European's and with the Fox 15 Schnuerle on high nitro they certainly turned tight. Curtis used a similar model to Cleveland's but Phil Granderson's design featured a high aspect ratio foam wing with remote tail. Again impressive but they certainly made large holes in the stadium seats!

Also from the Americans, the Mexicans, were flying much better and using superior models from those with which they came to Woodvale.

As usual, the Scandinavians fielded strong teams with several talented teenagers. Schou of Denmark and Ostman of Sweden impressed spectators with their ability, although it was felt that more experience in flying against other nations would have improved their chances. Ben Schon was also the subject of another protest after his official count of cuts and ground time seemed quite different from what had actually happened in the bout.

In the early stages of the competition one bout stood out against all others. Between Cleveland (USA) and Klimo (Czec.) the American did a terrific job of demolishing the opposition. The scorers counted a conservative 5 cuts but many onlookers spoke of seven. The cuts were all small, each one made with the prop, reminding many of the classic British diesel combat of the early seventies. A great bout causing jubilation amongst the American team.

By the time the competition had reached the third round proper, several possible winners had been lost along the way. Both Dave Wood and Ray Sibbald of Great Britain had been knocked out, and also Fred Meijer of Holland. Fred had a poor bout against Titov (USSR). He seemed overwhelmed by the opposition and made several unforced errors which for him is out of character.

In the last sixteen, no country still had a full team of three. Even the Russians had lost Nikiforov who had been disqualified for the second time for the same reason! On both occasions he took off, went inverted and started to attack! Instant disqualification! Salt mines?

Tribe (GB) now beat Ruckerel (West Germany) and Mourik (Holland) was demolished by Doroszenko (USSR) beat Edslev (Denmark) in a very close bout. Edslev was the only flier to be seen actually following a Russian! Phil Granderson USA disposed of Zink (Mexico) but fellow

American Cleveland lost to Figus (W. Germany) due to removing the whole streamer at one go. Borer Switzerland saw off the remaining Mexican Monge and talented Italian Vegetti beat Finn of Sweden. Relative newcomer Gysbertsen of Holland beat Benincasa of Italy.

The quarter finals produced no particularly decisive victories although there were two surprises. Surprise One came when Pete Tribe, the remaining British flyer lost to Gysbertsen. After following him closely for a while, Pete was unable to continue the bout due to the demolition of both his models. Surprise Two came much to everyone's relief, when Vegetti of Italy beat Titov, one of the two Russians still remaining. Titov removed the whole streamer at the beginning of the bout leaving plenty of time for the Italian to luckily take two cuts back from him. The cheering from the Italian supporters could be heard from outside the stadium.

The other Russian Doroszenko did just enough to win his bout but no more. There was less than twenty points between him and Figus of West Germany.

So to the semi-finals. Granderson USA drew Gysbertsen Holland and what a literally smashing time followed. The American's fast model was cut adrift within seconds of the start, and buried itself in the terraces. On using the second model a mid-air occurred and Phil was left nothing to fly. Thus Gysbertsen made his way to the final.

Vegetti of Italy then flew Doroszenko (USSR). A good clean bout followed with the Russian's model and motor performing to perfection. Although trying hard, the Italian was fighting a losing battle and having beaten one Russian in the quarter final, lost to his comrade in the semi.

For a change, the final turned out to be superb for competitors and spectators alike. Doroszenko + Gysbertsen both seemed to want to put on a good display and did just that. Unfortunately the Dutchman's Rossi powered *Zinger* was no match for the Russian machine and spent nearly the whole time being chased around the sky. Doroszenko changed tactics and unlike before when he simply did enough to win, went all out to prove his worth as the future "World Champion". In the first three minutes, all of which were spent in the air, he took seven cuts! This is of course almost unheard of in modern combat and was received with spontaneous applause by the large crowd. Gysbertsen then removed all the Russian streamer at one go, and it was all over. How rare to see such a crushing victory in a Combat final at any level.

In the Fly Off for third place Granderson beat Vegetti in a fairly short space of time.

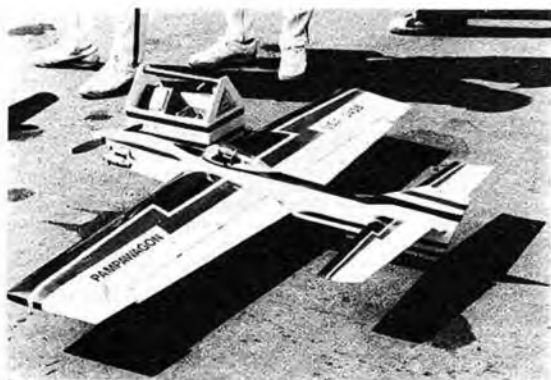
In conclusion there was not much really new to be seen in this World Champs. Models have become still bigger, to the point where even Rossis are not powerful enough. The performance of the Russians was fantastic but in the opinion of the writer, their incredible motors account for a great deal of their advantage. What is needed now is a complete re-writing of the rules with perhaps, limitations on motors and definitely a wing area restriction on models.

RESULTS

1980

WORLD CONTROL LINE CHAMPIONSHIPS

Czestochawa, Poland. July 12-18th



Wyn Paul was third official member of US aerobatics team flying 'Pampawagon'. Hunt flew as individual reigning champion.

F2B AEROBATIC

		1 Q	2 Q	1st F	2nd F	Total
1	L. McDonald	USA 2722	2931*	2792	2871*	5902
2	P. Hunt	USA 2817	2887*	2738	2880*	5767
3	W. Wefwage	USA 2804	2883*	2750	2774*	5657
4	Compostella	ITA 2799	2843*	2782*	2754	5625
5	T. Hara	JAP 2741	2791*	2718	2797*	5588
6	Y. Suemoto	JAP 2616	2833*	2655	2724*	5557
7	S. Cech	CZE 2346	2704*	2437	2690*	5394
8	Zhang Xiangdong	CHI 2560	2737*	2625*	2551	5362
9	M. Lavalette	FRA 2601	2673*	2647*	78	5320
10	W. Paul	USA 2519	2720*	2588*	2578	5308
11	S. Rossi	ITA 2530	2593*	2564	2616*	5209
12	S. Yoshimura	JAP 2541	2645*	2462	2538*	5183
13	I. Cani	OZE 2431	2595*	2523	2557*	5152
14	G. Sbragia	ITA 2565	2715*	2414*	2360	5129
15	Niu Anlin	CHI 2436	2607*	2406	2501*	5108
16	Wu Dazhong	CHI 2247*	2592*	—	—	2592
17	O. Andersson	SWE 2578*	2337	—	—	2578
18	G. Tayeb	FRA 2399	2576*	—	—	2576
19	J. Gabris	CZE 2492	2505*	—	—	2505
20	G. Marinov	BUL 2493*	2464	—	—	2493
21	P. Coates	UK 2135	2466*	—	—	2465
22	F. Tellier	CAN 2448*	1982	—	—	2448
23	B. Robinson	UK 2376	2443*	—	—	2440
24	J. Ostrowski	POL 2100	2442*	—	—	2442
25	P. Rodrigues	BRA 2166	2430*	—	—	2430
26	O. Maikis	FRG 2241	2429*	—	—	2429
27	R. Zawada	POL 2256	2426*	—	—	2426
28	T. Vellai	HUN 2154	2323*	—	—	2423
29	H. Pokorny	A 2403*	2301	—	—	2403
30	J. Konstantakatos	GRE 2196	2379*	—	—	2379
31	G. Lider	BEL 2374*	2275*	—	—	2374
32	A. Morozt	HUN 2248	2343*	—	—	2343
33	E. Rozenberg	ISR 2144	2341*	—	—	2341
34	G. Weinnurm	HUN 2184	2337*	—	—	2338
35	C. W. Draper	UK 2326*	2317	—	—	2826

36 S. Rättsch, FRG, 2307*; 37 D. Fagnoule, BEL, 2305*; 38 E. Janssen, HOL, 2267; 39 P. Dziuba, POL, 2262*; 40 B. Trudler, ISR, 2262*; 41 J. Fernandez, CUB, 2240*; 42 J. Kalev, BUL, 2235*; 43 Y. Sedlatchek, SWI, 2233*; 44 R. Liber, BEL, 2214*; 45 H. d. Jong, HOL, 2197*; 46 T. Salathe, SWI, 2196*; 47 U. Kehnen, FRG, 2181*; 48 K. Jarvinen, FIN, 2163*; 49 R. Diaz, CUB, 2159*; 50 S. Henriksen, DEN, 2158*; 51 B. Delgado, CUB, 2135*; 52 E. F. de Mello Affonso, BRA, 2130*; 53 A. Nyström, SWE, 2097*; 54 F. Wenzel, A, 2082*; 55 R. Baeten, HOL, 2074*; 56 A. Fakla, CAN, 2068*; 57 L. O. Mortensen, DEN, 2056*; 58 A. Eskilsson, SWE, 2052*; 59 H. Rabenhof, DEN, 2049*; 60 J. Lemminkäinen, FIN, 2047*; 61 H. Petrov, BUL, 2012; 62 K. Karma, FIN, 2007*; 63 A. Hansemann, A, 1983*; 64 H. Corney, AUS, 1901*; 65 W. Logan, CAN, 1883*; 66 A. Rodriguez Garrido, SPA, 1642*; 67 G. Duran, Carreras, SPA, 1602*; 68 S. Settem, NOR, 939*.

SPEED F2A

		1st	2nd	3rd
1	P. Constant	FRA 261.248	274.809*	—
2	P. Fontana	ITA 265.878*	258.064	—
3	G. Ricci	ITA 262.965	257.326	264.317*
4	D. Enfroy	FRA —	263.543*	257.695
5	S. Szegedi	HUN 261.437*	256.410	252.277
6	W. Maslenskin	SU 261.248*	256.598	—
7	R. Spahr	USA —	260.492*	250.000
8	A. Rachwal	POL 252.631	257.879*	243.079
9	L. P. Sarate	SPA 257.695*	246.238	250.052
10	C. Lieber	USA 253.699	—	257.326*
11	J. Mult	HUN 255.138	255.319*	250.052
12	L. Roy	USA 246.575	255.138*	252.100
13	O. Velunsek	YUG 254.237	—	254.777*
14	I. Kajic	YUG 227.129	223.325	253.164*
15	J. F. Bellelle	FRA —	251.572*	250.696
16	J. Rodzers	SU 250.871*	245.398	245.398
17	L. G. Beltran	SPA 249.826*	247.593	244.233
18	H. Kitipov	BUL —	246.575	249.307*
19	T. Chojnacki	POL 248.963*	226.415	227.992
20	J. Horwat	ITA 248.275*	243.407	—
21	F. Pagani	SWI 247.593*	—	238.410
22	O. Poulsen	DEN 243.902	—	247.252*
23	R. Brands	HOL 238.220	248.913*	239.840
24	J. Lanzen	FRG 246.575*	244.067	233.614
25	L. Bilat	SWI 230.473*	—	246.069*
26	R. Brechet	SWI —	—	246.069*
27	E. Rumpel	FRG 243.079	228.862	244.565*
28	S. Kalmar	HUN 220.723	—	243.407*
29	N. Lyhne-Hansen	DEN 211.791	—	240.963*
30	P. Alic	YUG 239.202	240.000	240.320*
31	G. Burgess	AUS 239.520*	234.680	232.408
32	I. Popov	BUL 230.031	239.361*	233.614
33	J. Valo	FIN —	—	239.361*
34	P. Halman	UK 238.726*	—	—
35	G. Isles	UK 237.780*	234.375	—

36 S. He, CHI, 236.998*; 228.716, 230.472; 37 H. Geschwendtner, DEN, 236.375*; 38 D. Smith, AUS, 236.065*; 39 W. Pietiankin, USSR, 234.986; 40 J.-J. Bak, HOL, 234.527*; 41 B. Jackson, UK, 233.918*; 42 G. Kabakov, BUL, 232.848*; 43 S. Sun, CHI, 232.558*; 44 S. Burke, CAN, 231.362*; 45 M. Rodriguez, CUB, 229.738*; 46 H. Zhou, CHI, 227.416*; 47 I. Schmidt, FRG, 227.416*; 48 P. O. Bertin, BRA, 226.843*; 49 A. Baez, CUB, 226.415*; 50 M. Obrovsky, CZE, 224.159*; 51 M. Jurkovic, CZE, 223.048*; 52 B. Sanchez, CUB, 221.811*; 53 J. Gurtler, CZE, 221.402*; 54 G. Nowakowski, POL, 215.956*; 55 J. H. Arakelian, BRA, 206.540*; 56 J. C. Malheiro Pinho, BRA, 200.333*.



The new Combat World Champion Doroszenko of the USSR, with Solarfilm covered, balsa frame model.

F2C TEAM RACE

		1st	2nd	1 Semi	2 Semi	Final
1	Geschwendtner/Mau	DEN	3:56.2	3:46.7*	3:45.2*	3:42.6*
2	Albritton/Perkins	USA	3:33.6*	—	3:41.7*	3:42.2 disq.
2	Smith/Brown	UK	3:42.3*	3:49.7	disq.	3:40.9* disq.
4	B. & R. Metkemeyer	HOL	3:29.2*	4:04.3	disq.	3:44.6*
5	Balogh/Dorant	HUN	3:36.5	4:25.0	disq.	
6	Heaton/Ross	UK	3:48.5	3:45.2	disq.	3:52.4*
7	Visser/Buys	HOL	3:46.6*	4:18.3	3:45.5*	
8	Cipolla/Cipolla	ITA	3:48.2*	3:58.6	disq.	disq.
9	Fischer/Straniak	A	3:50.4*	disq.	disq.	
10	Peracchi/Rossi	ITA	4:19.2	3:53.4*		
11	Jackson/Nelson	USA	3:53.9*	4:07.2		
12	Petersen/Geschwendtne	DEN	4:11.7	3:55.3*		
13	Shapovalov/Onufrienko	SU	3:55.3*	3:59.6		
14	Civit/Fernandez	SPA	disq.	3:55.7*		
15	Pazin/Pazin	YUG	disq.	3:56.3*		
16	Dodov/Sokolov	BUL	4:09.7	3:56.5*		
17	Dewez/Dessaucy	BEL	4:06.2	3:56.8*		
18	Rylin/Appring	SWE	4:03.7	3:57.0		
19	Delor/Surugue	FRA	3:58.2*	4:05.8		
20	Christen/Saccavino	SWI	3:59.0*	—		
21	Gurtler/Baumgartner	A	disq.	4:01.1*		
22	Fairey/Fairey	CAN	4:01.3*	4:05.8		
23	Ratkai/Nyarady	HUN	4:02.9*	disq.		
24	Rasmussen/Poulsen	DEN	4:03.7*	4:11.3		
25	Gray/Haycock	UK	4:04.0*	4:47.7		
26	Vila/Siota	SPA	4:07.7	4:05.6*		
27	Bodurkov/Kolev	BUL	4:06.0*	4:19.4		
28	Barkov/Surajev	SU	4:07.5*	4:13.8		
29	Lerf/Zajak	HUN	disq.	4:07.5*		
30	Nitsche/Kuhnegger	A	disq.	4:08.2*		
31	v. Uden/v. Uden	HOL	4:11.6	4:08.6*		
32	Antic/Golubovic	YUG	4:09.0*	4:45.8		
33	Curt/Cidon	FRA	4:19.8	4:09.1*		
34	Kelly/Parent	CAN	4:13.2	4:11.4*		
35	Meder/Nore	FIN	4:11.6*	4:15.4		

36 Ekholm/Nordlund, FIN, 4:14.1*; 37 Velunsek/Alic, YUG, 4:16.1*; 38 Zmudzinski/Wlodarczyk, POL, 4:16.8*; 39 Tinev/Rachkov, BUL, 4:17.3*; 40 Jefremov/Kuznietsov, SU, 4:17.5*; 41 Estrada/Carrasco, CUB, 4:19.0*; 42 Ziemniak/Galkowski, POL, 4:20.4*; 43 Samuelson/Axtelius, SWE, 4:24.0*; 44 Buben/Darius, CZE, 4:24.5*; 45 Lenzen/Pieper, FRG, 4:27.2*; 46 Wakkerman/v. d. Weerd, HOL, 4:28.5**; 47 Borer/Müller, SWI, 4:28.8*; 48 Brendel/Vogel, FRG, 4:29.6*; 49 Borer/Studer, SWI, 4:31.3* 50 McColлум/Kusik, USA, 4:33.7*; 51 Brozek/Jastrzebski, POL, 4:34.2*; 52 Basek/Vater, CZE, 4:34.5*; 53 Uzan/Uzan, FRA, 4:35.0*; 54 Silveira/Silva, BRA, 4:37.4*; 55 Cromberg/Cromberg, ARG, 4:48.8*; 56 Goddio/Giay, ARG, 4:49.0*; Ker/Baker, CAN, 4:49.0*; 58 Gonzales/Felipe, CUB, 4:52.7*; 59 Ramos/Gonzales, CUB, 5:22.0*; 60 Larsson/Anderson, SWE, 6:15.4*; 61 Diaz/Scaltritti, ARG, disq.; 62 Voghera/Menozzi, ITA, disq.; 63 Kodytek/Safier, CZE, disq.; 64 Escobosa/Alier, SPA, disq.

F2D COMBAT

1	O. Doroszienko	SU	740
2	B. Gysbertsen	HOL	300
3	P. Granderson	USA	134
4	M. Vegetti	ITA	114

5	S. Borer	SWI	378
5	N. Figus	FRG	340
5	O. Titov	SU	276
5	R. Tribe	UK	240

9	t. V. Mourik	HOL	392
9	R. Monge	MEX	322
9	U. Edslev-Christen	DEN	288
9	G. Cleveland	USA	268
9	P. Rückerei	FRG	248
9	O. Zink	MEX	20
9	G. Benincasa	ITA	4
9	J. Finn	SWE	

17	A. Giandrini	ITA	440
17	K. Kehrävu	FIN	422
17	P. Mutelet	FRA	396
17	D. Wood	UK	392
17	B. Schou	DEN	374
17	T. Greber	SWI	302
17	Zhu Yongnian	CHI	300
17	R. Beauval	BEL	258
17	P. Stjärnesund	SWE	216
17	F. Meyer	HOL	80
17	D. Hune	DEN	52
17	W. Christen II	SWI	34
17	D. Sigouin	CAN	8
17	P. Klima	CZE	
17	S. Nikiforov	SU	
17	P. Salerma	FIN	-40

33 J. M. Scherer, FRA, 348; 33 F. Quezada, MEX, 256; 33 P. Henry, FRA, 222; 33 J. Steiner, CZE, 154; 33 Mu Gang, CHI, 36; 33 R. Melhuish, CAN, 20; 33 B. Horta, CZE, -52; 40 W. Grothe, FRG, 340; 40 S. Gumulinski, POL, 196; 40 A. Feschian, BUL, 170; 40 R. Sibbald, UK, 140; 40 M. Lange, POL, 134; 40 J. R. Font, SPA, 94; 40 Meng Ximing, CHI, 92; 40 H. Östman, SWE, 24; 40 P. Rimpopov, BUL, 40 R. Dimitrov, BUL, -30; 40 P. Curtis, USA, -66; 40 P. Sigouin, CAN, -278.

TEAM RESULTS

F2A SPEED

1	FRANCE	789.924
2	ITALY	778.470
3	USA	772.956
4	HUNGARY	760.163
5	YUGOSLAVIA	748.261
6	USSR	747.105
7	SWITZERLAND	739.731
8	DENMARK	724.590
9	POLAND	722.798
10	BULGARIA	721.516
11	FRG	718.556
12	UNITED KINGDOM	710.424
13	CHINA	696.972
14	CUBA	677.964
15	CZECHOSLOVAKIA	668.609
16	SPAIN	507.521
17	HOLLAND	481.440
18	AUSTRALIA	475.585
19	FINLAND	239.361
20	CANADA	231.362

F2B AEROBATICS

1	USA	16797
2	JAPAN	16331
3	ITALY	16131
4	CZECHOSLOVAKIA	15543
5	CHINA	15309
6	UNITED KINGDOM	14062
7	POLAND	13693
8	HUNGARY	13689
9	FRG	13508
10	BELGIUM	13342
11	SWEDEN	13078
12	CUBA	12776
13	BULGARIA	12653
14	FINLAND	11946
15	CANADA	11882
16	HOLLAND	11323
17	DENMARK	11044
18	AUSTRALIA	10818
19	FRANCE	10295
20	ISRAEL	8977
21	SWITZERLAND	8533
22	BRAZIL	7254
23	SPAIN	6354
24	GREECE	4575
25	AUSTRALIA	3618
26	NORWAY	1520

F2C TEAM RACE

1	UNITED KINGDOM	11:30.1
2	DENMARK	11:41.6
3	HUNGARY	11:46.9
4	AUSTRIA	11:59.7
5	USA	12:01.2
6	BULGARIA	12:19.8
7	USSR	12:20.3
8	YUGOSLAVIA	12:21.4
9	HOLLAND	12:22.6
10	FRANCE	12:42.3
11	SWITZERLAND	12:59.1
12	CANADA	13:01.7
13	POLAND	13:11.4
14	CUBA	14:33.7
15	SWEDEN	14:36.4

F2D COMBAT

1	USSR	8
2	HOLLAND	10
3	ITALY	11
4	USA	12
5	FRG	13
5	SWITZERLAND	13
7	DENMARK	14
7	UNITED KINGDOM	14
7	MEXICO	14
10	SWEDEN	15
11	CANADA	17
11	CHINA	17
11	CZECHOSLOVAKIA	17
11	FRANCE	17
15	BULGARIA	18

A CHEAP LIGHTWEIGHT D/T TIMER

One of the interesting models seen during the Dutch trip was Edward Liem's hand-launched glider, which included a clockwork timer sunk into the wing thickness. The mechanism was modified from one of the ultra-light Snoopy timers, removed from the cheap Hong Kong made walking toys. From my own tests, most of these all-nylon motors run for about 20 seconds, when uncoupled from the legs or flippers of the toy they power, and the escapement 'waggler' thus needs loading to slow things down if a D/T is the aim. However, for prop delays, VIT or Auto-Rudder operation they are fine without any modification.

I experimented by cyano-ing lead foil onto the nylon escapement mass, which helped, but Edward simply uses a glass-headed pin, cut to about 10mm, heated up and pushed into the plastic waggler. This increases the moment of inertia of the waggler, and a couple of my 3gram timers now run happily for well over two minutes. Edward used a standard Seelig F1B machined dural scroll attached to the output shaft, since this rotates several times during the sort of times we are interested in. My own specimens have a mild steel shaft that can just be gripped at one end while the other has a 10BA thread cut on it, after the existing nylon wind-up knob has been carefully pulled off. Most of these mechanisms have a second faster-running shaft in addition to the main one, which originally carries the winding knob, so there is the makings of a multi-function timer ready for adaptation. I have also recently found an even lighter version (1), weighing just 2.2grams which has an integral all-nylon drive shaft and final gear, and another type using an eccentric weight governor, rather than an escapement, weighing 3.7grams which runs for 30 seconds unmodified.

Edward Liem's HLG timer uses another glass-headed pin with a knob at each end, sliding in a tube through the finger resisting reinforcement gusset at the wing root, to hold the escapement stopped as long as there is finger pressure against the launch grip.

WOODHOUSE GOODIES

Mike Woodhouse is a name to include on your source list of Free Flight items, and he has the following materials and parts at present.

Esaki Japanese Tissue in red, yellow, blue, orange, green and white, and in three weights. Lite Flite (450 x 600mm), 10p/sheet; Medium Flite (600 x 800mm) in white only, 18p/sheet; Super Flite (600 x 900mm), 20p/sheet.

Silk in white, yellow or blue at £2.50 per 900 x 900mm piece; white is also available in 900 x 1800mm pieces at £4.85. The silk is post free, but add 20p for tissue orders under £2.00.

Glider winches with 9:1 ratio via brass gears and alloy drum with quick release pin are suitable for either F/F with small drum, or R/C soaring with the large one. Price is £9.00 plus 50p postage for either size but state which size you want. Spare drums are £2.00 plus 20p post each.

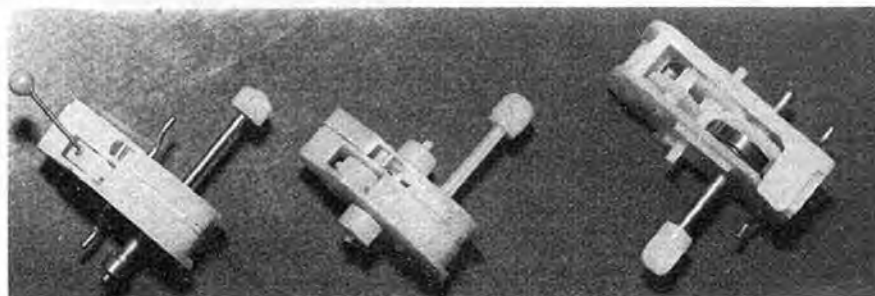
Auto-rudder adjusters, consisting of dural rod, horn and stop fitted with two 10BA adjusters are 75p a set, post free.

Wakefield prop units, fully machined from dural, feature Montreal stop and hold pin, twin ball bearings, Graupner snap on spinner, and alloy nose ring of 30mm outside diameter cost £11.50 post free.

A collection of three-view drawings, originally published in the East Anglian Area newsletter is £2.00 for 43 drawings, post free, and four Woodhouse plans are also available. The classic *Wichita* developed through the 60s and 70s, and a multi-contest winner is 60p; *Whiffler* based on the above and on latest trends is 75p and *Whiffler-2*, with Russian hook and D-box wing structure is also 75p. The Woodhouse Wakefield *Whiskas*, as used at Mostar this year, is shown in a two version plan at 75p; all plans are post free, from Mike at 12 Marston Lane, Eaton, Norwich, Norfolk NR4 6LZ.

ALUMINISED MYLAR

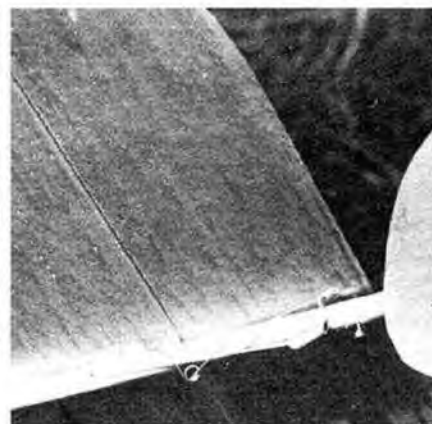
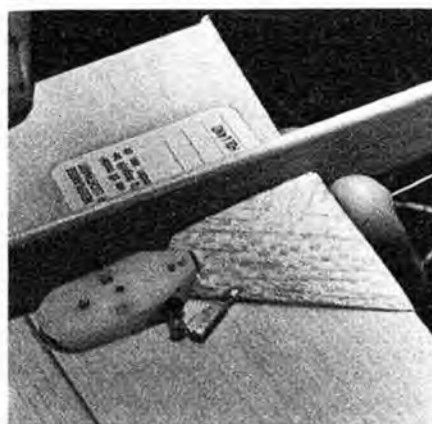
Ian Dowsett has available again the aluminised Mylar film that a number of people have used for indoor CO₂ wing covering and for outdoor tailplanes. Price is 50p per metre for the 6in wide material. Please include extra for postage and packing, or better still talk to Ian at the next contest. His address is 2 Warren Drive, Eastcote, Ruislip, Middx.

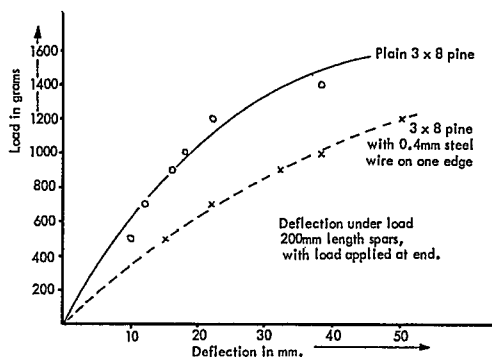


Top: lightweight nylon clockwork timers, weighing from 2.2 to 3.7 grammes each, are to be found powering walking toys made in Hong Kong currently on sale in most toy shops, as illustrated left.



Below: One such timer shown mounted in the wing of Edward Liem's all-sheet balsa chuck glider wing, fitted with Seelig F1B Wakefield scroll to permit several revolutions during run-down to D.T. Bottom left: underside shows hold-off pin running through aluminium tube sandwiched under throw tab exiting at trailing edge. Bottom right: tail end shows 50% chord span-wise hinge line and small wire coil spring to activate D.T. elevator.





WIRE-STIFFENED WING SPARS

The wing on my now very weather-beaten *Saper* (Pavel Dvorak's 1971 World Champion A/2) continues to produce horrified comments on its ability to bend to double or treble its normal dihedral during an energetic zoom launch. While the wing looks very flimsy to British eyes, and uses two vertically-set pine spars running through the centre of the ribs, making it look awkward to build, it stands up to this treatment well. Its strength lies in the inclusion of 0.3mm steel wires epoxied into grooves along the lower edges of the two centre panel spars, and the completed wing weighs in at 135 grams.

While planning a slightly beefed-up version of the *Saper* wing, to prevent the premature aging of fellow competitors when I fly, I ran a crude test on the difference the wire makes to the bending strength of the spars. Lengths of plain pine spar stock of 3 x 8mm, as used in the *Saper*, and the same wood with 0.4mm wire epoxied in place, were clamped in a vice side by side, while loads were applied 200mm out from the fixed ends. The graph here shows the results; while the test conditions were far from laboratory standard (for example, the test pieces started to twist under high load unless restrained by hand pressure at the sides), they do show that the unreinforced spar deflects roughly twice as much under load, and finally broke at 1.4kg.

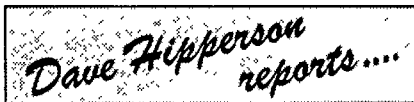
Dvorak advises builders of the *Saper* to round the corners of the spars (probably to remove stress-raising nicks and to ease their passage through the rib slots), to give them a couple of coats of clear lacquer and to sand them smooth all over. This will remove the scratches and saw marks present on so much of the British-cut wood found in our model shops, which of course reduces its strength considerably; quite possibly the lacquer helps to prevent moisture absorption and resultant warping.

NEW ZEALAND RECORD HAND LAUNCHED GLIDER

Richard Weston is one of New Zealand's most successful HLG flyers and this month we have a 3-view of his record holder, first published in *South Island News*. Flying this model, *Hangover*, Richard achieved six consecutive 90 second maxes at the '77 Hamilton Nationals, and a number of later wins.

The model uses a wing of constant thickness, so the tapered planform gives an effective airfoil thickness changing from 6% at the roots to 9% at the tips, and results in aerodynamic washout. Hoerner-type vortex tips may result in some improvement in efficiency, and, if the tip itself has its grain running chordwise, it will at least minimise tip warping. It is important to use only good quarter grain balsa for the tail surfaces to prevent trimming problems due to warps; trailing edges are left unsealed to allow them to be breathed on for easier bending during trimming. Two coats of sanding sealer are used with a drop of castor oil to prevent brittleness, the first coat being almost sanded off to smooth the grain, while the second is lightly sanded without cutting through to the grain.

A falling weight D/T is used, attached to the rear of the fuselage. The left polyhedral joint is cut through about 10mm, so the tip trailing edge can be washed-in about 1mm, and then cemented. All the other panels are flat, and 1.5mm of left rudder is bent in. Trimming details were described by Mike Fantham P319 June 78 *Aeromodeller* F/P Scene, but Richard Weston stresses the importance of 'warming up' your arm before attempting full power throws.



CROYDON GALA

Bassingbourn, 18.5.80

A large attendance but comparatively low entry suggested that many were taking the opportunity to check and trim models for the next week's Nationals rather

than risk them on comp flights in the breezy and thermally conditions. The six events, three Mini and three F1A, all run separately, put the emphasis firmly on picking the right air and having a model that would stay in it. In some of the stronger patches of lift this was not at all easy.

Highest standard was in Coupe which produced a four way fly-off all from the host club. Peter Carter picking a good patch to win after George Sharp tried unsuccessfully to launch into the same air but being some way to the side missed it and only suffered the downdraft. Spooner waited longer and made a 2 minute flight which wasn't seen down but timed sufficiently long to take second place.

The only other event requiring a fly-off was F1A where the top two seemed to be on the edge of some good air but not quite in it. John Cooper's making the best use of the air for 2.45 and first place.

Results: F1A 1. J. Cooper (*Biggles*) 15:00+2:45, 2. P. Williams (*Richmond*) 15:00+2:14, 3. P. Jellis (*Croydon*) 15:00+1:21. **F1B** 1. I. Taylor (*Wolves*) 14:50, 2. R. Dugan (*C/M*) 14:02, 3. R. Miller (*Northwood*) 13:43. **F1C** 1. P. Harris (*Birmingham*) 10:32. **A1** 1. C. Edge (*Welland Valley*) 10:00, 2. D. Thompson (*Croydon*) 9:16, 3. A. Cordes (*Whitefield*) 9:10. **C d'H** 1. P. Carter (*Croydon*) 10:00+3:52, 2. B. Spooner (*Croydon*) 10:00+1:46, 3. G. Sharp (*Croydon*) 10:00+1:40. **1/2A** 1. R. Kenward (*Croydon*) 9:26, 2. P. Bayram (*Richmond*) 9:15.

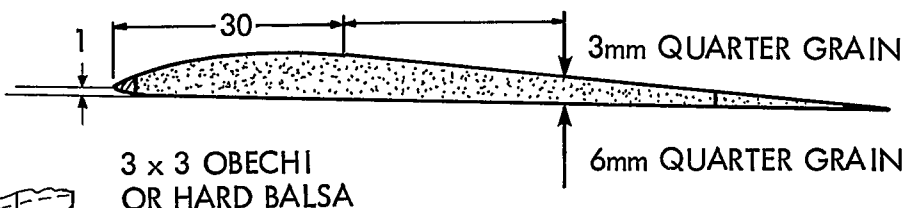
ST ALBANS MINI

Bassingbourn, 22.6.80

Unflyable weather for the preceding week must have deterred many from attending St Albans' second event of the year. Even the host club were represented only by the Contest Director! A breeze blew all day but some post shower periods were quite calm. However by 3.30pm the drift had settled down both in strength, 10mph and direction, S.W. - turbulence however making positive lift identification almost impossible.

Birmingham were represented by a strong force who took the top 4 places in 1/2A - still a long way to come, to fly against your club mates. The standard in Coupe was quite the opposite with Hipperson just topping the results despite one flight less than a minute and two of

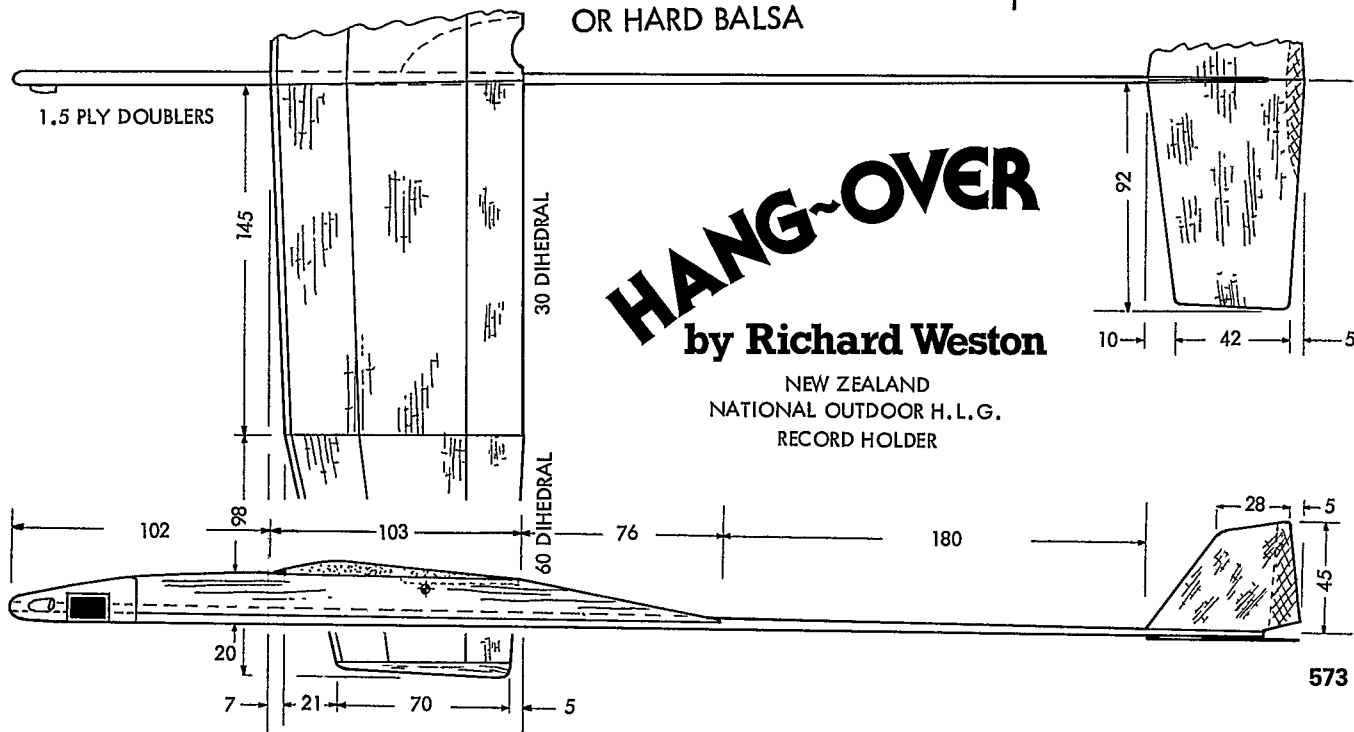
HIGH POINT



HANG~OVER

by Richard Weston

NEW ZEALAND
NATIONAL OUTDOOR H.L.G.
RECORD HOLDER



RESULTS: 1/2A 1. P. Harris (*Birmingham*) 10:00, 2. S. Screen (*Birmingham*) 9:46, 3. R. Baggott (*Birmingham*) 9:12. A1 1. J. Abbey (*Leicester*) 8:55, 2. C. Edge (*Welland Valley*) 8:08, 3. S. Oldfield (*Leicester*) 7:33. Cd^H 1. D. Hipperson (*Croydon*) 6:56, 2. R. Miller (*Croydon*) 6:54, 3. M. Chilton 6:38. CO: 1. C. Blanche 6:58, 2. I. Dowsett (*Croydon*) 6:32, 3. C. Parry (*Biggles*) 2:33.

Woodbury Common 20-7-80

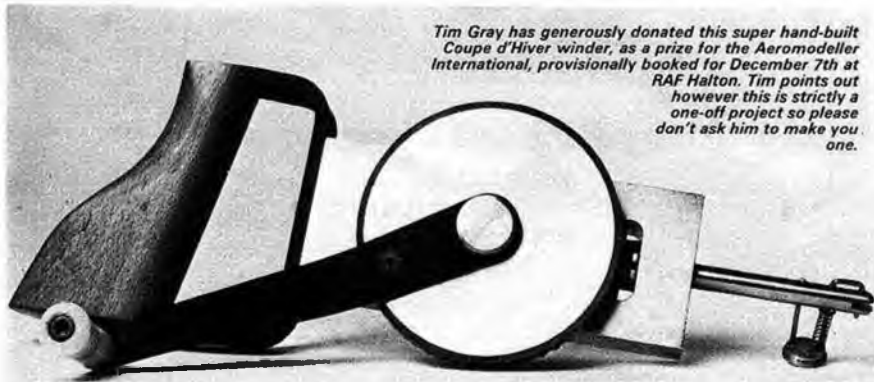
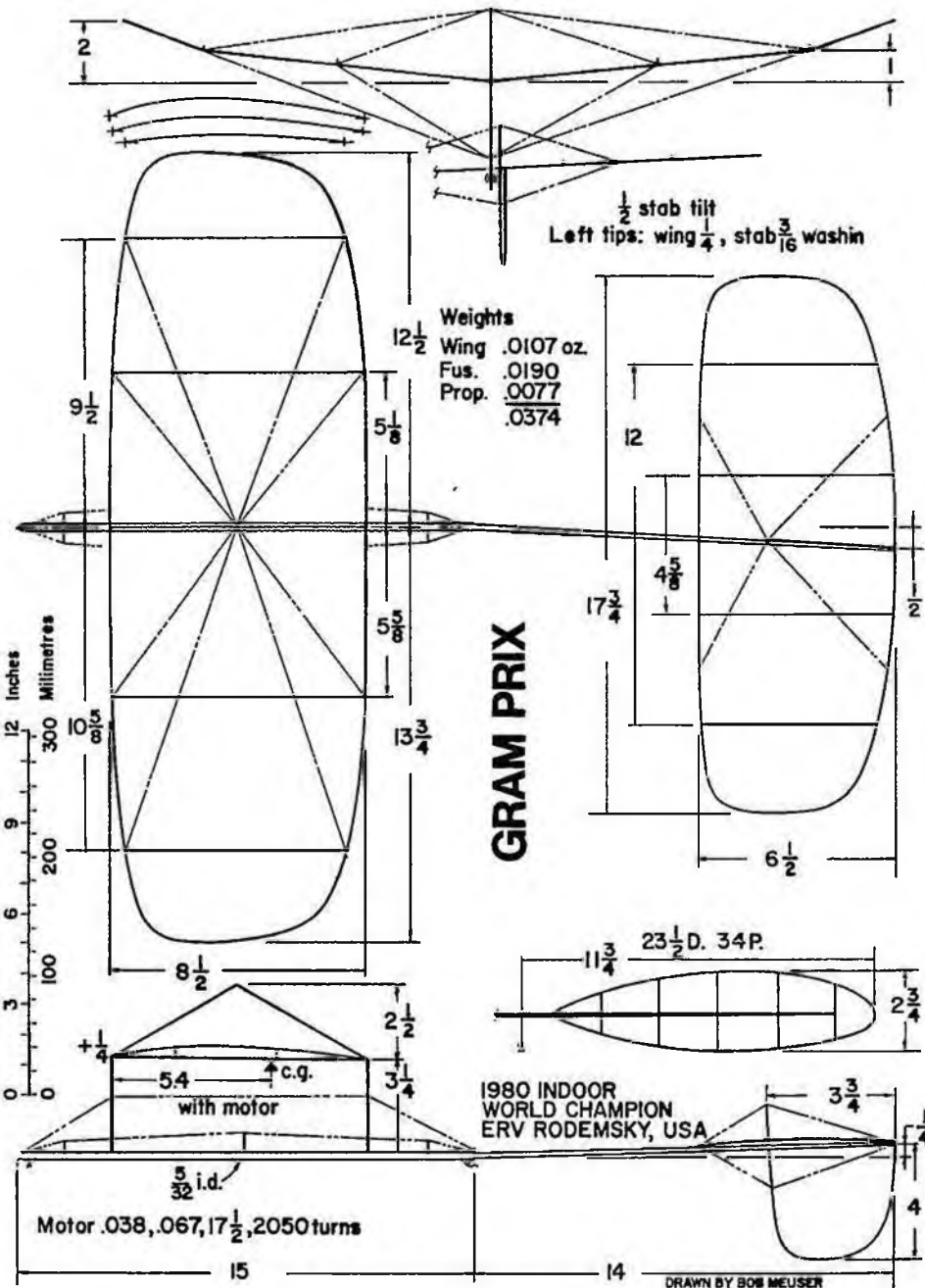
The Torbay Trophy was keenly contested by a hardy handful, but the wind and rolling turbulence took its toll of most of the competition. Dick Cummins had to rebuild a wing on the way to winning his two 'Pots' — one silver, the other contained gloss paint! All winners received plaques, supplemented by tins of paint kindly donated by Berger (Brolac).

Scores were generally very low, Russell Peers won Rubber with nearly a 'full house' and a lost modell John Tipper recorded a creditable 4 min. 38 secs. to win HLG whilst Gordon Burney scored 6 min. 38 sec. in CO₂ which was better than most other scores.

A Fly Off was necessary to decide Open Power! Julian Hopper had maxed with his first flight of the day, but ended high up in a tree (the model was eventually blown out of the tree by the end of the day) Peter Ward also maxed but returned with a broken model and no reserve! Julian put his reserve model together and recorded a nominal flight to win.

Good humour prevailed throughout, and the organisers thanks are extended to all competitors for making this a memorable day.

Combined FAI 1. R. Cummins*(Bristol & West)* 9:23;
2. C. Chapman*(Bristol & West)* 7:04; 3. C. Sharmam
(Cheltenham) 7:02. **Open Rubber 1. R. Peers***(Falcons)*
8:51; 2. P. Davies*(Bristol & West)* 7:30; 3. C. Chapman
(Bristol & West) 5:16. **Open Power 1. J. Hopper**
(Stansted) 3:00 + 28 secs; 2. P. Ward*(Bristol & West)*
3:00; 3. R. Greenslade*(S. Bristol)* 1:00. **Open Glider**
1. C. Sharmam*(Cheltenham)* 6:37; 2. R. Cummins
(Bristol & West) 5:18; 3. D. Carter*(RAFMAA)* 2:26.
H.L.G. 1. J. Tipper*(Lee Bees)* 4:38; 2. D. Carter
(RAFMAA) 3:51; 3. R. Greenslade*(S. Bristol)* 2:45. **All-In**
Mini 1. E. P. Drew*(Bristol & West)* 4:53; 2. P. Davies
(Bristol & West) 3:43; 3. G. May*(Bristol & West)* 2:50.
CO₂ Duration 1. G. Bunney*(S. Bristol)* 6:38; 2. D. Carter
(RAFMAA) 2:31.



Tim Gray has generously donated this super hand-built Coupe d'Hiver winder, as a prize for the Aeromodeller International, provisionally booked for December 7th at RAF Halton. Tim points out however this is strictly a one-off project so please don't ask him to make you one.

SMAE MID-SUMMER MINI
Bassingbourn 27.7.80

Practically identical conditions as for this same event last year, meant full width aerodrome retrieval for many long makes. In humid conditions, under an overcast sky and through long, sometimes waste high, grass which often concealed models only yards away from searchers, it was tiring! Many too were obviously nervous of flying early—maybe they had been caught out already this year! In fact by lunch time there were only two flights recorded in Coupe from an entry which was already over 20 and still the weather gave little sign of any spectacular improvement.

There was reasonable activity in A1 1/2A power however. John Ashmole taking the former with the only 10 minute score of the day and Pete Buskell breaking the Birmingham clubs recent domination of 1/2A with his distinctive red and white all sheet model that dropped but 20 seconds on one flight. His son was less lucky and John had to be content with only a third in HLG after finding air good enough for only two maxes. Phil Ball dropped time in this event too but only 7 seconds. That was enough for Paul Davies who made sure with a five max total although



he needed all this flights to make it.

Ball had plumped to fly CO₂ first and started early and was soon in trouble with double sub 20 second attempts on his second flight in the mysterious turbulence that made the small models difficult to fly and lift even more unpredictable. With no more room for error he made amends with maxes until a 1.59 dropped his best five of six total by a second. His early problems definitely contributed to many peoples not flying until later when conditions did seem to smooth out considerably. Nonetheless his total stood all day to win CO₂ as did Ian Davitts score of 9.49 in Coupe completed by about 3.30pm. Ian dropped the 11 seconds on his third flight and sets himself such a high standard that he looked quite miserable from then on despite being comfortably in the lead Others could have come close but finally it was left to Hipperson to continue a string of maxes after a first flight boob. Norman Marcus was close behind with two slightly sub-max flights from his old fashioned open type model complete with build up fuselage and long wire yoke to bring the rear peg far enough forward for the tiny motor under allegedly an open model wing! Its always difficult to know when Norman is kidding you but whatever it is it flies a very smooth pattern.

Less than half an hour before the end of the contest and with a pleasant breeze prevailing under a now sunny sky, Ian Davitt, now safe in Coupo, supplied the necessary encouragement to Dave Hipperson who was dithering as to whether to start CO₂ or not. Eventually Dave flew his two identical models and Ian supplied incredible leg work to enable all six flights to be made in less than 25 minutes. This also necessitated Tim Groy literally sprinting backwards and forwards to control with the card each time and with empty CO₂ cartridges hitting the ground like shot gun cartridges in a pigeon shoot the entire proceedings too on the atmosphere of something between the Nationals Scramble and "It's a Knock Out!" The efforts of all being rewarded by a 2nd place despite some problems with a motor in one model. In A1 it wasn't over either as Steve Philpott made a late charge during the last hour and despite some very long distance flights squeezed in four maxes and a 1.32 to similarly take a 2nd.

Despite a high standard generally there were no Fly/Offs required and hence the prize giving was held soon after 6pm. This was marred by the age old problem that only prize winners seem to attend prize givings and in some cases not even all of them. The majority of entrants who had not placed seemed totally oblivious of John Goddens efforts. In one case to the extent of running up a 40 model adjacent to the control table thus drowning Johns closing comments — naughty!

A1 Glider 1. J. Ashmole (Grantham) 10.00; 2. S. Philpott (Whitefield) 9:32; 3. J. Abbey (Leicester) 9:28. **Coupe d'hiver** 1. I. Davitt (Leeds) 9:49; 2. D. Hipperson (Croydon) 9:28; 3. N. Marcus (Croydon) 9:11. **1/2A Power** 1. P. Buskell (Crookham) 9:40; 2. R. Monks (Birmingham) 9:37; 3. L. A. Rogers (Swindon) 9:16. **HLG** 1. P. Davies (Richmond) 5.00; 2. P. Ball (Grantham) 4:53; 3. J. Buskell (Crookham) 4:26. **CO₂ Duration** 1. P. Ball (Grantham) 9:59; 2. D. Hipperson (Croydon) 8:30; 3. P. Siddall (Grantham) 7:51.

SCOTTISH F/F NATIONALS by J. O'D Newbigging 31.5/1.6.80

"Split" Nationals are now almost the norm and this year's Scottish contest was no exception. However the numbers participating at the F/F section must have been a disappointment to all concerned. Local response was meagre — even allowing for Scottish modellers being thin on the

ground — whilst last minute advertising at the British Nats failed to interest the English fliers. The "reasons why" can hardly lie with the venue — Newbigging is a large and empty stretch of moorland, comparing more than favourably with sites such as Everleigh, Woodbury and the late lamented Chobham. At least those who attended cared about the contests, which is not always the case elsewhere!

This year the weather was kind, even if very different from one day to the other. Saturday had an overcast sky, occasional attempts at drizzle, and little more than a light breeze. Lift proved to be deceptively weak — with the few maxes being marginal at best. FIA and FIB were flown alternatively in 40 minute rounds, with the customary flight line being used.

FIA was convincingly won by organiser Ron Sabey, in between recording, timing and signalling round times. He made five good flights for a two minute lead over Tommy Lawrie and Richard Sheen. Surprisingly in this day and age, all three were flying propriety designs — *Wichita*, *Whiffer* and *Classic* respectively. Wakefield saw the writer (J.O'D) secure an early lead with his Delayed Prop Release model — eventually needing only a very nominal fifth flight after Brian Martin conceded defeat by under DTing!

Sunday was a very different sort of day — warm, sunny spells, breeze and monster thermals. The wind had reversed overnight, necessitating the use of a different launch site — with all the empty downwind space one could ever want!

Unusual was the staging of Mini as a 3 hour contest at the start of the day, with the open events not commencing till later. If the idea was to concentrate interest, then it succeeded with Mini being by far the best supported event with 16 entries. I mixed Cd'H and A/1 to economise on retrieval time (and effort) and managed 5 maxes at the expense of losing my fancy (DPR) Cd'H upwards on D/T. Runner-up was Richard Sheen who only dropped one flight with a standard *Little Hinnay* whilst third was Ewan Jones flying 1/2A power — the most difficult class to thermal-fly as his final flight proved.

The remaining events barely mustered as many entries between them as as had Mini. Doubling up flights seemed to have little general appeal, although I used the technique to advantage — winning Open Glider with one "extra" flight with my A/1. There were a couple of disappointments in this event, with David Hearn "losing" a max by throwing the winch when his model veered dangerously on tow, only to thermal from low altitude. Even more disheartening was Pêre Farimond's spectacular blow-up on tow when the combination of strong lift and his injured knee proved too much for the A/2's wings! Consequently Frazer McKay and Tom Lawrie placed with rather modest scores.

Open Rubber was topped by Tom McLaughline recently returned to aeromodelling and flying a model displaying considerable Bilgri influence — reliable if far from up-to-date. Power (and the Flying Dutchman Trophy) went to Ray Moore, very pleased to have at last beaten Russell Peers. Scottish opposition disappeared with the loss of George Blair's best model on a rather lengthy over-run. The FAI power event was a flyover for Ray Moore — but he still persevered for the full 5 flights. A premature engine cut on one flight spoilt what would have been a respectable score for the SMAE Area event. Retrieval rather than the more usual timekeeping, chores were performed by Ray's wife Maureen! Chuck glider winner Dave Hutchison flew late due to losing his best model upwards on test — and going downwind to search.

Top left: Enjoying the vast moorland expanses at Newbigging, once again venue for the Scottish Nationals, J. Campbell and T. McLaughline, on their way back up wind after retrieving their comp flights. Top right: Ray Moore and son Stuart brandishing their trophies, went straight from the British Nats to the Scottish, with good results — the tam-o-shanter was not a spoil of victory. Below: Second in both glider events, Richard Sheen attends to the clockwork timer in his APS Little Hinnay A1 glider.

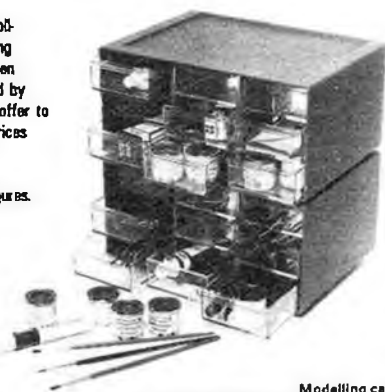


The prizegiving saw Ron Sabey giving out a large number of trophies — a tangible return for the rather high entry fee. All-in-all this was a meeting worthy of better support — from both sides of the Border.

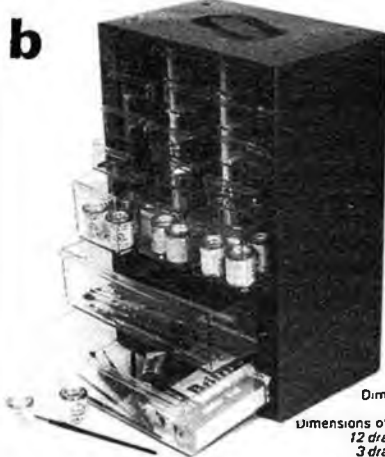
FIA 1. R. Sabey (Hamilton) 14:14; 2. T. Lawrie (Paisley) 12:06; 3. R. Sheen (Nantwich) 11:52. **F1B** 1. J. O'Donnell (Whitefield) 11:58; 2. B. Martin (Tynemouth) 10:47; 3. R. Peers (Falcons) 9:38. **FIC** 1. R. Moore (Biggles) 10:31. **Mini** 1. J. O'Donnell (Whitefield) 10:00; 2. R. Sheen (Nantwich) 9:27; 3. E. B. Jones (Tynemouth) 8:59. **Open Glider** 1. J. O'Donnell (Whitefield) 8:02. 2. F. McKay (Edinburgh) 5:49; 3. T. Lawrie (Paisley) 5:46. **Open Rubber** 1. T. McLaughline (Paisley) 7:45; 2. J. O'Donnell (Whitefield) 6:37; 3. J. Annett (Hamilton) 3:27. **Power** 1. R. Moore (Biggles) 8:25; 2. R. Peers (Falcons) 7:25; 3. G. Blair (Edinburgh) 2:13. **HLG** 1. D. Hutchison (Dunfermline) 2:40; 2. D. Hearn (Edinburgh) 2:13; G. Hutchison (Dunfermline) 2:10.

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CLUB NEWS

HAVE YOU EVER noticed that the successful competition flyer is invariably a first class model builder? It is not, of course, necessary for a competition model to have that Concours d'Elegance look; it would perform just as well if it were strictly utilitarian, as long as the basics were taken care of, but it would seem that part of building a model with precision and exactitude is the imparting of a highly attractive, if not lustrous finish, giving the model that little extra in style and flourish. What this adds up to, is just plain enthusiasm, which is what model flying, and indeed competition flying, is all about.

We start off this month with news of a new club which has sprung up in the North Herefordshire area. It is called **The Leominster & District Modellers Association**. This is not just an aeromodelling club, but one that covers all forms of modelling activity such as trains, boats, war games and even plastic kits. If interested write to Mr. L. Whetton, 6, St. Peters Close, Moreton on Lugg, Herefordshire.

Much of the nicely printed newsletter of the **Hemel Hempstead M.F.C.**, is taken up with an article and plan from transatlantic sources. Nearer to home the club nights are held at the ADMEL sports pavilion where light refreshments re-inforce the various activities, such as the Super Raffle. Tickets 50p each and cheaper for bulk purchase, the top prize was £30 engine starter. It is hoped to make this a regular club feature. Pointed out in the newsletter is a slight misunderstanding over parking at Flaunden, although we are assured that the Landlady's name, Miss Gates, has nothing to do with it. Mentioned also is a side of club activity that does not get the prominence it deserves, is the 'local Derby', or inter club get together. The St. Albans M.F.C. have invited Hemel Hempstead to a number of one day slope soaring outings at various sites within easy motor car reach. The Middle Wallop Large Scale Meeting may sound rather catastrophic, but it proved a most entertaining event for the club members, four in number, who set out with large models and caravans in tow to make a weekend of it. Many and spectacular were the models to brave the rather gusty elements, John Aris's Zlin getting a special mention. Sec: Russel Attwood, 63, Crouchfield, Boxmoor, Hemel Hempstead.

Is there a falling off in model flying? Nothing to do with people flying too near the edges of cliffs, but an observation made in 'The Scimitar', newsletter of the **Buckaneers Model Club**. The various club flying sites do not seem quite so activated this year, although Wroughton continues to enjoy a measure of popularity. If there is a falling off in model flying, it could well be an expected decline in the euphoric popularity that Radio flying has enjoyed over the years, not to mention the recent sharp increases in petrol prices. That 50-100 mile round trip to the distant airfield is now a number one expense item, although not so bad as it seems when viewed in the light of present day incomes. I suppose a one-to-one scale model is a full size replica, the subject of a talk by a member of the Popular Flying Association, illustrated with film, which was but one of the many items which enliven the Buckaneer club meetings. Sec: Derek Giles 64A, Station Road, Bow Brickhill, Milton Keynes.

The June/July issue of *Northern Area News* is mainly taken up with the major Rallies that were held in the first half of the season. These included a belated report on the Northern Area F.A.I., rally, also the results of the North Eastern Area Rally held in May. Neither event too well supported. The newsletter rounds off with a fulsome account of Editor Jim Moseley's transatlantic adventures, mostly centred on the notorious Taft flying field. Seems the desert cooks up some pretty hefty thermals, so strong that DT's just don't — the model being pursued on motorised transport over the torrid wastes on the basis that it must descend sometime, but that sometime can be some time, hours in fact.

Big news in 'Cosmutterings', the newsletter of the **Cosmo A.C.**, is that club members, Pete Tribe, and Ray Sibbald with Dave Willis, will be representing Great Britain in Combat at the C/L World Champs to be held in Poland. The question now is of raising funds to

help the lads on their way. Seems it may be just a question of personal donations from club members. On the home front the news is not so cheerful as the club gala had to be cancelled due to flying restrictions on the park, but hopes are set on a more favourable re-writing of bye laws. *Sec: H. Jones, 173 Wessex Drive, Frith, Kent.*

In the newsletter of the **Grantham & D.M.A.S. 'Hot-Air'** some concern is felt over the alleged public image of the sport as grown men flying toy planes. Personally, I think that prejudiced old attitude died a justifiable death long ago. Model flying is now generally accepted as a healthy and edifying pastime; a change that seems to have coincided with a general increase in sports and hobby recreations. But who really cares what the public thinks? Just go ahead and enjoy your model flying, and do not be self-conscious about it. Even so, the public at the model display at the Boston Parish Church must have been perplexed, if not Stumped, at the absence of the usual Radio models which it has come to associate with model flying — they saw only Free Flight and C/L models. In more active vein the very strong Free Flight section has been hard at it throughout the season, putting in a determined effort at the Nationals. The following week they were again to field two teams in the Area Glider event, but lost out to Biggles — who were evidently on mind boggling form. At the R.A.F.M.A.A., champs at Barkston Heath there was much concentrated effort for the bounteous 20 quid prize in F1A Glider. Big money for a model contest, but still little enough by general standards. *Sec: Tony Grantham, 115 Fifth Avenue, Grantham, Lincs.*

Now to the glorious hills and peaks of Wales where the **Clwyd Soaring Association** put on a Fly for Fun display together with members of the **Aberystwyth Soaring Minority**. Model flying went on throughout the day, interrupted only by the aerobatic demos of the Rothmans Team. Adding their own touch of realism to the proceedings the model flyers put up a number of scale and near scale models, including Mike Trew's *Skylark* and Bob Jones's *Gyr Falcon*. The sight of these graceful machines and the excellent standard of the noiseless flying quite intrigued the spectating public, as well it might. The get together of the two clubs inspired further possibilities of mutual activity. Scale and Cross Country events could be organised and held at that famous hill of the A.S.M. — the one equipped with a cafe and a cliff railway (a fly for funicular day?) Model flying visitors to the Aberystwyth area are reminded that split frequencies are used on the hill, with solid frequencies on nearby Pendinas. To get an idea of what is going on in the district just pop in to the *Albatros Model Shop, Pier St., Aberystwyth*. They have information of who's flying where and on what frequencies.

For some time the strength of the Thermal Soaring element in the **Anglia M.F.C.**, has been rapidly growing both in size and keenness. Reading the latest issue to hand, of *High Flyin* it would seem that this is something of a mixed blessing as the lads are so often away at contests that the broad acres of the club flying field are too seldom graced by the grand order of bungee bangers. On the other hand the majority of power enthusiasts are strictly fly for fun, making for lively

Club outings to model flying meetings are all part of the busy programme of activities at the Mitchell Model Aircraft Club, with some of the members seen here about to hop on board the mini-bus.



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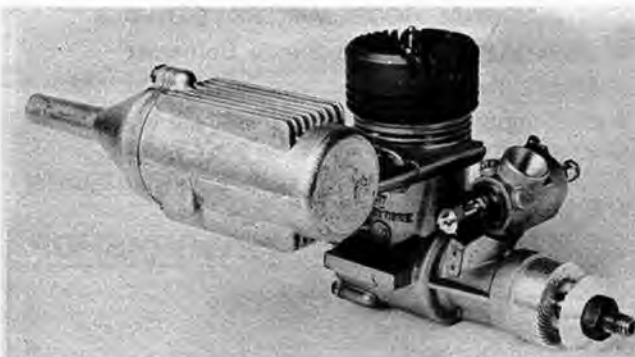


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get together at the weekends. Even so, members are perhaps a little reluctant to make the sort of fulsome use of the splendid flying facilities that they have at their disposal. 'Paper' members are a number one drag factor, but very difficult to sift out. In a general sense, and not applying it particularly to the Anglia situation, it is very disheartening for the people who run a club at much expense in time and trouble — and even monetary expense — to have the membership quota hogged by people who are only mildly activated, if at all. But then, it's an old story. *Sec: C. J. Goodley, Chase Farm, Woodham Mortimer, Maldon, Essex.*

Jeff Smith of the **Wharfedale & District Aeromodellers** has sent along the club's June newsletter. Very much C/L orientated, for which they have a widespread reputation, although we are assured that the club covers a wider range of interests. Anyway, it was for Stunt and Goodyear participation that a small club contingent set out for the Wolves Flying Day in early June. A particularly worthwhile journey for young Roger Price who, in Mini Goodyear, lifted the Junior Novice and the Top Junior Trophies, coming away with 3 plaques and any amount of goodies. Over the same week end two teams from the club were competing in the Criterium Micklen in Holland. A good outing, with the Langworth/Broadhead team earning a creditable fourth place. In the club Mini-Goodyear League the Cross/Cross team head the table — fastest time to date put up by McCarthy/Walker. In a lighter mood, but just as gripping in its way as handle waving, was a Chuck Glider Comp. Won by Jeff Smith. *Sec: John Broadhead, 3, Lea Terrace, Kings Lane, Leeds.*

Two newsletters to hand from the **South Bristol M.A.C.**, one of which carries the Club Contest Calendar. Plenty of participation offered to Free Flight and Control Line members alike. A particular feature appears to be a number of mini Free Flight events, each for P.30 rubber, kit glider and H.L.G. Programmes, though, are subject to flying field availability, and we read that there is some Sunday restriction on power flying at Colerne — at the request of the Padre. We also read that Macbeth was not the only one to fall foul of moving trees — seems that Geoff Andriesson's *Crystal Voyager* suffered



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AUGUST WINNER — JEFF ANDERSON, MIDDLESBORO'

damage when fate struck in the shape of a tree. A report on the Nationals is that a good time was had by visiting members, although luck did not favour their efforts. Recorded too, a quite remarkable chuck glider flight. Flying in an Area comp., newsletter Editor Bob Horwood's chuckie went O.O.S., but was subsequently found by a farmer some 15 miles from the point of launching. Could this be a record for a hand thrown, non-powered object? At least worth a Heinekin advert! *Sec: G. May, 4, Burchells Ave., Kingswood, Bristol.*

A newsletter new to these columns is *The Informer*, from the **Long Eaton & D.M.A.C.** Quite a useful content including a couple of plans and a number of informative articles. From the editorial, imploring members to support the newsletter with the bits and pieces, we learn that the club is quite a large affair of some 120 members, run by an equally large committee. *Sec: B. Hammersley, 7, Ridgeway, Southwell, Notts.*

A somewhat thin content in the **Belfast M.F.C.'s 'Nitro'**, no doubt due to holidays. Mainly given over to the club's principal activity: control line. John Black, who is leading the club 1/2A Combat League, gives a graphic account of the initial flights of his new, triple line Veron *Tomtit*. The battle was between John's ability to maintain line tension and a predilection of the model to go free flight. Some damage suffered in the process but the model lived to fly another day.

Paper aeroplanes are not to be confused with paper members, at least not in the **Watford Wayfarers**. Anyway the competition for the design gave a spot of excitement at a meeting of the club. Many interesting designs, but the newsletter writer says he has never seen bricks made from paper before.

Just how adaptable model flyers are to changing conditions is high lighted in the newsletter of the newly named **National Association of Zimbabwe Aeromodellers**. The radio flyers are using large paper clips as radio pegs — they were used as party cards during the election. Good luck to the association and to the new country.

More reports required. Come along you P.R.O.'s and how about some more photos. Clubman



This month's captions made us laugh until we were hoarse, with such offerings as "SHOULD HAVE KNOWN THERE WOULD BE A SNAG WITH THAT SALE AND SWOP SHOP AD — 'IDEAL FOR RECOVERY WORK, MINI MOKE £5'" from R. Watson, Northumberland; "HOW ABOUT WE FLY HERE KIMASABEE!" D. Wolstenholme, Lancashire; "I THINK HE NEEDS MORE NITRO IN HIS CARROT JUICE" A. Elson, Tamworth; "AND TO THINK FOR ANOTHER 50P I COULD HAVE HIRED PEGASUS" Fred Bawtree, Croydon; but the last laugh surely goes to Bob Brown of Newbury "IT MAY BE LESS TIRING THAN USING A BIKE, BUT ITS EARS KEEP GETTING TRAPPED IN THE BOOT LID WHEN I CLOSE IT." The original photograph was one we simply could not resist, originally published in *Modelarz* depicting the mode of transport at an International Free Flight meeting in Bulgaria.

Why not try winning yourself a year's subscription to *Aeromodeller* by entering this month's Caption Challenge — just send your entries to *Aeromodeller*, P.O. Box 35, Bridge Street, Hemel Hempstead, Herts HP1 1EE — Results December Issue.

P.A.W.

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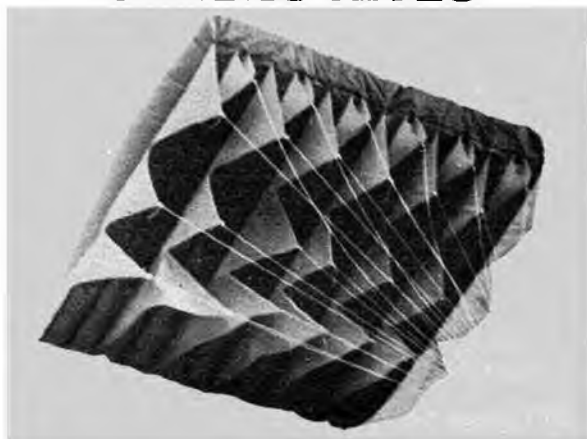
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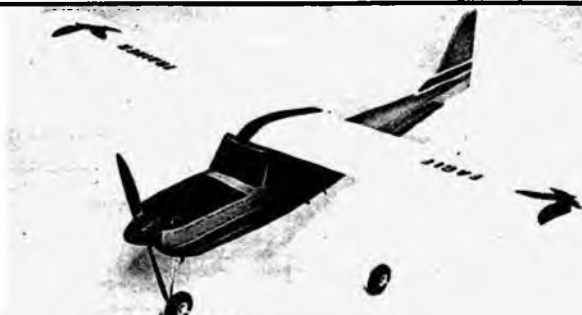
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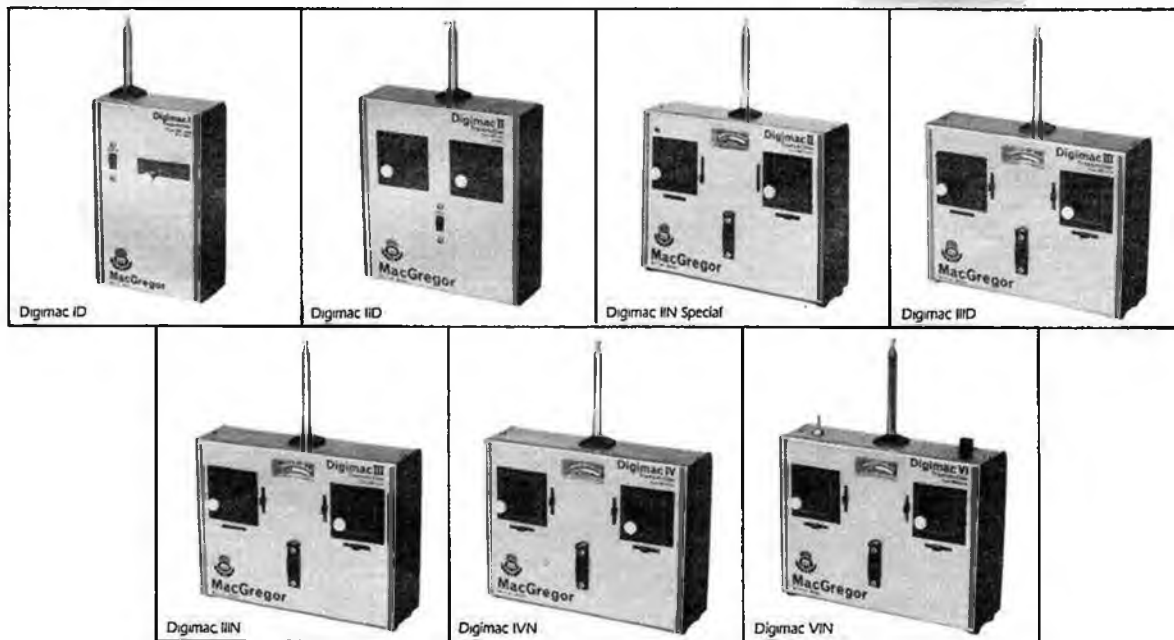
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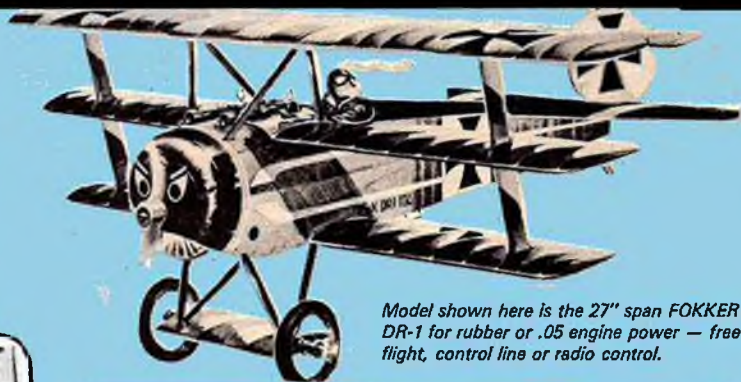


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