

August 1972

# Aero Modeller

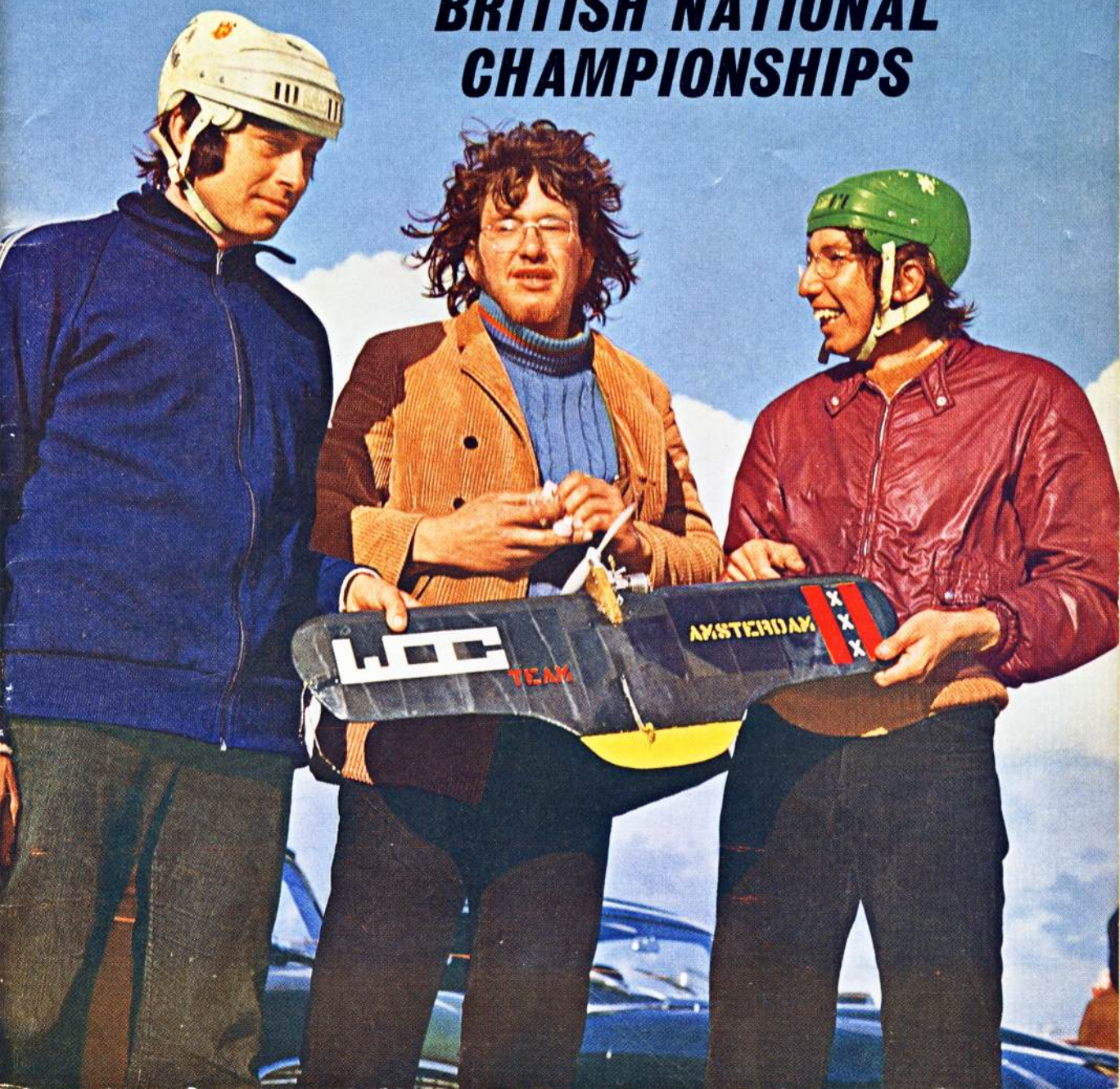
INCORPORATING  
MODEL AIRCRAFT

15p. U.S.A. & Canada 75c.

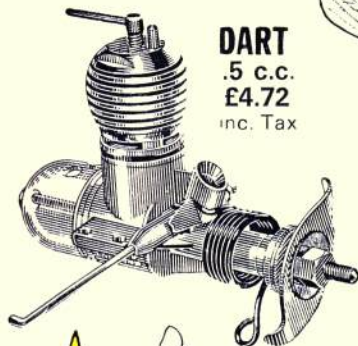


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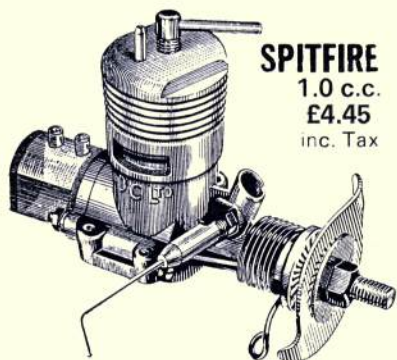
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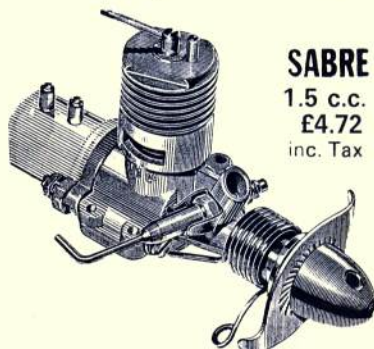
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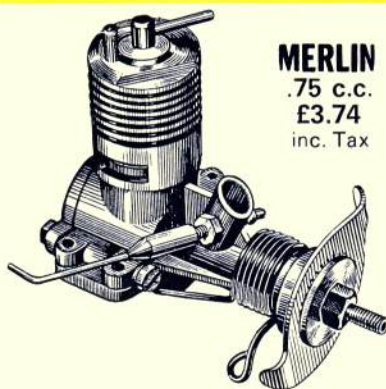
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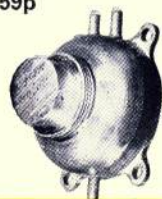
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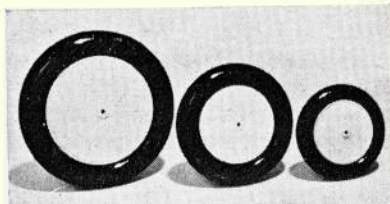
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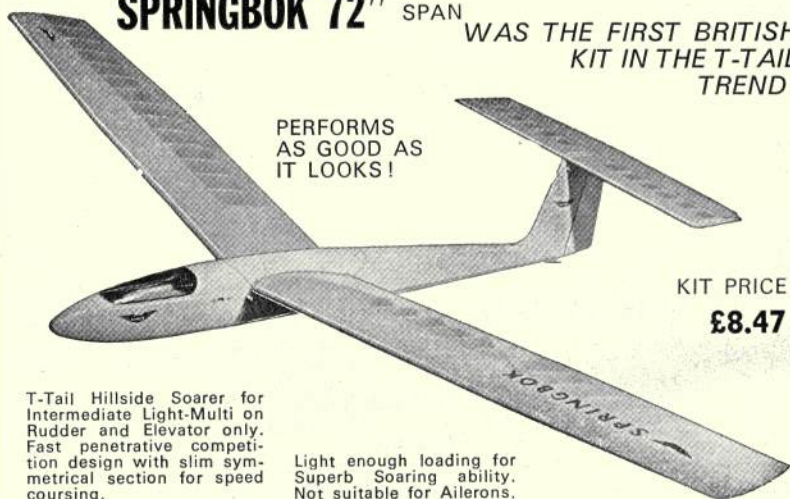
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# Aero Modeller

INCORPORATING  
MODEL AIRCRAFT

**August 1972**  
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## COMMENT

It may come as a surprise to some readers that outside the three free-flight categories, Pylon Racing has drawn greatest support in team selection trials for International contests. Even then it rivals F.A.I. Power for popularity and is only really eclipsed by the traditional Wakefields and prolific A/2 gliders. Few forecast such a growth of interest, especially for the F.A.I. class which the gloom casters said would never succeed. Few that is, except our companion magazine *R.C.M. & E.* which alone fostered this modern category and has anticipated the rapid developments in three short years. The Throttlebenders of the B.M.P.R.A. recorded over 130 thrilling flights during the eliminators and finals to pick the fastest 12 for the Sopwith Trophy team and in doing so produced a dress rehearsal for what will surely be the fastest show in all modelling at Cranfield on August 27-28th. Experts from eight Nations will be matched in a continuous series of thrilling heats. Koreans, Americans and Europeans will provide as great a spectacle as ever seen on this famous airfield. Interim demonstrations will include scale aerobatics and 'funnies', while there will be side attractions for the family, top-class refreshments, a trade and model exhibition. Camp if you wish - right on the airfield - it's to be an event for all to enjoy, a tribute to the first 50 years of organised aeromodelling in the British Isles on the occasion of the S.M.A.E. Golden Jubilee - see you there!!

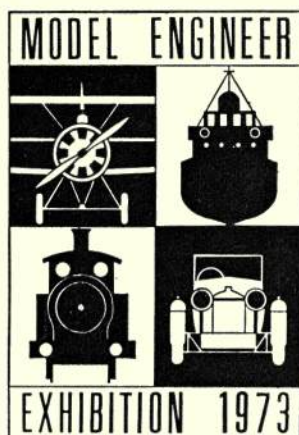
## on the cover

*Messrs. Buys, Meijer and Metkmeyer caused quite a stir by placing fourth in the combat event at the Nationals. Fred Meijer's piloting skill surprised many competitors who were under the impression that British combat fliers were invincible, while the Continentals had a very low standard of competition at this sport. Maybe so at one time, but this Dutch trio have shown their ability quite forcibly!*

## next month

Full details and results of the **Control Line World Championships** held at Helsinki, Finland in mid-July. Plans and feature on Jim Mannall's **Nimrod V** control line stunter - the design which won the Gold Trophy event at the Nationals, and which Jim is using at the World Champs. **Aircraft Described, Latest Engine News, Flying Scale Column**, plus all the regular features in the September issue of *AeroModeller* - on sale August 18th.





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Price of admission at the door will be 30p adult, 15p child. Reduced admission charges for pre-booking as under: Single and small number pre-booking tickets: Adult 25p; Child 12½p. Parties of more than 10: Adult 20p; Child 10p. Teachers i/c parties free – one per 10 in party.

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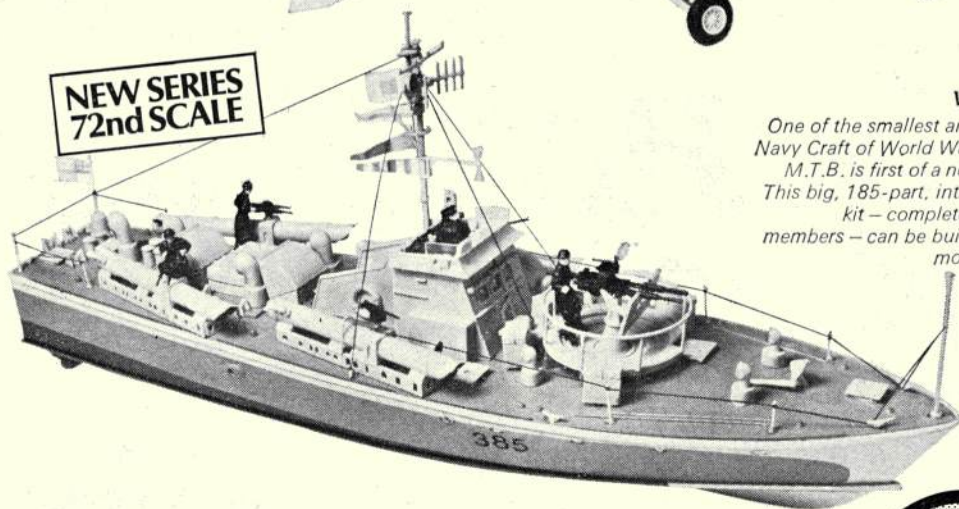
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KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS



**A** "Adlerangriff", the German 'attack of the Eagles'. Planned date Tuesday, August 13th 1940. Intention: to crush once and for all the vastly outnumbered Royal Air Force and so 'soften up' Britain for 'Operation Sea Lion', Hitler's planned invasion of England. The invasion that never was.

Up to this time Göring's much vaunted Luftwaffe had had an easy time of it. In Poland and in France, most of the outnumbered aircraft had been destroyed on the ground before the Blitzkrieg attack on the cities began. The British army had lost all its heavy equipment at Dunkirk, and the R.A.F. had lost more planes – and more pilots – than the country could afford.

So, on August 13th, with the codeword Adler Tag – 'Eagle Day' – the German attack was launched. At dawn, 84 Dorniers took the air under command of Oberst Johannes Fink. Yet in sight of the English coastline, over Cap Blanc Nez, just South of Calais, the Dorniers – promised clear skies – were met by rising banks of cloud. When the escorting Messerschmitt Bf 110 of fighter group commander Joachim Huth finally appeared, it dived repeatedly past the nose of Fink's Dornier. Fink took this as telling him that the fighters were with him. But this was not the case. The fighter escort was, in fact, returning. *The Eagle Day attack had been postponed until 2 p.m.* So the Dorniers, one key radio out of action, kept on, heading for Eastchurch airfield and Sheerness, Kent.

The British too had their problems. Because of a surprise raid on the previous day by Bf 110 long-range fighters unexpectedly fitted with bombs, Ventnor radar on the Isle of Wight was out of action for weeks and radar installations were damaged at Dover, Rye and Pevensey.

On this occasion little warning was given, and aircraft were still lined wingtip to wingtip on the ground at Eastchurch when Fink's Dorniers arrived. The attack was on. Spitfires of the R.A.F.'s 74 Squadron, Hornchurch, fell on the masses – and unescorted – Dorniers from the rear, but the leaders escaped, and their bombs rained on Eastchurch airfield, smashing the operations block, killing and wounding nearly 40 personnel and writing off five grounded Blenheims. Yet the field was operational again within hours as a result of superhuman effort.

The real 'attack of the Eagles' began in the afternoon, as the Luftflotte groups 2 and 3 arrived over England between 3.45 and 5 p.m., aimed towards Portland, Southampton, Kent and the Thames Estuary. Forewarned by the earlier false start, 11 Group of Fighter Command was ready to meet the threat.

The great battle was joined in the skies over Southern England. 13 Spitfires saw a formation of Junkers 87b bombers below them and dived on them out of the sun, breaking up the escorting Bf 109 fighters and sending at least one down in flames. Score 1 for the R.A.F. Attacked by the Spitfires of 609 Squadron, nine Stukas were destroyed in minutes. The remainder missed their target, the airfield at Middle Wallop, and did little damage to Andover airfield, not a key target.

During this long-awaited Eagle Day the Luftwaffe flew 1,485 sorties – their most active day ever to that date. R.A.F. losses in the air were 13 fighters against 45 German aircraft brought down. Two of Britain's airfields were damaged, but one supposed fighter station turned out in fact to be a Coastal Command air station, 'a major error by German reconnaissance'. The main aim of Eagle Day – to crush Britain's fighter strength – was not achieved.

Yet Eagle Day was decisive. It is possible that the R.A.F.'s victory on this day set the pattern for the remaining days of the Battle of Britain. In this battle, the Nazi Eagle had its wings clipped.

✱ It is only a fitting tribute to the Spitfires and Hurricanes that gained this great victory that Revell should make them in both 1/32nd scale and 1/72nd scale, so that they can be represented in everyone's WW11 model collection—an appropriate reminder of a great victory.

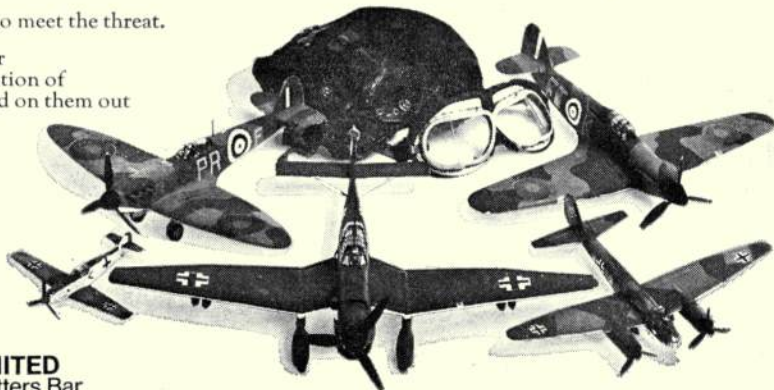
✱ Revell make two 1/32nd scale 'Stuka' models: one the standard Junkers 87b as used in the Battle of Britain, the other a Ju 87b with Hungarian markings, as used in later phases of the war in Europe. Also in the range is the 1/72nd scale Messerschmitt Bf 109E, arch-enemy of the R.A.F.'s Spitfires and Hurricanes. Plus 1/32nd scale Bf 109G 'Gustav' and 'Bf 109 F'.

✱ The Junkers Ju 88 A-4, the most versatile of German planes also comes from Revell's vast range of 1/72nd scale model kits.

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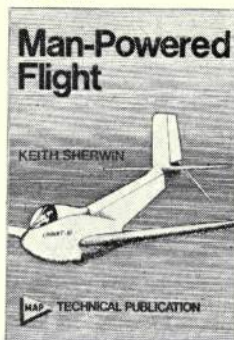
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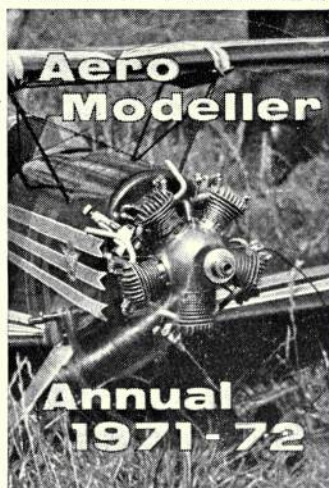


## 160

### AEROMODELLER ANNUAL 1971/2

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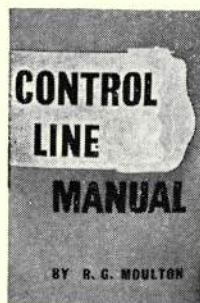
128 pages, size 8½ x 5½ in. Coloured cover (photo) bound boards. **75p**



## 7 CONTROL LINE MANUAL

Main chapter headings. Why Control Line?; Basic U-Control; Basic Mono-line; Basic Flight Control; Learning to Fly; Aerobatics; Speed; Team Racing; Combat; Carrier; Cargo and Endurance; Scale Models; Jet. The engine in Control Line; Towards the indestructible; Looking after the Lines; Variations on the Theme, plus appendix.

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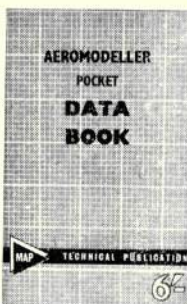


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## 156 CHALLENGE

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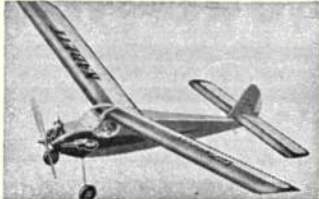
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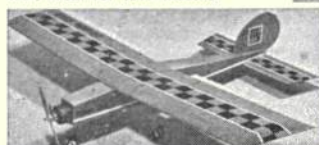
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**GUILLOW'S** We have now taken delivery of a further consignment of these popular balsa flying model kits. Forty modern/old time model planes ideally suited to free-flight or, in the case of the larger models, powered tether flying or simple radio control. All kits are complete with selected Hi-grade balsa, light plastic cowls, lavish insignia, clear canopies, etc., and are suitable for the beginner to the more advanced modeller. Every kit includes full instructions for assembly plus a 24-page booklet on how to build and fly a balsa model kit. **Send S.A.E. for free illustrated leaflet.**

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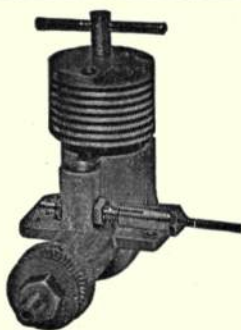
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There are cash prizes for the best models produced every three months both senior and junior. Finally, the supreme modeller at the end of the year will be awarded a further cash prize of £250 and the handsome Bic Championship Trophy.

**If you have a creative flair and a little imagination - prove it!**



**Bic**

Regd. Trade Mark

model making competition





## Model Making Competition

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make sure they are genuine Bic Crystal Medium  
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### RULES

- 1 The participants of the Bic Model Making Competition will be judged on their originality and technical model-making expertise.
- 2 The competition will be divided into two parts:  
**Junior:** Participants, either sex, under the age of 16 at time of entry. Within this group no heat or flame technique for moulding may be used, but any other form of adhesion may be utilized.  
**Senior:** Participants, either sex, over 16. Within this group, any form of adhesion is accepted. Heat to bend or shape the pens may be used.
- 3 Entries for the competition must be accompanied by the official entry form below.
- 4 Any number of BIC Ballpen barrels may be used. All models must be constructed utilising any part of BIC Crystal Fine (Yellow) and Medium (Transparent) ballpens.
- 5 BIC Crystal barrels may be cut to shape or size, but each barrel must clearly show the Registered trade name BIC (as imprinted on the barrel). Where models are moulded by heat, there must be at least 10 parts where the BIC Registered trade mark is clearly shown.
- 6 Accessories other than BIC parts may be used *only* to make the model functional or to infer final design, i.e., wheels, transfers, cotton, string, paper, etc.

### PRIZES

- 7 Prizes will be awarded to competitors who, in the opinion of the panel of judges, produce the most creative, unusual or skilful entry for each quarterly competition.
  - 8 Quarterly prizes will be awarded as follows:  
**Senior section—first prize £25,  
second prize £15,  
third prize £10,  
10 consolation prizes of £5 each.**  
**Junior section—first prize £15,  
second prize £10,  
third prize £5,  
10 consolation prizes of £2 each.**
  - 9 Models winning any of the three prizes in either Junior or Senior levels of any of the quarterly competitions will automatically be entered in the BIC National Championship Competition and the individual competitor whose model is selected by the judges to be of greatest merit will receive an additional cash prize of £250 together with the 1972 BIC Model-Making Trophy.
  - 10 Entrants should send their models to:  
**The BIC Model-Making Competition,  
c/o Montague House, 23 Woodside Road,  
Amersham, Bucks.**  
Should a model be considered delicate for conventional postage, then a photograph (colour or black and white) may be despatched beforehand. This will be used for preliminary judgement. Entry forms should be clearly attached to each model or photograph entered.
  - 11 No responsibility can be taken for the damage in transportation of any model received. Judges will, however, take into account such unfortunate circumstances and the model will still be eligible for participation within the contest.
  - 12 Should participants require a model returned, then return postage must be included by way of enclosing the appropriate stamps.
- RESULTS**
- 13 The 1972 competition will be held during 3-monthly periods and results will be announced during August 1972, November 1972, February 1973.
  - 14 Participants should ensure that their models are despatched to arrive by 1st June (for August judging), 1st September (for November judging) and 1st December (for February judging).
  - 15 Any model received after this date will not be eligible for the relevant Quarter but will qualify for the next Quarter's competition.
  - 16 Any prize winning model will become the property of Biro-Bic Ltd., and may be used in any way they think fit.
  - 17 Employees, relatives or direct associates of Biro-Bic Ltd., Model and Allied Publications Ltd., as well as their advertising agents will not be eligible for this competition.
  - 18 The decision of the Judges is final and no correspondence can be entered into in relation to prizes awarded or decisions made.

I understand and abide by the Rules

Name (BLOCK LETTERS PLEASE) \_\_\_\_\_

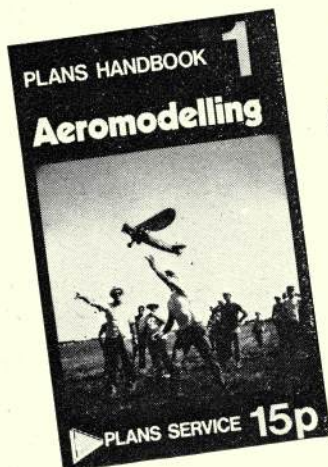
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A3

# PLANS HANDBOOKS



## Aeromodelling

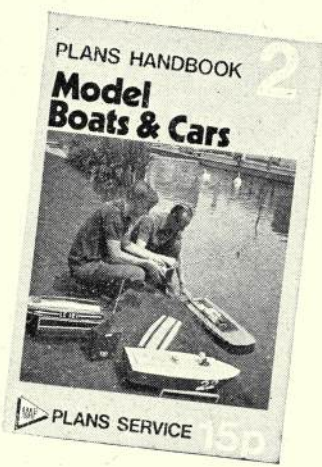
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## Model Engineering

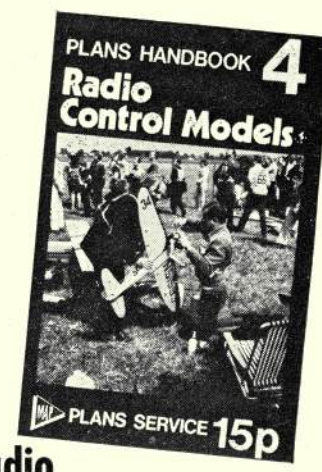
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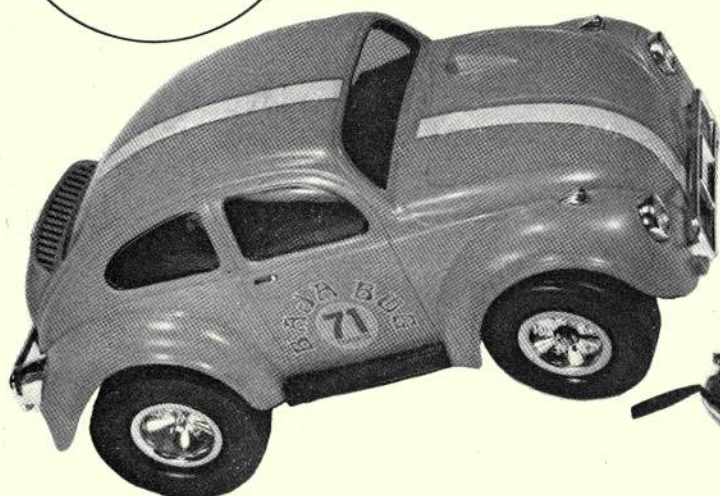
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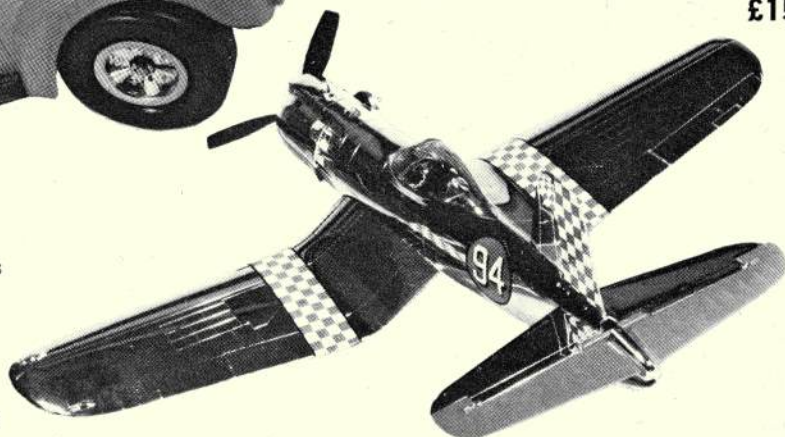
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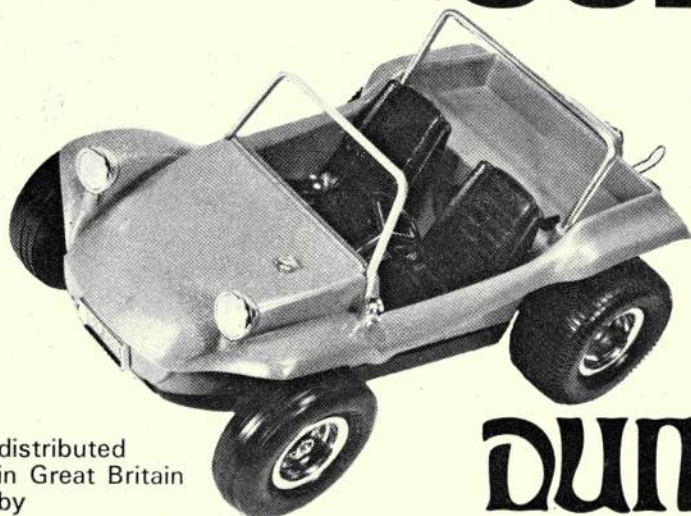
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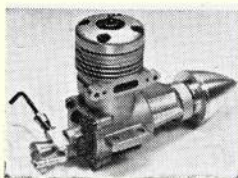
August's issue includes full-size plans for a simply-built rowing boat, ten inches long, which propels itself, by means of an electrically-driven oarsman and oars. Articles cover the Road Research Laboratory, pearls, inventions, paper making, stars, swans, matches, etc., plus the bridge, air news, stamps, Dinky Toy, photography series. Meccano models include a cross-country tracked truck, use of sprockets and chain, a 'walking tractor', mechanisms, club news, etc.

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# Heard at the HANGAR DOORS

**JOE BILGRI** will not be attending the forthcoming Indoor World Championships at Cardington, having relinquished his team position. His place will probably be taken by Sal Cannizzo, who will join Bud Romak and Merrick (Pete) Andrews in representing the United States under the watchful eye of team manager Bud Tenny. A great pity Joe cannot make the trip, as he is certainly one of the all-time greats (and characters) of the ultra-light modelling fraternity, and his absence will be sorely felt. Perhaps team places for World and International Championships are losing their status? Or is it just that people are no longer interested in travelling long distances, at considerable expense, to represent their country? As for the meeting itself, the prospects are quite rosy with at least 30 individual competitors from countries as far apart as Japan, Australia, Yugoslavia, Canada, Poland, U.S.A., Czechoslovakia, etc. Truly a *World Championship* meeting. **GRAND RAFFLE** held at the Nationals resulted in a net profit of £254 for the S.M.A.E. - a



Only two competitors entered the control-line Scale Team Trials at Cottesmore. Mick Reeves, the current World Champion, will defend his title with the same Zlin 526A, while he is joined by Mick Staples' Miles Magister - the model which won the Championship Cup at the '72 Model Engineer Exhibition.

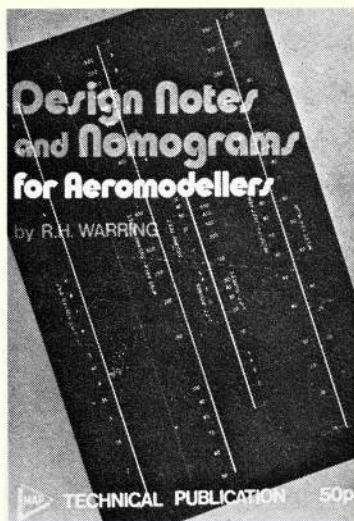
magnificent achievement, and a most welcome source of income in the face of a meeting which could so easily have been a financial disaster. First prize (a set of Horizon four-function proportional R/C equipment) went to R. Kitchen from Nottingham while consolation prizes went to: Mrs. D. Robinson, Ipswich; John Law, Glos.; M. Beck, Bristol; M. Straight, Worcs.; C. Williams, Leics.; Mrs. J. Fox, Somerset; Mr. Flaherty; B. J. Emms, Middx.; C. Chick, Glos.; R. Jarman, Oxford.

The Society's P.R.O., Ian Peacock, stated that he was happy to see that each of the lucky winners *really* wanted their prize - all items thus going to 'good homes' - while many thanks were expressed to the generous donors who made it all possible. These were: Horizon Systems, Hobby People, MicroMold, J. & M. Models (Andover), Bobs Models (Birmingham), J. & E. Davis (Birmingham), Thanet Models (Ramsgate), Bondaglass, R.C.M. & E., Radio Modeller, Rapidcraft Products (Andover),

An old favourite returns! 'Design Notes and Nomograms' contains some 56 pages of interesting data for the model designer with conversion scales, tabular facts and criteria plus the famous Nomographs which are so useful to serious-minded competition fliers. These charts enable design factors to be determined quickly - and all for just 50p (plus 5p postage) from Sales Dept., M.A.P. Ltd., 13-35 Bridge Street, Hemel Hempstead, Herts.



Ellesmere Cameras, Carl Roedling. **THE F.A.I. BRONZE MEDAL** is a very rare accolade, particularly for the modelling side of the *Federation Aeronautique Internationale*, and thus its award to our own F.A.I. delegate (and incidentally, Managing Editor of this publication), Ron Moulton, brings our heartiest congratulations. British Delegate to the C.I.A.M. (the sub-section of the F.A.I. dealing with aeromodelling affairs) since 1964, and its Technical Secretary for the past four years, he has been largely responsible for the complete revision of the *Sporting Code*, from preparing the final text to the finished printed product. Adding to this considerable expenditure of time and effort, all his organisational activities at many F.A.I. World Championship events, one realises the significance of the award.





a 54 in. wingspan  
semi-scale  
control line model  
with retracting  
undercarriage,  
designed specifically  
for display work  
by RON  
TRUELOVE

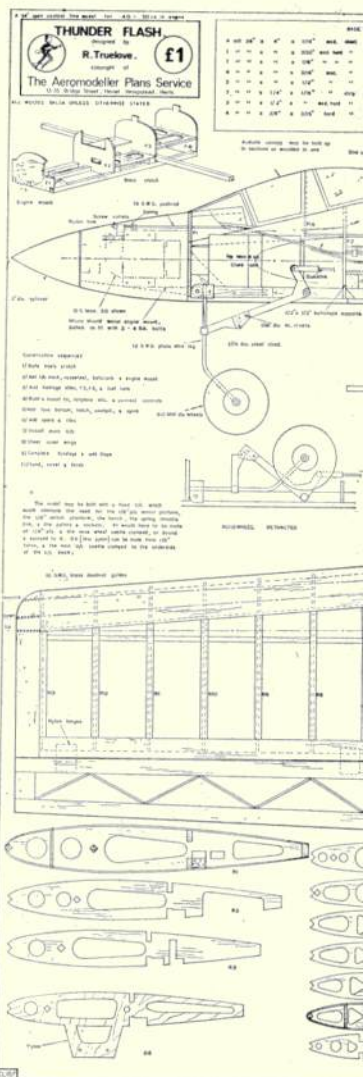
DURING THE 1971 display season the *Valkyries Model Club* control line team were beginning to achieve some degree of professionalism, being the main attraction at many a local fête or sports event. Undoubtedly, the most popular event of the display was the 'grand finale', in which a model executed a dummy attack on a target which was electronically blown to smithereens! For the 1972 season it was decided to improve the buildings and models that comprise the target, and at the same time I realised that my attacking model, a suitably painted A.P.S. *Spacehound*, was beginning to look a little too battle-scarred, so the decision was made to build a new model especially for the job. A scale looking, fairly large, semi-aerobatic aircraft with throttle, retractable undercarriage and provision for carrying or dropping various underwing stores (i.e. bombs, rockets, etc.) was needed.

From four similar original designs evolved the PSA10 (Pyrotechnics Strike Aircraft), a 54 in. span, jet-looking model powered by an OS Max 50 R/C glowmotor. It features a wide, spacious fuselage (to accommodate the undercarriage unit with ease), a double sweep (Phantom style) leading edge, elevator linked to full flaps, tricycle undercarriage with large wheels (for rough ground take-offs and landings) plus pylons with electronic sockets – power for which passes on full down elevator. A 'Roberts' system works the throttle and undercarriage, the latter operated by a PP6 battery, access being gained via a



A tug on the third-line, and the wheels are pulled up into the cavernous underside of this attractive model. The retract system is very reliable, yet needs no tools other than hacksaw, file, drill and patience to fabricate.

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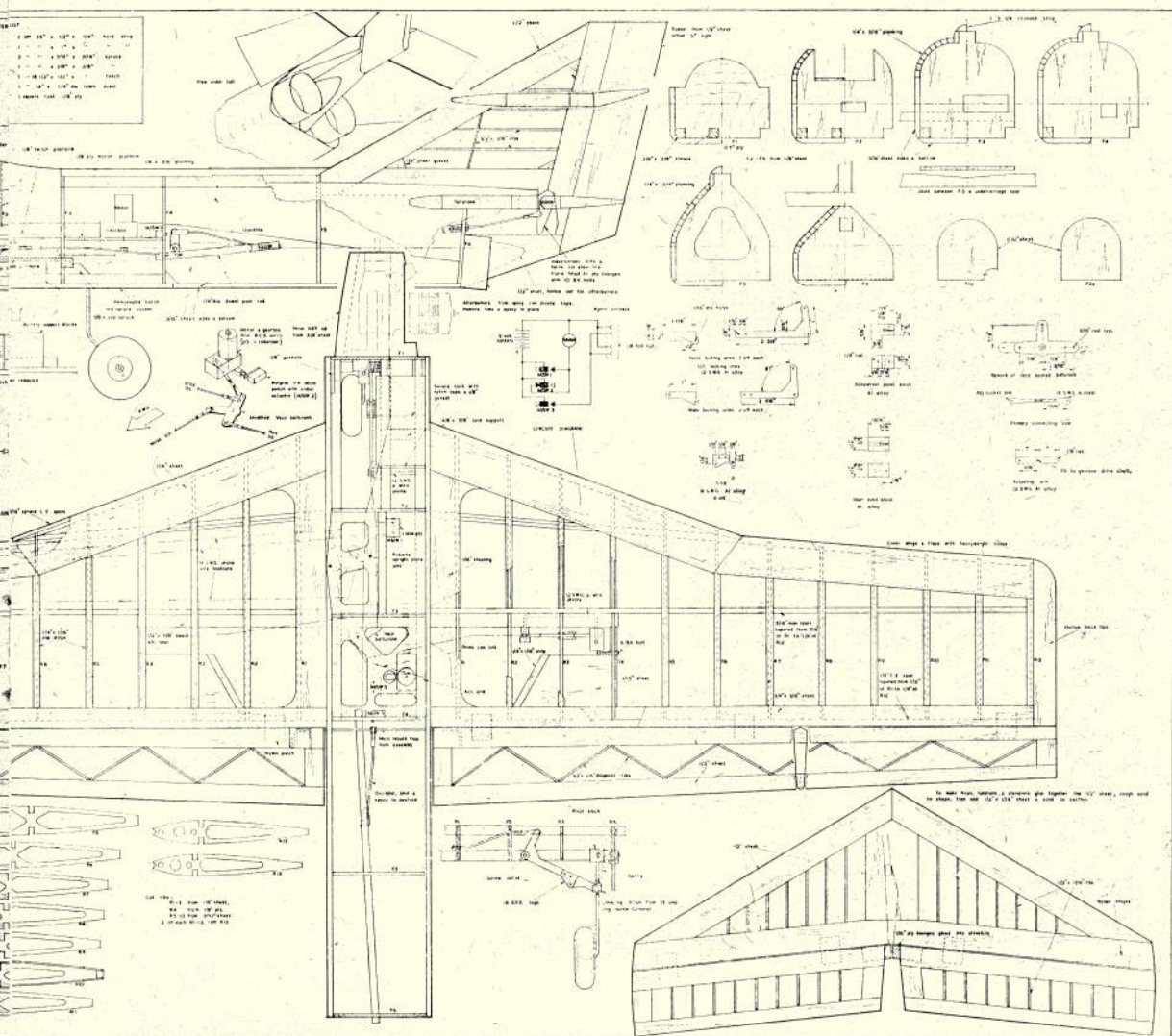


large inspection hatch under the fuselage. The retraction unit is made completely from odds and ends clamped and bolted together, making it cheap, light and easily repairable. It is a fairly simple sawing, filing and drilling job, well within the capability of the model workshop.

The first item to be dealt with is the undercarriage unit, and if any items are replaced or modified from the original I strongly recommend that the unit is put together in a test rig before the model is built. The main purpose of such a rig is to determine the holes required in the formers and ribs to take the push rods, etc. The rig structure is scrapped eventually, but it eliminates a lot of possible mistakes.

The part of the mechanism most likely to vary is the motor and gearbox which tend to be a 'whatever you can lay your hands on' item. The original unit was an old R.C.S. reed servo from which the motor and gearbox were carefully extracted and then mounted on a plywood platform, with the output drive shaft protruding through the other side. An actuating arm was then cut from 12 swg aluminium alloy and tailor-made to fit squarely on the end of the drive shaft, making sure that each half of the arm had an identical length. Built into most gearboxes is an

anti-overload slipping device which should be pinned or locked up - in this case the output gear was only a press fit on to its mating shaft, and it was found necessary to insert a steel pin to lock it. The gearbox was mounted with an 8BA bolt and a small self-tapping screw. One corner of the 'meaty' end of the gearbox had a  $\frac{3}{8}$  in. dia. hole drilled carefully through to take the bolt and the self-tapping screw secured to the other corner. One of the two micro switches is now required, being mounted so that it is switched on by the actuating arm, swinging round to point across the fuselage, and suitably packed to bring it out to the same height. The position and mounting will depend on the switch and actuator used. I used a 'Burgess' V4 with a home-made actuator which required  $\frac{3}{8}$  in. packing and was mounted with two 8BA bolts. A slightly modified Veco bushed bellcrank is then mounted on a 4BA bolt to the ply platform and is connected to the actuating arm's 10BA bolt to the adjustable primary connecting links. Three adjustable quick links then lead-off from the bellcrank to the undercarriage locking arms. Basically the nose and main undercarriage assembly are all the same, having 12 swg piano wire pivots for legs and locking arms fitted into tight holes in the  $\frac{3}{8}$  in. square spruce and

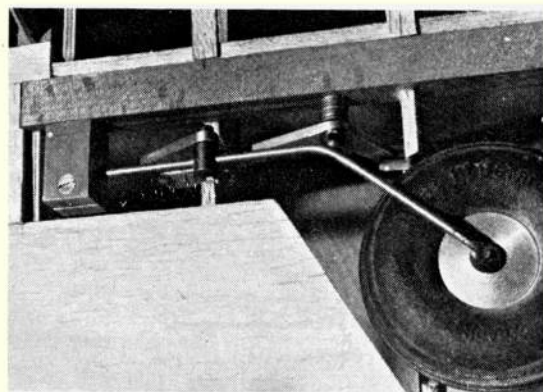
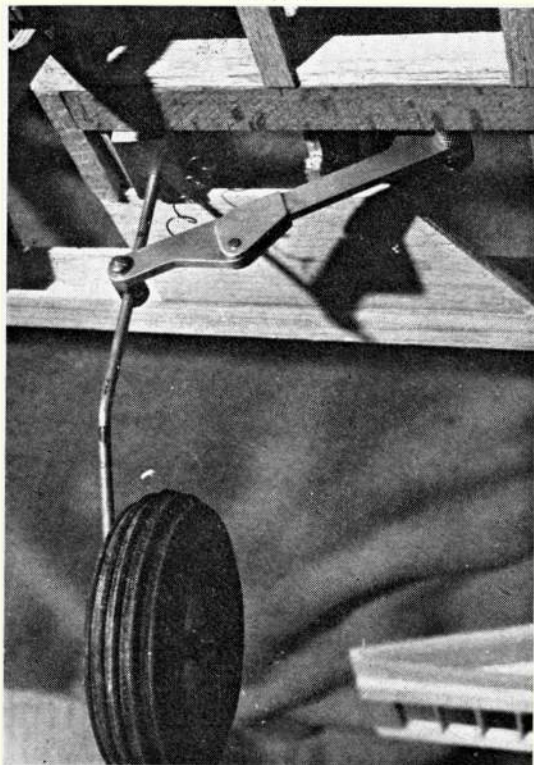




$\frac{1}{8}$  in. x  $\frac{1}{2}$  in. beech structure. The pivot blocks are cut, filed and drilled pieces of aluminium alloy into which the 12 swg piano wire legs are clamped with a 6BA counter-sunk bolt. The top of the legs need to be rough knurled to prevent them turning in the blocks. The locking arm assemblies are 12 swg aluminium alloy with two 16 swg aluminium alloy lugs secured to each of the long arms by two  $\frac{1}{8}$  in. dia. aluminium rivets and pivoted to the shorter arms by  $\frac{1}{8}$  in. steel rivets. A clamping block is then made from a spare screw terminal off a 13 amp plug and used to connect the short locking arm to the undercarriage leg. Balance springs should then be added as shown, and should be capable of supporting the undercarriage half way up its travel.

The system is operated from the throttle linkage which is connected to the inner hole on the carburettor throttle arm and the throttle can then be opened and closed using only half the movement of the bellcrank. The remaining bellcrank movement is used via the spring device at the throttles to operate the undercarriage micro switch (M/SW1). This allows the throttle to be opened and closed without actuating the undercarriage.

Commence the construction of the fuselage by cutting the formers, F1 from  $\frac{1}{8}$  in. ply and F2-F6 from  $\frac{1}{8}$  in. hard balsa - put F5 and F6 to one side for the time being. Cut the  $\frac{1}{8}$  in. square spruce and  $\frac{1}{8}$  in. x  $\frac{1}{2}$  in. beech members to length and drill the  $\frac{1}{8}$  in. dia. holes for the undercarriage pivot rods. Mark the former positions on the  $\frac{1}{8}$  in. square spruce and securely epoxy the spruce packers behind the F3 position, before epoxying the beech members in place, together with the main gear in the lowered position shows the simple operating arm with the knee lock in operation. The light spring should be capable of supporting the undercarriage at mid-travel.



Main gear retracted reveals the washers used as packing between the bearer and operating arm, enabling precise adjustment to be made as no undue friction can be tolerated. Well-doors were not used on the original model due to operating from grassed areas, which can be unkind to such refinements.

F1-F4. Add two  $\frac{1}{8}$  in. gussets to the rear of F1 and then the small  $\frac{1}{8}$  in. square balsa tank support between the centre and starboard spruce members. Cut control bellcrank platform from  $\frac{1}{8}$  in. ply and mount bellcrank assembly on top, secured with two 6BA bolts, after cutting a groove for the sliding bush. Securely glue  $\frac{1}{8}$  in. square balsa bellcrank supports and bellcrank platform into structure between F2 and F3. Also cut  $\frac{1}{8}$  in. ply motor platform (modify if necessary) and install between F3 and F4. Add  $\frac{1}{8}$  in. balsa M/SW platform between F2 and F3. The aluminium engine mount is drilled and tapped to sink the engine, and is then bolted to the front of F1 (which has been thoroughly fuelproofed) with three 4BA bolts and nuts being securely epoxied to the rear of F1. Bend up the 16 swg main throttle linkage, fixing a screw collet at one end to contact the M/SW (screw pointing downward to be accessible through the battery hatch), and the spring and link assembly at the throttle end. A quick-link is then connected to the throttle arm of the 'Roberts' bellcrank and bound and soldered to the main 16 swg wire arm. The microswitch is then fitted to balsa platform to contact the collet on the throttle linkage - I used a V4 with a roller actuator, attached with two 8BA bolts. A  $\frac{1}{8}$  in. x  $\frac{1}{2}$  in. piece of 1 mm. ply is put on top of the balsa platform to stop the nuts and washers drawing into the wood. The undercarriage motor and gearbox, actuator arm, primary connecting link, bellcrank and M/SW should now be fitted to the  $\frac{1}{8}$  in. ply platform. The system should then be wired up to the circuit diagram and connected to a PP6 battery, which is securely taped up after removing the case. Test the system by moving the 'Roberts' bellcrank throttle arm from the extreme throttle open position, through the closed position until the collet actuates M/SW1. The switch is wired up in the N.O. state (i.e. press for on) and starts the motor, turning the actuating arm. Immediately the actuating arm moves off M/SW2, which is wired N.C. (press for off), it will keep the motor going until half a revolution of the arm, later it is actuated and switches itself off. The nosewheel assembly should now be fitted in, connected to the undercarriage bellcrank via an adjustable quick-link, set up and tested.

The fuselage sides are now cut from  $\frac{1}{8}$  in. sheet and glued securely to the structure, adding F5 and F6 (note F6 leans back 5°), and while this is drying the fuel tank is fitted in place, secured by a  $\frac{1}{8}$  in. sheet



gusset at the rear and  $\frac{1}{2}$  in. wide nylon tape epoxied to the centre spruce member and top of fuselage side. The fin, tailplane, rudder and elevators are now built up from  $\frac{1}{2}$  in. sheet balsa and when dry is shaped, rough sanded and glued into the fuselage. Each elevator is attached by two nylon hinges and has a  $1\frac{1}{2}$  in. x  $\frac{1}{2}$  x  $\frac{1}{8}$  in. ply tongue slotted into the forward inner corners to take the nylon horns – one left and one right handed. The flap horn assembly is now positioned in the fuselage sides and with the bellcrank and elevators all locked at neutral, is linked up. The linkage consists of a 12 in. length of  $\frac{1}{4}$  in. dia. dowel having three adjustable wire links and one mating socket type adjustable link, bound and epoxied into position. Unlock controls and adjust as necessary.

The inspection hatch for the underside of the fuselage can be made either from one piece of  $\frac{1}{8}$  in. sheet or built up from 1 x  $\frac{1}{8}$  in. The three blocks are positioned to encase the battery when the hatch is clamped down. The remaining  $\frac{1}{8}$  in. sheet may be glued to the underside of the fuselage, clearing the nosewheel and leaving a  $\frac{1}{8}$  in. gap around the hatch. The cockpit floors, ledges and bulkheads may now be glued into place and the pilot plus cockpit details added and painted if required.

The spine is now glued into position, being of two  $\frac{1}{8}$  in. balsa strips and a rounded-off  $\frac{1}{4}$  in. strip, going from F3 to the fin. Three lengths of 18 swg piano wire are cut for the control leadouts, and are bent and soldered up, with two pieces of 12 swg brass tube, to the bellcrank. Cut and bend the 12 swg main undercarriage pivot wires and epoxy into grooves in the front of the  $\frac{1}{2}$  in. x  $\frac{1}{8}$  in. beech undercarriage spar. File front face flush when set.

Cut the main spars and tailplane spars to length, marking on them the position of the ribs. Lay the fuselage on a flat board and securely glue in the three spars – ensuring they are in line with each other, and square to the fuselage. Cut out all the ribs and glue securely to spars, passing the leadout wires through all the port ribs. Glue in the long leading edge spars from the wing tips to the fuselage, the short spars across the front of R1-R6, and the pieces of  $\frac{1}{8}$  in. sheet which will go to make the rear of 'D' section. The fuselage can now be planked with balsa.

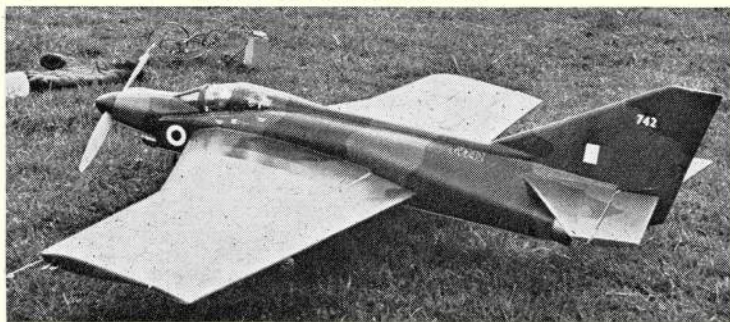
Assemble the main undercarriage units (one RH, one LH) on to the wire pivots, securing the pivot blocks with a 6BA bolt through R4 and the locking arms with a screw collet. Attach a suitable spring from the locking arm clamping blocks, halfway down the legs to the top of R4, again balancing the wheel to settle halfway up its travel. Connect the locking arms to the undercarriage bellcrank with adjustable links and set up as necessary. Test the whole undercarriage throttle and control system thoroughly before continuing.

Clean up the structure, and add the  $\frac{1}{8}$  in. sheets to

the top and bottom of the wings, together with the capping strips. Cut and hollow out the tip blocks, then epoxy three brass guide tubes in the port tip, to take the leadout wire ends, making the throttle wire  $2\frac{1}{2}$  in. longer than the up and down lines (throttle wire in open position). The nose is then constructed from chunks of  $\frac{1}{8}$  in. sheet thoroughly fuelproofed inside and sanded to blend into the spinner shape. Rough shape and glue the rear canopy fairing in place and construct the windscreen from ply and acetate sheet. The original model had a two-piece built-up canopy but a one-piece bubble type may be moulded if so desired.  $\frac{1}{2}$  in. x  $\frac{1}{8}$  in. sheet strips can now be glued to the fin, tailplane and elevators to form their ribs. The flaps are constructed by gluing together strips of  $\frac{1}{2}$  in. sheet to form leading edge, and edges, and a strip of  $\frac{1}{2}$  in. to form the trailing edge. Sand to shape, then add the  $\frac{1}{2}$  in. x  $\frac{1}{8}$  in. diagonal ribs, which are also sanded to section. The flaps are carefully mounted with three nylon hinges and lined up with the elevators, when connected to the flap horn assembly. Any necessary adjustments should now be made to the elevator linkage and the tail fillet can then be glued in place under the tailplane. The afterburners, made from spray can plastic tops with their ribs removed, can now be epoxied in place.

### Covering and Finishing

The fuselage is covered with lightweight tissue, doped on after first applying one coat to the structure. Three or four further coats are then applied until a satisfactory finish is achieved. The wings, flaps, fin, tailplane and elevators (and inspection hatch, if applicable) are covered with heavyweight tissue and given three or four coats of dope. The original model was given standard RAF finish, i.e. undersides *Duck Egg Blue*, top surfaces, fuselage, sides, fin and rudder *Dark Green* and a *Dark Admiralty Grey* camouflage pattern. 4 in. dia. roundels were applied to top and bottom of the wings and 2 in. dia. on the dummy intakes just forward of the wing roots. A  $2\frac{1}{2}$  in. long by 1 in. deep fin flash and  $\frac{1}{2}$  in. white numbers (742) were applied to either side of the fin. Two serial numbers (XV742) of 3 in. black letters were applied under the wings – port reading from front, starboard from the rear, and the same serial from  $\frac{1}{2}$  in. letters were applied to the top of the fuselage just forward of the fin. Two ejector seat warning signs were applied either side of the canopy, just above the wing. The afterburners were painted a coppery colour on the outside and black on the inside, while the inside of the wheel wells were painted a chrome etch green. The model was then fuelproofed with RipMax Tufkote, thinned with an equal amount of cellulose thinners.



Attractive fighter-lines really get the public interested in club displays – particularly as this model is used for making dummy 'bombing' raids on cardboard mock-ups of airfields, etc., which are electrically ignited to give maximum effect. A real crowd pleaser, and a good finale for any flying display.



# GADGET REVIEW

Readers'  
hints and tips

**GAINING ACCESS** to the glow plug in a fully cowled installation, such as frequently occurs in scale models, is often a problem. Reader Graham Smith, from Sutton Coldfield, has a neat solution which merely requires an unobtrusive small hole in the cowl. The device (illustrated in **Sketch A**) was designed when it was discovered that a press-stud, as used in dressmaking, fitted perfectly on to a Fireball glow plug. The quick-fit glow connection comprises of scrap brass tubing, a discarded felt pen, some piano wire and plastic tubing, while construction itself is simple. First solder a press-stud to one end of the brass tube, then solder a piece of electric flex to the other end. Cover with the plastic tube. Solder a piece of piano wire to the second (shorter) piece of brass tube and again solder on a piece of flex, then slide this unit on to the plastic tube and epoxy together. Cut down the discarded felt pen body and slide over the assembled unit and again epoxy together. Connect the two leads to the battery and the tool is complete. Main points to watch are that the piano wire earth connection does not foul the press-stud, and that the plastic tube runs right down to the bottom of the brass tube to provide adequate insulation.

The most prolific contributor to these columns, Trevor Faulkner, now has an idea to aid quick and accurate building and one which has proved invaluable where, on a prototype design, components have been subjected to 'shock fractures' before the model has been completely trimmed. The upper drawing in **Sketch B** shows construction for increased strength and ease of profiling. The method used is to build up a blank as shown, using spruce strips of the minimum section applicable, and using a non-shrinking adhesive such as P.V.A. These hard strips act as sanding guides when sanding the section to shape and maintain an accurate profile as well as adding longitudinal strength. An extension of this idea is shown in the lower drawing, where a tapered section is required. Just taper the spruce spars to the required depth, position at leading and trailing edges as well as sandwiching one at the high point. This then provides controlled shaping without recourse to pencil markings and 'guestimation' of the required section change.

Find those commercial nylon elevator horns rather expensive? G. Parsons of Dowend, Bristol, cuts his own from a length of *Swish* type curtain rail and the resulting item is certainly unbreakable. A  $\frac{1}{8}$  in. ply plate is used on the underside of the control surface to prevent the retaining bolts from pulling through. See **Sketch C**. A 'de-luxe' way of retaining the pennant on a glider tow line is shown in **Sketch D**. Shrewsbury enthusiast D. A. Bloom found that tying knots in the tow line to retain the pennant encouraged breakages, so he now sews the pennant with a simple straight-through stitch and includes a small strip of rubber at each end of the seam. This produces sufficient friction to grip the line.

Brian Hunt of Wolverhampton likes to see realism in the cockpits of his models and uses plastic-headed modelling pins to achieve this. **Sketch E** shows how gummed paper is wrapped around the shafts of these

pins which are then bent and inserted into balsa or ply quadrant to resemble push controls as throttles, etc. Simple, but effective – and an idea which can help to greatly improve the bare cockpits of many models. Team racing enthusiast Paul Acton from Hazel Cross, Cheshire, has a home-built version of the popular pressure-refuelling system, made entirely from spare parts (**Sketch F**). Basis is an empty half-pint fuel can, to which a cycle valve is securely soldered at the top and a squeeze bulb from an old hand-operated spray bottle fits over this valve and may be wired for extra security. A brass tube is then soldered at the base, to which a length of fuel tubing is fitted. The end of a Valvespout bottle is then inverted into the other end of this tube. To use, *half* fill the can with fuel and attach to the forearm with an elastic band, then build up pressure with the hand bulb. The cycle valve will prevent the air from escaping, as will the Valve-spout fitting.

Last sketch drawn opposite (**G**) is again a Faulkner 'brainwave'. Blocks of 12 nylon insulated cable connectors may be bought very cheaply, and these have good quality threaded inserts moulded in. Cut off one of these blocks, then cement (after roughening base) and bind to a balsa pushrod. A piece of piano wire from the control surface or servo passes through the connector block and is then clamped in position by the two terminal screws – thus providing simple and reliable adjustment.

## Not Illustrated

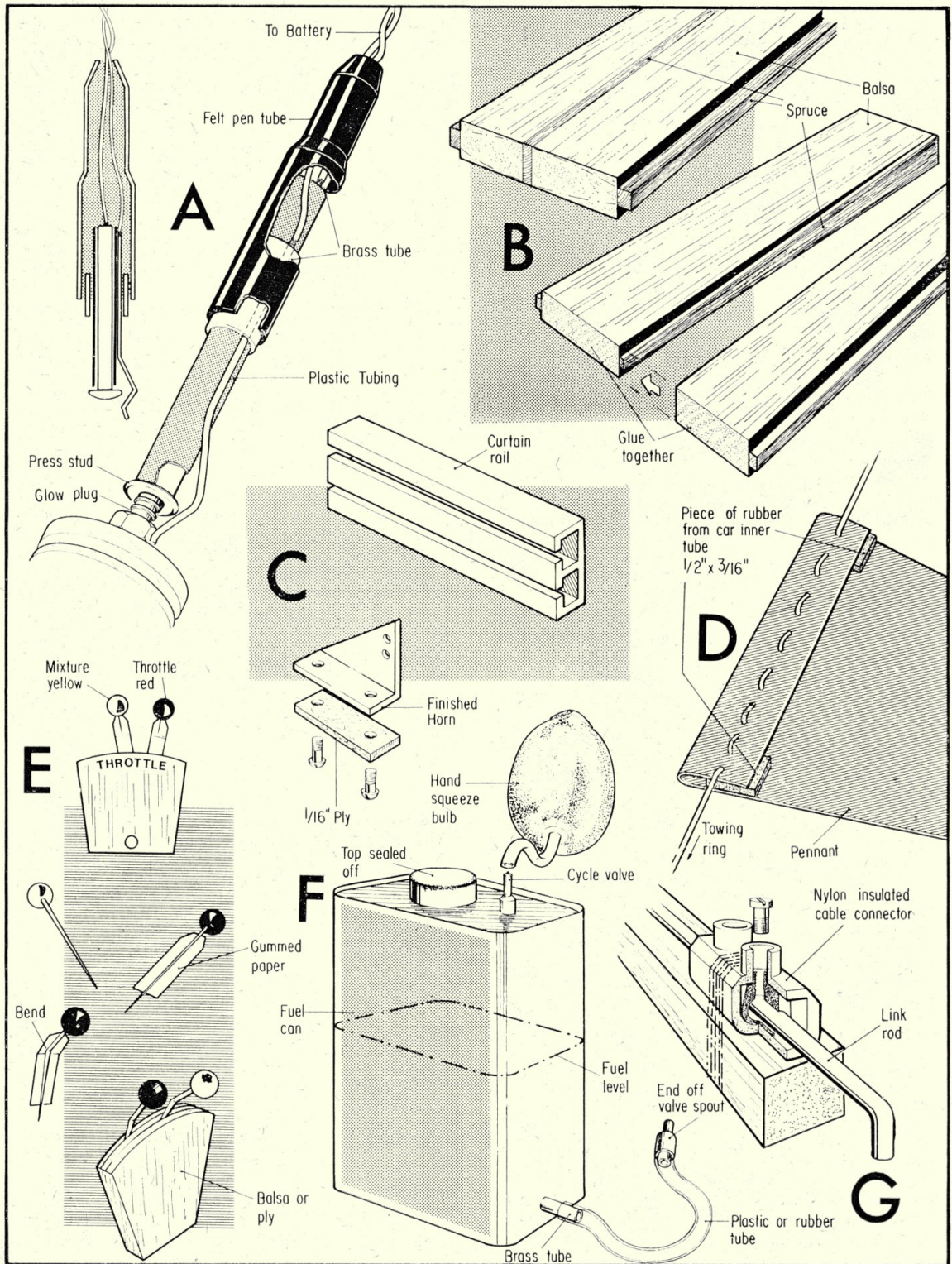
Cutting rubber bands from inner tubes is a well-known dodge, but Trevor Faulkner finds that cutting them from the wrist area of discarded rubber gloves is much easier, and the resulting bands are ideal for retaining wings, etc.

Ever finished doping a wing only to find that you have no thinners with which to clean the brush? T. Child of Tonbridge, Kent has come across this problem many times before, but has a simple remedy to save the brush. Just shake some Vim or Ajax household cleaner into the palm of your hand, dip the brush in some water then thoroughly 'work' it into the Vim. When a thick paste results, rinse well in warm water then dry with a clean cloth. Result, a brush 'good as new' ready for action once again.

Junior reader Colin Fretwell from Lichfield, Staffordshire, finds that Polyfilla, a product with which all 'Do-it-yourselfers' will be well acquainted, makes an ideal filler for covering up holes and dents in balsa wood, gaps in sheeting, etc. and all other 'repair' work necessary before the finish is applied. Polyfilla will not set 'rock-hard' and is easily sanded down with the surrounding balsa wood.

Dressing small dolls to resemble pilots can be a tricky job, but not for Bolton's Mr. D. Potter who has 'discovered' a new medical product called *Desa Aqua*, designed for covering wounds. This is in the form of a thin sponge which will only adhere to itself and when wrapped around the doll, moulds itself to the correct shape. When suitably painted it closely resembles leather – just the job for those World War I biplanes. Mr. Potter also adds that the lids from Aerosol spray cans make excellent paint or glass-fibre resin mixing pots.









WHEN I FIRST attended the British Nationals as a spectator in 1959 it was clear where the spectator appeal lay; a crowd nearly three deep surrounded the Gold Trophy circle to watch such names as Brown, Horrocks and Eifflander perform the then-new A.M.A. schedule. What a novelty a square eight was in those days!

Multi Radio, in the form of reed systems was with us and they too attracted a comparable crowd – what a contrast to recent times when public attendance at the 'Nats' has increased enormously, attracted by the spectacle that modern proportional radio control can provide. Sadly, despite this vast influx of potential aeromodellers, fewer people seem to reach the control-line and free-flight areas (particularly now that the 'Split Nationals' precedent has been established). How has this affected the number of active stunt fliers? I believe that we have as many competitors now as ten years ago – when I first entered the Nationals there was a group of about six fliers who could be expected to top any competition. A similar situation may be said to exist today, but the last ten years have nevertheless seen considerable change.

First the personalities; Stunt has lost many leading fliers over the years, radio control and the 'brain drain' being among the culprits. One ex-flier in particular has performed a considerable amount of judging recently – perhaps few people realise how important it is to have a judge readily available. Stunt judges are never plentiful, but the really lean years were 1965 to '67, when often no judges were to be found and entries consequently dropped to two or three on occasions. Fortunately, there has always been a nucleus of active fliers and from 1967 interest and entries have increased. In 1970 entries averaged just over eleven, but last year saw this reduced to eight, although this may be due to the greater number of events in '71 – twenty compared with thirteen in the previous year. Stunt then, is as popular as it ever was and with one or two promising newcomers last year the prospects for the immediate future are bright.

## Stunt Model Developments

a personal view  
by JIM MANNALL

The author and his Nimrod 3, with which he won the 1970 Nationals – in rather better weather than that recently experienced, where Jim again placed first, this time using a Nimrod 4a, preserving his latest machine for the forthcoming World Champs.

Let us now examine the models used. The majority of people who have recently started flying competition stunt began with a well-established design or kit. Perhaps the most surprising aspect is the absence of *Thunderbirds* even though many people use American designs. Apart from the *Crusader*, which probably equals the *Nobler* for popularity, there is a sad lack of British designs. However, for the past two seasons I have been flying my own *Nimrod* design and last year Steve Blake's *Starmaker* appeared.

These two designs really reflect the old *Thunderbird* versus *Nobler* rivalry, although stunt models have changed somewhat since the former appeared, as I hope to show in the following discussion. The ideas are based on personal experience and observations, and I make no apology for having my thesis largely based on the *Nimrod* design.

First let us compare it with the *Starmaker* in respect to size and weight. The latter with a wing area of approximately 550 sq. in. and weighing 42 oz. compares quite closely with a *Nobler*. The *Nimrod* on the other hand has 620 sq. in. wing area and to achieve the same wing loading as the *Starmaker* requires a weight of 47 oz. This was reached in *Nimrod*, Mk. III. It is interesting to compare these figures with the 610 sq. in. *Thunderbird* at 38 oz! In general then, the lighter the better. As for the maximum weights at which good performance can be obtained, I have flown models weighing 52 oz. very successfully, but for top performance from a 620 sq. in. model, 50 oz. should be the maximum. Very light models have their disadvantages too, especially in windy conditions or when the engine stops in the wrong place. There is something to be said for a model with enough momentum to carry it round a half loop after the engine has cut. Similarly a model of average weight is less disturbed when flying through turbulence than one which is exceptionally light. Problems of ultra light models rarely arise in practice, however, the difficulty is usually in keeping the weight down to acceptable limits. As an example of what can be done by careful wood selection and



by developing a design through several models, compare *Nimrod 5*, just completed at 44 oz., with *Nimrod 2* at 54 oz.!

Remembering the *Thunderbird*, one would expect a large area stunter to fly relatively slowly and this was true of *Nimrod 2*, although it was rather too heavy for very slow flying. However, in the past two or three years there has been a trend away from very slow-flying models—I noticed this very much at the 1969 Criterium of Aces at Genk, where many people used a faster and sharper style of flying. The wing section on *Nimrod 2* has a thickness/chord ratio of 20 per cent. In order to increase the flying speed on later models this was reduced to 17.5 per cent.

The trend away from slow flying has been followed almost universally in this country. Whether or not this is desirable is open to argument, but it is evident that only experienced fliers can produce a reasonable schedule from a slow model in wind. Today's models are less sensitive to weather conditions and for that reason alone must be considered better.

Increasing the flying speed produces problems with the small radius turns in the square manoeuvres—with some designs the effort required is tremendous, as anyone who has flown a *Crusader* in wind will know. For a faster-flying model then, a very powerful control system is needed—this can be achieved by using a longer tail moment to increase the effectiveness of the elevators. Traditionally, stunt models have short tail moments to increase manoeuvrability. However, it should be remembered that the flaps produce a turning moment in the opposite sense to the elevators, and this must be overcome by the elevators before the model can be made to manoeuvre. Pete Russell commented on this fact in the 1958 *Aeromodeller Annual*. Furthermore, careful observation of a stunter in flight shows that full control movement is rarely used, and so increasing the tail moment is unlikely to impair the performance. The tail moment on *Nimrod 2* is 2 in. longer than its predecessor, having been lengthened to reduce a tendency to 'kick' in square corners. No further increases have proved necessary on later versions and the geometry of Mk. II has been retained. Another bonus of the longer tail is the good, level flight characteristics obtained. Some models are notoriously difficult to fly level, having a tendency to 'wander' up and down slightly—no doubt the longer tail helps provide this additional stability.

Josef Gabris' *Super Master* is a classic example of a simple, functional model which at the same time is certainly attractive. Plans of this design are available from the Aero Modeller Plans Service as Plan No. CL/930, price 50p plus 5p postage.



The grand-daddy of them all! Bob Palmer's original *Thunderbird*—this is the model he took to South Africa in 1957—which introduced many of today's techniques to the stunt flier.

Comment on the effect of increased flap movement is perhaps opportune: an increase in flap movement relative to elevator movement has a smoothing effect on the model's performance, i.e. manoeuvrability is reduced. I use a 3:2 ratio on the flap and elevator horn length, which results in 30° flap and 50° elevator movement (these figures are not the maximum travel available).

Due to the thinner wing and lower weight of *Nimrod 3* this model flies noticeably faster than Mk. II but is very quick to respond even under windy conditions. Very sharp, square corners are possible from high speed and there is virtually no tendency to 'kick' on exit from a square.

The relatively long rear fuselage provided plenty of side area behind the centre of gravity, and this helps to reduce the build-up of speed and line tension during consecutive manoeuvres in wind. My reasoning for this is that wind pushes the tail of the model outwards causing the model to yaw inwards, reducing the line tension. Conversely, when the model is upwind this 'weathercock' effect yaws the model outwards just at the right time.

Having discussed some of the aerodynamic considerations, let us now turn to some of the more general characteristics of stunt models.

The semi-scale stunter has always been popular, and with more people on the international scene using .40 and .49 motors, in models which have larger power reserves, this trend may indeed continue. Notable in this respect were the Italian models at the 1971 Criterium of Europe which had previously been very simple, functional designs. In this country the various designs from the Warburton stable illustrate just what can be done, given a suitable choice of prototype.

An alternative is the 'functional' approach, aimed at producing an attractive model but without the limitations of the semi-scale type. In recent years such models have been especially popular with the East Europeans, notably the Hungarians and the Czechs, and to a lesser extent with the French and the Dutch. The common features of these models are simple, straight fuselages with a bubble canopy. Examples of the type are Lous Ven den Hout's *Olympus*, Georges Billon's twin-finned design and, of course, Josef Gabris' *Super Master*.

The *Nimrod* design was based on the above trend, the fuselage styling being very simple; the top is parallel to the thrust line except for the taper at the front to accommodate the spinner, and the underside is tapered upward slightly at the front and rear to give the model a less bulky appearance. The bubble canopy was purposely kept small to emphasise the



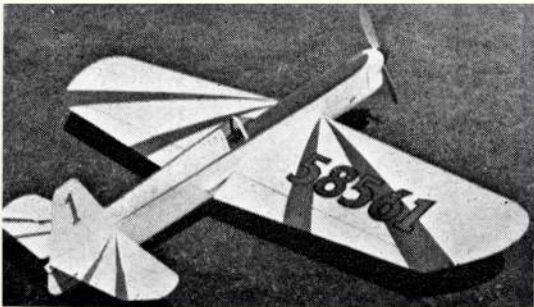


## Aero Modeller

long fuselage, a point worth considering when competing against the bigger .40 and .49 size models.

The simple fuselage-mounted undercarriage has almost disappeared on modern designs, wing-mounted two-wheel undercarriages being almost universal now. The main exceptions are the Russian monowheel types which have never caught on elsewhere. Various people have tried tricycle undercarriages, including myself. I had such a system on a *Crusader* (No. 2) from 1962 to 1966. The main wheels were wing mounted about 2½ in. behind the centre of gravity and a vertical nose leg 3 in. in front of the wing leading edge. This set-up gave take off and landing performance superior to the fuselage mounted two-wheel systems common at that time, but the extra weight of the nose leg and the poor performance on our local grass field led me to abandon tricycle undercarriages. With the introduction, from America, of wing-mounted spatted undercarriages it was realised that here was a good improvement over the fuselage mounted system. Landing bounce was virtually eliminated and appearance of the model was enhanced. My own experiences with spats were disappointing. Two *Crusaders*, numbers 4 and 7 were fitted with spatted wheels and I soon learned that spats tend to 'trip up' on all but the shortest grass. Worse than that, both models suffered a severe 'judder' on inside square corners. Whether by coincidence or not this fault was shared by a friend's design and also by Dave Day's *Spacebird* (this was in 1965 when the latter was new!). This model has *Thunderbird* flying surfaces so the poor performance was very surprising, however, when the spats were removed the problem was cured – the inference is obvious, but I can offer no explanation! The popularity of spats soon declined, but not before the advantages of wing-mounted undercarriages had been shown. These are now fitted with low-bounce balloon wheels which aid smooth landings and they will also cope quite well with grass surfaces. A model so equipped may be landed on concrete under full power if desired, although this practice does tend to wear out the tyres! I do not know what limits to put on the position of the wheels, on my models the wheel centres are some 1½ in. forward of the centre of gravity. If they are placed farther back than this the model tends to tip forward on landing, while if they are too far forward the model tends to bounce on a hard landing. This problem should not arise if the wheel centres are less than 2½ in. forward of the centre of gravity.

Probably the most obvious 'new' feature to appear in stunt model design is the use of detachable wings. Obviously the main motive behind this is to ease the Another truly classic machine – the Nobler designed by George Aldrich. This model has introduced many modellers to the satisfaction of precision aerobatics. This example is junior John Heanen's superbly built version.



The Italian stunt team at the 1971 International, which was composed of Compostella and Cani (left and right) with semi-scale designs, a Macchi 202 and Typhoon respectively, while Rossi (centre) used the conventional rather functional approach.

transport problem, but other advantages are evident, including the possibility of interchangeability between models and the easy access to the control system. Perhaps I should clarify a point here, a detachable winged model in the present context is one which is conventional in all other respects. Some older designs have 'cheated' by fixing the bellcrank in the fuselage, an idea which removed the side loading from the wing-fuselage joint, but generally involves the use of exposed leadouts. I believe the first to produce a conventional model with detachable wings was Gabor Maszzyk of Hungary whose model was seen at the 1967 Criterium of Aces. I first saw this model at the 1968 World Championships in Helsinki and my own system was inspired by it. *Nimrod 2* was my first model with detachable wings and this was flown in May 1969. The original Maszzyk model used two bolts, one in front and one behind the wing. Other Hungarian models and my own *Nimrod* use four bolts. Marconini of France uses a large front fairing for vertical location with a central dowel for lateral location and rear bolts. Steve Blake has used a radio model type system of front dowels and rear bolts on a modified *Crusader* but his *Starmaker* employs four bolts.

It is quite a problem producing a strong, rigid joint between the wing and fuselage. Anyone who has flown a stunter for long periods will know how stress cracks always occur around the wing root, particularly at the leading edge. These indicate the heavy loading imposed on this joint in flight, and it is not surprising that people have preferred to make this joint permanent. The joint must not only carry the vertical and horizontal loads but should also provide accurate location of the wing so that no trim changes occur. From the latter point of view a joint with front and rear bolts is very good, providing a solid fixing, free from fretting and wear. *Nimrod 3* has now had two seasons' flying and the wing fuselage joint has proved completely trouble free.

I have tried to present here my views of recent developments and the present state of the art in stunt model design. Obviously an article of this length cannot cover all aspects of the subject but I have tried to include the points I considered most important in designing the *Nimrod*. Next month plans of the *Nimrod* will be introduced and the accompanying article will deal in more detail with the structural design and its development up to the present Mk. V version.



# topical twists

by 'Pylonius', Illustrated by 'Sherry'

## Cash & Carry

At one time you had to fly your way into the model world; now, it seems, you can buy your way in. The modern young executive, seeking some outdoor recreation from the world of dolly birds and business, finds the golf courses more crowded than a rush-hour train during the go-slow, and the Squash courts all too aptly named. What better, then, than the wide, open space appeal of multi Radio? Where, like his typist, he can enjoy a few rewarding laps.

Problem, though. He is too busy to waste precious money-making hours at the building board; but this is where the modern pre-fab kit comes to the rescue. -Where money is no object, the distance between the model shop and the flying field is but a short zoom in the Bentley. And there you will see the young executive; his plastic and foam model in one hand and the latest in propo transmitters in the other—a glowing triumph for our instant, package deal society.

I saw one such outfit the other day, and after making a few cost calculations I came to the rather alarming conclusion that my kitchen table slavery was making a saving of only ten pence per hour worked. This means that had I done some remunerative job during those workbench hours instead of chipping laboriously and inexpertly at the balsa, I could have had my own pre-fab multi model, and in a much shorter time, too; though I have a faint suspicion a new washing machine would have insinuated itself somewhere.

## Hop, Skip and Fling

I suppose its all right for people to try to muscle in on the national hand outs by getting this hobby classified as a sport, but some consideration should be given to old fuddy duddies like myself who want to preserve the unique flavour of the hobby and have no wish to sacrifice its integrity to some phoney concept of athleticism. No doubt you do need Olympic style coaching to prepare you for a modern F.A.I. contest, but, on the other hand there are radio enthusiasts who have been known to operate from wheel-chairs; so you are only going to bemuse the public, not to mention the sporting authorities, by claiming there is fitness in every fistful of model. The public at large have never seen a pukka free flight model, and if they did they would never associate the old daddy-o's who fly them with the fleet foot or the lissome limb. Mostly what they see on the open spaces today are radio models, and since that sportive element have given up flinging the flyer in favour of sedentary rise off ground, their only fear is of being earth bound rather than muscle bound.

In the pure sense of the hobby the flying field is only a testing ground for the labours of the drawing board and work bench, and it is the midnight oil that should be kept burning by the model movement rather than the Olympic flame.



'What do you mean, where do I put Dick Dastardly?'

## Spaced Out

It is not only the radio spectrum that is becoming too crowded; so, too, is the model spectrum. Back in the early days of the hobby, when we were all one big happy family, the only split in the model movement, if there was a split, was between the people who flew their rubber-powered models forwards and those who flew them backwards. In those spacious times, the use of the term 'tractor' had another, less sinister, meaning than the ploughing up of your flying field, and Pusher was then a socially accepted word. But apart from working out which end of the model to avoid, everything on the flying field was simple and uncomplicated, whilst in the clubroom there were yet no divergent factions at each other's throats, only the unanimity of blokes discussing the new-fangled rubber winder.

Now, of course, things are entirely different. It's possible to have a club of a dozen members each doing a totally different thing. You might think that there might be some concurrence of interest in, for example, Radio. Not a bit of it. Even those who fly R/C glider have completely different approaches to the controlling of non-powered craft. There are those who believe that hills and mountains were put there as model launching platforms, and others who think that, in the mighty scheme of things, it was ordained that models should be dragged up on the end of a line. With one lot at the top of the hill and the others at the bottom, they are not likely to see eye to eye. What is more, they jostle uncomfortably together in the crowded bands of the model journal spectrums, each pealously guarding any space the other might usurp.

Altogether, the model journals are hard put to accommodating the ever-widening spheres of interest. You can, for instance, be one of three distinct species of Scale Modeller: Radio, C/L and F/F, and have nothing in common with the other Deperdussin dabblers. Or you can be a Pylon Racer who has begun to move a few light years away from what you may regard as the old-fashioned aerobic performer. In fact, its rather like an astronomer's view of the expanding universe; discovering more and more suns rushing away from each other at galactic speeds.

It is possible that, by 1980, we shall be flying a ten-part Nationals. One after the other, of course, as by then there will only be one flying field left—if we're lucky.



Jack Arnould's

## SPINKS AKROMASTER

WHEN 'PAPPY' SPINKS decided that he could build an aerobatic aircraft to beat the seemingly invincible Yak 18s and Zlin 526s, no expense was spared. The Research and Development department of *M. H. Spinks Enterprises* set to work to produce the *Akromaster* – and the final product was remarkably conventional in appearance, being not far removed from a modern aerobatic R/C model! The machine also had a functional, though not spartan, appearance and with its red, white, blue and black livery looked quite pretty – which was partly the reason why the designer chose it for a scale model.

This is not a difficult plane to build, although it is not recommended for a beginner, as while the construction does not present any real problem, the successful trimming of such a model to achieve more than mediocre performance does require considerable experience. Start the fuselage by laying out the  $\frac{1}{2}$  in. square keel. The curved section between F-1 and F-3 is cut from three pieces of  $\frac{1}{2}$  in. sheet – one for the central keel and the others as stringers on either side of it, once the formers are in place. Now cement the half formers to the keel, making sure that they remain perpendicular. When dry, attach the  $\frac{1}{2}$  in. stringers to the lower corner of the formers, then add all the remaining stringers. Next, sheet the flat side of the fuselage with medium  $\frac{1}{8}$  in. sheet as far back as F-5. All of the above work is done with the half fuselage attached to the building board. When thoroughly dry, preferably overnight, remove from building board and complete the other side in a similar manner. When this, too, has set, join the two sides and sheet, using soft  $\frac{1}{8}$  in. sheet for the double curvature on top of the engine cowling. Soaking this in hot water for a few minutes will help the curvature. Sheet the bottom of the fuselage from F-1 to F-2 only, leave the rest of the underside open until after the wing is installed.

Wing construction is quite conventional, it being made in two halves, which are inserted through the sheeted sides of the fuselage. The main spar, leading and trailing edges are butt jointed, and then reinforced as shown on the plans. The ribs are made by the sandwich method, seven pieces of  $\frac{1}{8}$  in. sheet

Bright colour scheme and simple yet attractive lines make this aircraft a 'natural' for scale fans. However, as all rubber power enthusiasts will appreciate, go easy on the paint scheme – preferably apply a very light spray coat to the main areas. Weight kills performance.

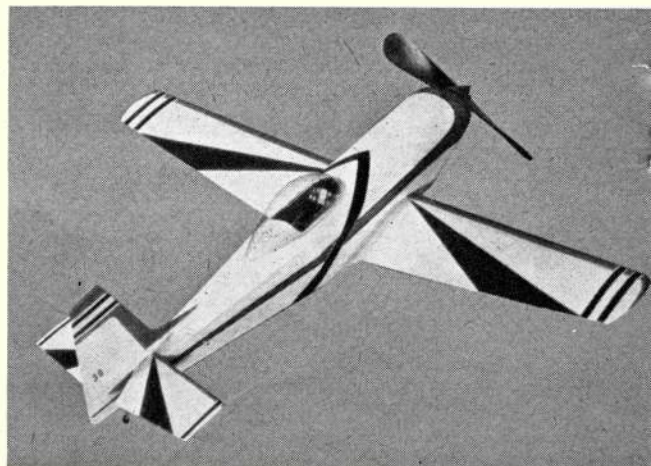
a 24 in. span,  
one-twelfth scale  
model for rubber power

being placed between the root and tip rib and sanded to shape for each wing half. The plans show lightening holes in the root rib – these were also used in the other ribs except the outer two. Use common-sense in their positioning and you can't go wrong. Before installing the wing, the landing gear should be bent from 16 s.w.g. piano wire, bound with thread to the  $\frac{1}{4}$  in. square cross-member pre-grooved to receive it,

## YOUR TWO FREE,

and cemented into place. Cover the thread with several coats of balsa cement and when thoroughly dry the wire can be flexed to loosen it, so that the wire can pivot. Alternatively, brass tubing can be used. The auxiliary landing gear struts from 18 s.w.g. wire, which provide the spring to the gear, are, in fact, the brake lines for the disc brakes on the full-size plane. This arrangement on the model has worked very well, providing a very flexible landing gear as needed on this kind of model but without any sloppiness or sag.

*continued on page 452*





An unorthodox,  
flex-wing, towline  
glider, with ultra-  
simple construction  
designed by

H. E. HUBBLE



THE BASIC IDEA behind this flex-wing glider was to meet the requirements for a tail-less model competition organised by the model club section of the *Shuttleworth Veteran Aircraft Society*. The factors that prompted such an unorthodox approach were mainly that the model had to be built quickly to meet the contest deadline, while the designer also has a distinct preference for the out-of-the-ordinary machine.

## FULL-SIZE PLANS!

When the finished product emerged from the workshop, it was soon evident that at least the 'quick-to-build' criterion had been met – and also that this was one of the cheapest models built for a long time!

Construction is rapid simply because there is so little of it – no ribs to cut out, spars and leading edges etc. to be inserted. Instead, only a plain box fuselage is required together with the delta planform of the polythene sheet cut from a red refuse disposal bag. What could be easier to build? Flight tests revealed that the towing characteristics were ideal and that *Snoopy* could be towed up in all weathers without difficulty: indeed a raw beginner could tow it up in a gale.

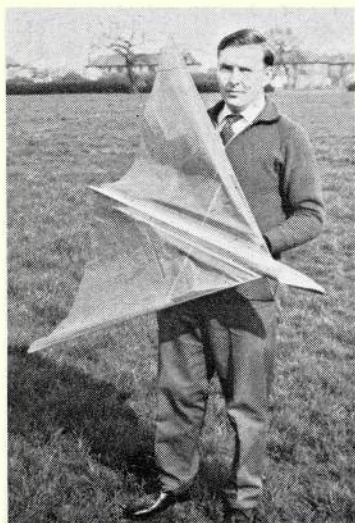
An added side benefit of the polythene wings have been their strength and resistance to damage – despite several unscheduled visitations into the tops of trees, hedges, collision with wooden fences etc. the covering is still as good as the day on which it was applied. Performance has also been remarkably good – flights of up to 6 minutes having been recorded with thermal assistance.

Start work on the fuselage by cutting out the 3/32 in. balsa crutch – see the 1/5th scale plan view of this item to identify its exact shape. Cut the 1/8 in. ply dowel former to size and glue it to the underside of the fuselage crutch – P.V.A. glue is recommended for this and all other joints as although it takes longer to set, the increased strength (and cleanliness) is worthwhile.

Now cut the 1/8 in. dia. wing dowels to length, notching the front end 3/32 in. to bring the top edge of the dowel flush with the crutch. This structure is then braced by

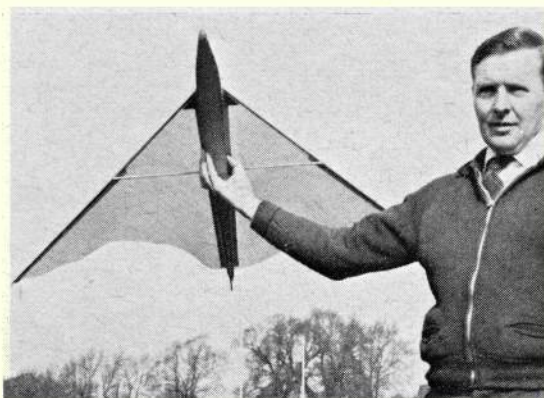
the 1/8 in. dia. centre dowel support, which is also cemented to the crutch at its centre. Add the 1/8 in. sheet web to the wing dowels as shown. Two pieces of polythene for wing covering are now cut to the approximate size, but allow a surplus – final trimming is detailed later. In view of the difficulty in finding an adhesive to fix the polythene, it was found simpler to use double sided adhesive tape. Apply this tape to the dowels and the fuselage crutch as shown on the plan, retaining the protective covering in place at this stage. Start by fixing the polythene to the leading edge. To do this lay the polythene on the wing, folding back to about 2 in. of the sheet. Then, still holding the model and plastic in their relative positions, peel off the tapes protective backing on the dowel section. Carefully smooth the sheeting in position.

With a flexible wing it is necessary to have a certain amount of 'sag' to form the airfoil section. From the plan it can be seen that the chain-dotted outline shown allows for this degree of sag. Having fixed the plastic to the leading edge, mark this 'true length' of the wing on to the polythene with a Chinagraph wax pencil. The polythene may then be cut to size and fixed in position along



Henry Hubble displays his unusual design, which must surely rate as one of the cheapest models of its size that can be built. Construction is also quick and easy – not a rib in sight for this glider.





the fuselage crutch. Repeat for the opposite panel and trim off the excess from the leading edge with a razor blade.

Now return to the fuselage. Cut out the  $\frac{1}{8}$  in. sheet backbone and glue vertically in position, followed by the addition of formers F10 to F16. When the cement has set, invert and add formers F1 to F9. Make up the tow-hook assembly and cement in position – an offset tow-hook proved to be unnecessary. Sheet the fuselage sides using medium soft 1/16 in. balsa, then add the soft balsa noseblock – carved to shape when the glue has set. Finally sand the fuselage smooth all over and add the tail fins. Cover the completed fuselage with lightweight tissue and apply a couple of coats of clear dope. Lastly,

The designer shows how the polythene wings must be ballooned-out before launching is attempted. It is recommended that coloured polythene sheeting is used for the wings to aid visibility both in the air and on the ground when retrieving – a clear substance can be very hard to see!

glaze the cockpit area with thin acetate. One word of caution is to keep the nose area as light as possible in order to preserve the correct centre of gravity position – the original model had a nose some 3 in. longer and required an ounce of lead in the tail to overcome this.

Before flying check that the C.G. is as stated on the plan – if too far forward the model will simply dive. Trimming is quite conventional, but do make sure that the polythene is ballooned-out before releasing the model. If the wing covering has been applied carefully, ballooning of the plastic will be symmetrical for each wing panel. However, small differences are almost bound to creep in which will affect the natural turn – if this turn is excessive it can be reduced by adding a small piece of plasticine to the opposite wing tip (this should be added in very small quantities as with the span employed the effective moment is quite large).

For initial flights, it is recommended that only a short tow-line be employed in order to check the degree of turn etc. and when towing do not be tempted to release the model from the line if one wing panel is flapping or else a spiral will result. Once trimmed out for a flat glide, *Snoopy* may be flown in all weathers – indeed if flown in very windy conditions you will be surprised how docile she is on the line. Remember, no form of dethermaliser is shown on the plan, so write your name and address clearly on the fuselage!

## SPINKS AKROMASTER

*continued from page 450*

The wings can now be installed – make sure that they are accurately positioned – then cement MS-1 and the other reinforcing pieces to the centre section. Also, the  $\frac{1}{8}$  in. sheet doublers can be well cemented in place. These may seem rather heavy for a model of this size, but they carry the landing gear loads as well as the wing flying and 'crashing' loads. Now the bottom of the fuselage can be sheathed as far back as F-5 and the window in the floor of the cockpit cut out.

The tail assembly needs no special comment beyond using medium soft balsa and sanding down both the tailplane and fin/rudder to the symmetrical section shown. Once cemented to the fuselage the dorsal fin (made from two pieces of soft  $\frac{3}{16}$  in. sheet) can be put in place. Next, install the tail wheel – this does not revolve in order to save a little weight in the critical tail section. Remember a little weight in the tail needs a considerable ballast in the nose to counter balance it. The landing gear fairings should now be cemented and silked to the wire, also wheels and spats.

The nose block is carved from hard balsa and uses the cut out from F-1 as a key. The designer prefers to make his propellers from Sugar Pine or American White Wood rather than balsa, finding it worth the extra work, as they are so much more durable, one propeller often outlasting several models. The free-wheel used on the original model was of the clutch type, and this necessitated removal of a plastic

spinner for flying. Subsequently, this was changed to the type shown in the plan.

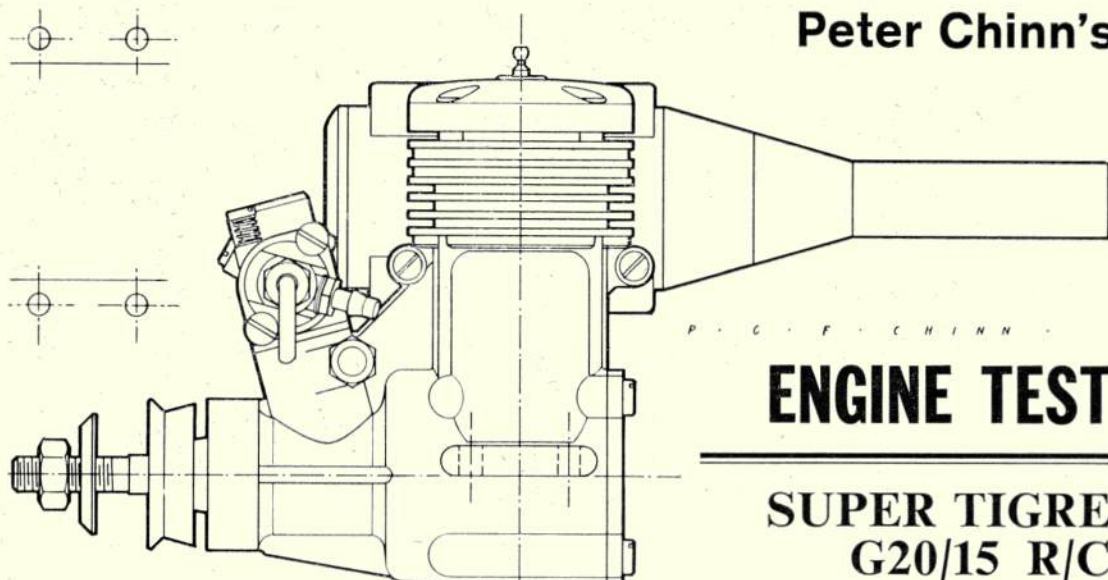
The cockpit cover is next, being moulded from thin acetate sheet. First, a hard balsa block is carved to shape approximately  $\frac{1}{8}$  in. smaller in all dimensions. A  $\frac{1}{2}$  in. thick spacer is glued to the bottom of this block to allow for folds and creases in the plastic when moulding. This should then be mounted on a base to keep it steady while moulding. It is then given a heavy coat of candle-wax, which must be smooth. Cut out an exact plan view of the cockpit from a piece of  $\frac{1}{8}$  in. plywood, approximately 6 in. x 8 in. A 7 in. x 9 in. piece of acetate is heated over an electric stove until soft, then quickly placed over the shaped block and the plywood plate forced down over it. The whole trick is getting the plastic hot enough without blistering or burning – after a couple of tries it comes easy. Most readers are probably familiar with this method and have their own variations on it.

Cover the model with lightweight tissue and give two coats of a low shrink dope, followed by one thin coat of colour dope, spraying this on, if possible. The colour scheme was obtained from the *Aero-Modeller Plan Pack No. 2913* (price 45p plus 5p postage). I used a combination of transfers, colour dope and coloured Monokote to achieve this, but everybody has their own favourite methods.

Now install the motor and balance the plane as shown in the plan. The centre of gravity can be varied, along with the sidethrust and downthrust of the propeller, to give just about any desired flight pattern. These are the only adjustments I use on a model of this type, but there must be no warps of any kind in any of the flying surfaces, with the exception of the rudder, which may be warped to give a left or right turn in the glide as desired.



Peter Chinn's



## ENGINE TEST

### SUPER TIGRE G20/15 R/C

THREE YEARS AGO, in this series, a report was published on the then current version of the Super-Tigre G.20/15 R/C engine. The performance of this engine (and especially so for a Super-Tigre) was not very impressive. As we remarked at the time, the test motor was possibly sub-standard, but there is no doubt that the more recent model, based on the 1970 Series G.20, is a very considerable improvement on the earlier model. Our test motor, in fact, turned out to be the most powerful throttle-equipped 2.5 c.c. engine handled to date.

The main features distinguishing the current model from the earlier versions are as follows:

**Main Casting.** This has thicker walls and a wider transfer bulge. It omits the boss below the main bearing, the purpose of which was to provide for a high-pressure tapping to pressurise the fuel tank on the original C/L speed and F/F versions of the G.20.

**Cylinder Liner and Head.** The cylinder-liner is lengthened below the ports. The cylinder-head, which formerly had a wide squish-band surrounding a bowl-shaped combustion chamber, is now of a conical shape.

**Carburettor.** This, replacing the airbleed equipped barrel-throttle type of the earlier engine, is of the Super-Tigre 'Mag' pattern, featuring an adjustable

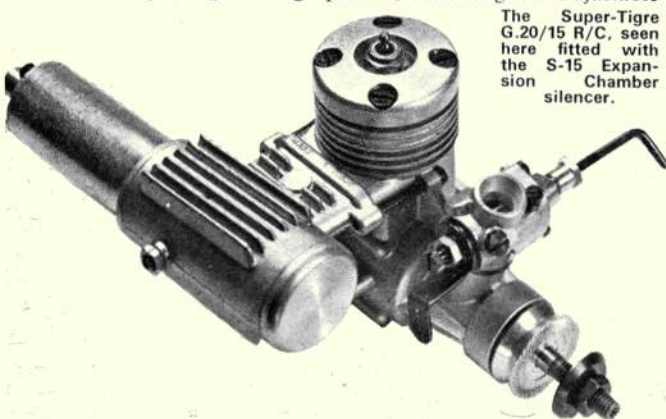
idling mixture control by which fuel flow is automatically reduced as the throttle is closed. It has a choke diameter of 7 mm and a full length spraybar of 4 mm dia., giving an effective choke area of approximately 12 sq. mm.

The G.20/15 R/C piston continues to use skirt cut-aways fore and aft to clear the crankweb and crankcase backplate at BDC, and, as a result, the skirt rises above the lower edge of the exhaust at the top of the stroke, opening the crankcase chamber for approximately 50 degrees of crank angle. This, of course, tends to reduce fuel suction at the carburettor and also to cause charge dilution when an orthodox silencer is used, due to exhaust gas being drawn into the primary compression chamber. However, the former is, to some extent, countered, in the latest G.20/15 R/C, by the improved mixture strength control provided by the Mag type carburettor, while the latter effects are obviously dealt with very efficiently by using the S-15 extractor pattern silencer in place of the S-15 baffled expansion chamber type.

As received, the test engine was very free-running and it was not anticipated that a long running-in period would be necessary. The Super-Tigre was nevertheless put through our standard running-in procedure, and it was rewarding to find that both power output and starting improved quite markedly after about one hour of intermittent running.

For all tests of the G.20/15 R/C our standard R/C test fuel, containing 5 per cent pure nitromethane, was used. The first series of test readings was taken with the engine in standard (non-silenced) trim. This was followed by a second series with the engine fitted with the Super-Tigre S-15 extractor type silencer. Mainly for the purpose of further comparison with the performance of the older G.20/15 R/C when similarly equipped, this silencer was then replaced by the earlier S-15 baffled expansion chamber type and a third series of readings were taken.

The figures obtained in the first two tests clearly indicated that the S-15 extractor type silencer, while of limited effectiveness as a 'silencer', caused no power loss on this engine compared with the open-exhaust condition. In contrast, the very much quieter S-15



The Super-Tigre G.20/15 R/C, seen here fitted with the S-15 Expansion Chamber silencer.



expansion chamber caused a steadily increasing loss of torque as load was reduced, resulting, ultimately, in a 25 per cent lower peak b.h.p., at 3,000 r.p.m. lower peaking speed.

As one might expect of an engine based on the 2.5 c.c. G.20, a high performance motor that has always been at its best when given its head, the G.20/15 R/C is not happy when lugging a big prop and it is suggested that, when the engine is used with the S-15 extractor silencer, the owner should aim for static r.p.m. in the 12,000-14,000 r.p.m. bracket, or 16,000 r.p.m. plus for ultra high-speed (e.g. Quarter-Midget Pylon Racing) models. Typical r.p.m. recorded on test included 10,800 r.p.m. on a 9x4 KeilKraft nylon, 11,600 on an 8x6 Power-Prop wood, 13,400 on an 8x5 Power-Prop wood, 13,500 on an 8x4 Top-Flite nylon, 15,000 on an 8x3½ Top-Flite wood, 14,900 on a 7x6 Top-Flite wood, 17,400 on a 7x4 Top-Flite wood and 17,900 on a 7x4 Power-Prop wood.

Response to the 'Mag' throttle was good, and a very considerable improvement on that achieved with the older carburettor. As delivered, the Mag carb's idle mix was set too rich, causing the engine to cut out when the throttle was closed and making it impossible to start the engine with the throttle in the idle position. After the mixture control screw had been closed three-quarters of a turn, we had no difficulty in achieving safe idling speeds in the 2,800-3,500 r.p.m. range (speed dependent on prop size) and the engine would then also start with the throttle closed to the idle position.

One thing that may need watching with the G.20/15 R/C is undue variation in fuel head, as, on test, it was not too tolerant of an over-rich mixture. If, for example, the main needle-valve was set too rich or the fuel tank raised more than 3-4 inches, the engine was unwilling to four-stroke but tended to cut out instead. Using an O.S. No. 7 plug in place of the S.T. plug gave greater tolerance but at the expense of 200-300 r.p.m. Some improvement may, however, be expected under warmer climatic conditions.

Compared with the performance of our earlier G.20/15 R/C test model, the latest version showed a vast improvement in power. Gross b.h.p. was up by some 50 per cent and even with the expansion-chamber silencer, the improvement was nearly 40 per cent. The engine is essentially a high speed unit and, apparently, somewhat sensitive to variation in fuel delivery pressure, may not be the ideal choice for the beginner, but obviously has potential where a

#### SPECIFICATION

Type: Single cylinder, air-cooled glowplug ignition two-stroke with crankshaft rotary-valve induction and twin ball bearings.

Throttle type carburettor.

Bore: 15 mm (0.5905 in.)

Stroke: 14 mm (0.5512 in.)

Swept Volume: 2.474 c.c. (0.1510 cu. in.)

Stroke/Bore Ratio: 0.933 : 1

Checked Weights:

176 grammes - 6.21 oz. (less silencer, less exhaust baffle)

180 grammes - 6.35 oz. (with exhaust baffle)

224 grammes - 7.90 oz. (with S-15 silencer)

#### General Structural Data

Pressure diecast aluminium alloy crankcase/cylinder/main bearing housing unit with detachable rear cover secured with four screws. Hardened counter-balanced crankshaft with 10 mm dia. main journal, 7.5 mm bore gas passage and 5 mm dia. hollow crankpin. Shaft runs in one 5 mm i.d. 6-ball brass-caged ball journal bearing at front and one 10 mm i.d. 8-ball brass-caged ball journal bearing at rear. Lapped cast-iron flat crown deflectorless piston with 4 mm dia. fully-floating tubular gudgeon-pin retained by wire circlips in piston. Machined duralumin connecting-rod with plain eyes and two oil holes at lower end. Drop-in steel cylinder-liner located in cylinder casing by flange at top and locked by cylinder-head. Machined aluminium alloy cylinder-head with one 0.004 in. soft copper gasket and secured to main casting with four screws. Pressure diecast aluminium alloy carburettor body seating on rubber gasket and locked in intake boss with cotter pin and nut. Ground steel throttle barrel with automatic fuel metering device. Brass spraybar assembly. Coupled centrally pivoted steel exhaust restrictor. Machined aluminium alloy prop driver fitted to shaft with alloy split taper collet. Beam mounting lugs.

#### TEST CONDITIONS

Running time prior to test: Approx. two hours.

Fuel used: 5 per cent pure nitromethane, 25 per cent

Duckham's Racing Castor-oil, 70 per cent Methanol.

Glowplugs used: Super-Tigre standard long reach,

platinum filament, as supplied.

Air Temperature: 52 deg. F.

Barometric Pressure: 29.80 in. Hg.

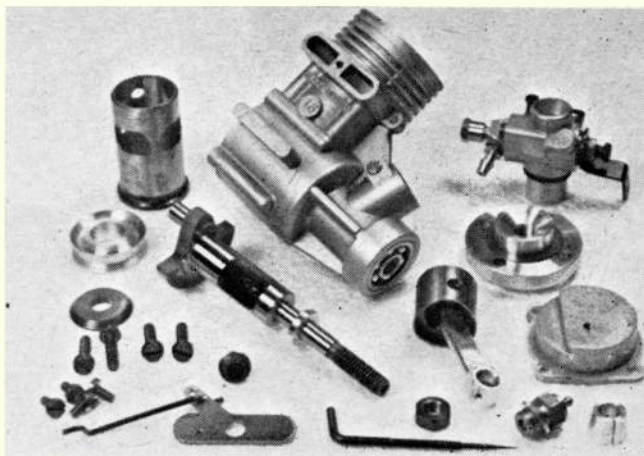
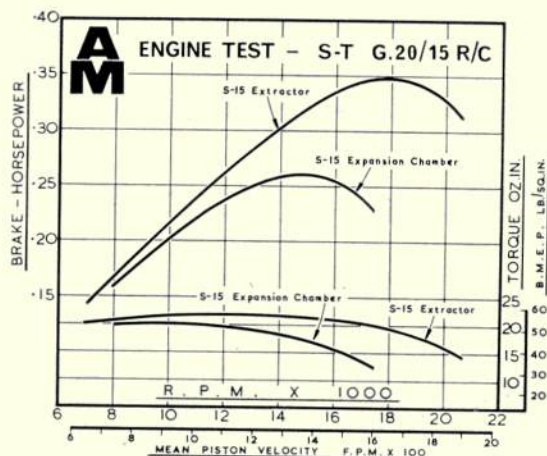
Silencers used: Super-Tigre S-15 Extractor type.

Super-Tigre S-15 Expansion-chamber type.

high-speed 2.5 c.c. throttle-equipped unit is called for. The G.20/15 R/C is very well made (like all Super-Tigres) and is built to withstand continuous high output operation. It ran effortlessly at speeds of well over 20,000 r.p.m. and was in perfect condition at the conclusion of the tests.

Power/Weight Ratio (as tested with S-15 extractor silencer): 0.71 b.h.p./lb.

Specific Output (as tested with S-15 extractor silencer): 140 b.h.p./litre.





# 1972 BRITISH NATIONALS

The S.M.A.E.'s JUBILEE YEAR, two championship meetings, held simultaneously at R.A.F. Hullavington and R.A.F. Strubby, May 27-29th

NO DOUBT the atrocious weather conditions helped to cloud our views, but the first reaction to the experiment of splitting the Nationals into two separate meetings was clearly that it was not a success. The carnival or jamboree atmosphere was gone, and nit picking and petty jealousies crept in.

Apart from the contests being flown, part of the National's magic has always been the hordes of sports models flown by enthusiasts from all over the country who make their annual pilgrimage to this Mecca of Modelling to simply enjoy participating in their favourite hobby/sport in the company of fellow enthusiasts. With the flying of free-flight models restricted to scale at Hullavington and all sports activities practically forbidden at Strubby (which was a strictly competition only meeting) there was none of the previous relaxed, holiday spirit. And, of course, the weather was far from kind. Strong winds interspersed with frequent showers and only occasional glimpses of sun provided far from ideal conditions.

From the competitors point of view, things were little better. Radio control with its magnitude of organisers, officials, etc., was beset with problems, particularly in the aerobatic event where the safety rules of zero points for flying over the crowd were interpreted differently by the various persons responsible, resulting in protests galore. The result of this was that all the flights made on the Saturday afternoon (itself a new departure) were wasted!

There was a definite feeling of 'bitterness' and a lot of this was directed at the R/C section, not entirely without foundation. It is not our intention to 'knock' any particular branch of aero-modelling but we feel that some proprieties must first be put in order. The R/C section was generally well organised and strictly run (ignoring the previously mentioned troubles) but the costs involved in the preparation were enormous. The claim is normally that 'R/C brings the spectators'. Maybe, but how many spectators must pass through the gate before the expenses of all that paid officialdom is covered? And is the claim justified? We think not after seeing the bigger crowds around combat and team race circuits this year. It is perhaps interesting to note that the combined control line and free-flight entry fees (roughly equivalent) outnumbered the R/C entry fees in a proportion of nearly 5:1. Control line and free-flight are also run on a self-supporting basis.

The major difference between the types of classes is that the minimum number of true enthusiasts run these 'poor relation' events and that the competitors are themselves willing to assist in the organisation. Oh - how we shall welcome the day when R/C events at the Nats are run without the scramble for petty cash chits when the event is over. If a cost effective exercise were ever conducted on R/C at

the Nats, the entry fee would rocket to at least £2 per model. And as ever, it was the often-denigrated S.M.A.E. officers who were there from first fence erection to last litter-picking, giving their time in service to others. On the bright side, the number of competitors were well up on previous years - a really encouraging sign - and there were several competing visitors from other countries bringing an even greater International flavour once more to this Golden Jubilee Year event.

## Scale

In view of the truly appalling conditions, particularly for scale models, a very good percentage of the **Radio Controlled** entry made a qualifying flight, but some who failed to get away on their first flight on the Sunday when conditions were not too bad (15-20 m.p.h. wind), wisely declined their second flight on the Monday afternoon, when a near gale was blowing.

The two outstanding models present were undoubtedly Vaughan's **P51B Mustang** (how nice to see this earlier version modelled instead of the more popular D variant), and Melleney's **D.H. Moth Minor**. This latter machine which has been flying for a year now is at last completely finished. Unfortunately, a nose-over prevented Terry taking his first flight and he declined his second on the windy Monday: saving the model for the World Championship Team Trials. Unfortunately, Vaughan did not figure very high in the final score, despite top marks in static, due to a premature engine failure which

prevented the majority of the flight schedule being performed. The detail on this model was superb, the metal panel simulation being probably the best seen to date. The cockpit detail was unbelievable and the standard of construction inside the wheel wells, including the retracting undercarriage, was of the standard associated with model locomotive valve gear at the Model Engineer Exhibition!

Other models of a very high standard were: Sheldon's **Tipsy Nipper**, built to such a large scale that one felt a child of four could climb into the huge cockpit and fly the thing! The model was not quite finished; engine detail requiring completion. However, it flew very impressively in the difficult conditions, and when completed, this model will be a strong contender for a team place for Toulouse. Taylor's **Kawanishi 'George'** flew impressively and looked very realistic in its weathered paint finish; without quite the same standard of detail as the very top models. Another model which both looked and flew well was M. Gilham's **Westland Widgeon**. In flight the scale area tailplane looked minute, but no longitudinal stability problems were apparent.

Without doubt, the best flight performance was put in by Norris with his large **B.N. Islander**. The very high flight score was sufficient to carry him to first place; notwithstanding only a modest static mark. The model was neat, but lost marks due to lack of panel detail and a completely bare interior. Evidently he ran out of 'weight'. All such extravagances had to be foregone to keep the model down to 11 lb.



Sole female pilot in the control line circles was Christine Kant, who partnered by her husband Joost, flew in the F.A.I. team race event. Their model features a glass-fibre cowl for the engine, while the wings themselves are covered entirely with light-weight glass-fibre cloth - a typical Continental approach but one not seen in this country, presumably due to lack of suitable material.



It is, however, nice to see that the premier scale event can still be won by an 'ordinary' model provided it is flown well. Incidentally, this is the first time a twin has won the R/C Scale event at the Nationals.

**Control line** scale was ably organised by Derek Goddard, who provided large score boards to keep the public informed and in general kept the event running smoothly. His efforts were amply rewarded, both by the appreciation of the competitors and by winning the event himself – although he was *not*, of course, judging! (Dennis Bryant and Mick Charles did the honours.) His immaculate fully-instrumented *Tiger Moth* scored the highest static points, as well as just topping Venables' *Fokker DVII* for flying marks, despite a nose-over on landing which rather spoilt the prop's appearance! The *DVII* indeed placed second, although its pilot, in common with many others, found difficulties with the weather, especially as his model is lightly-loaded.

Most 'hair-raising' performance of the day's award must have gone to L. Fidal of the Heswall club with a *Viscount 720* which ran into the circle on take-off, snarling up the lines and generally causing confusion. Onlookers leapt to the pilot's aid and succeeded in keeping the model from going entirely berserk! And, of course, there was *THE* prang. Albert Briggs' so familiar *Brigand* had been up-dated by the inclusion of a retract undercarriage. Never exactly overpowered, and with this increase in weight, the inevitable happened when he got it airborne, and brought up the wheels. The model pitched nose-up, then fatally nose-down. One cause was that as the wheels retracted, the C.G. moved even further aft with disastrous results to the heavy machine. Albert has also diagnosed a control failure out of the wreckage.

Brian Perry, though lacking scale points for his *Tipsy Junior*, racked up a good flight score which included some inverted runs. However, the light model with rather rearward C.G. was quite adversely affected by the wind. Given better conditions and more experience with his recently re-worked machine, he could easily have placed higher.

The **Super Scale Trophy** was somewhat decimated by the conditions – free-flight scale models have no great

liking for these over-scale winds! Consequently, only four modellers managed to make the qualifying 30 seconds of flight duration. Among those 'casualties' was none other than Eric Coates (red faces all round!) who could only persuade his *DH9A* to remain airborne for 23 seconds, not helped by a lack of power from his Mills 1.3 c.c. Indeed, he would have done better to have flown his well-tried and tested *BE12B* but rather than face taunts of cowardice after Terry Manley flew his equally new *DH4*, he declined this 'easy way out'. As it happened, Manley's *DH4* did fly very nicely, but not sufficiently well to make up the deficit of static scale points that he needed to overcome from Vic Driscoll's *Westland Waipiti IIa*. The latter thus took the Trophy with a total score of some 50 points ahead of Terry, and with double the score of Vic Priest's *B.E.2e* in third place.

The international flavour was once more evident in this event, Canadian J. McDonald being the fourth qualifier with his plain but attractive *Tiger Moth* – the perennial favourite!

## Control Line

The control line side of the operations benefited this year from a certain amount of re-organisation, the most significant difference being a somewhat more closely-knit location of the various events around a central point – in fact, the runway intersection – and with the provision of 'model parks' to allow the competitors to leave their models/lines in relative safety from the large-footed public. This perhaps helped (at least it was so intended!) to provide a better image of this side of the sport to the general public and so that the events could be more easily watched without entailing walking the length of a single runway where the events are normally interspersed with practice-fliers.

**F.A.I. Team Race** attracted an entry of 60, but even more surprisingly, all but two teams actually competed, whereas a high drop-out can normally be relied upon. With Brian Turner as Contest Director, few pilots 'got away' with rule infringements, and he, together with Don Haworth, produced a very smooth-running contest, aided greatly by the co-operation of many fliers who offered their services for time-keeping duties, etc. Unfortunately last year's victors, Germans Schwartz/Kaul were not in attendance, but the 'foreign' flavour was kept alive by a trio of Dutch teams, namely well-known Internationalists Visser/Buys, Rob Metkmeyer partnered by Meyer rather than his usual brother-pilot, plus Joost and Christine Kant. This husband and wife team proved less fortunate than their fellow countrymen, their Oliver tending to overheat and being slow to restart, but at least it makes a pleasant change to have a female pilot in the 'middle'. The racing seemingly began well with Heaton/Ross recording a 4:45 in the very first heat – although this was not to be. Derek being disqualified for planting a foot outside the pilots' circle before the model was in Malcolm's hand. Hard luck, but it has happened before.

From this early point, the standard of flying dropped somewhat alarmingly, well-known competitors making small mistakes, but ones which were enough to spoil their times, while the number of models retired due to running into the circle was little short of incredible. True, the wind did little to help, but conditions were not impossible – just the standards were low. So low indeed

that only three teams recorded sub-five minute times – Devonish/Davy with their usual *HP.15D* elliptical-winged model, Meyer/Metkmeyer's *Super-Tigre G.15 Turtle*, now well past its best, but used while saving the number one machine for the forthcoming World Champs, and not surprisingly Heaton/Ross who made no mistakes in the second round.

Before the semi-finals were flown, the fastest nine models were processed. Almost unbelievably the organisers had to check *seventeen* models before nine 'legal' ones were found for these semis – seven were disqualified for having oversized fuel tanks, while Langworth/Muncaster discovered to their cost that the pilot's head was undersized. This surely highlights the necessity of frequent processing at all contests, and makes one appreciate how some modellers obtain all those laps quite so easily!

For the semi-finals, Heaton/Ross produced a *Bugl 15* in a modified *Timeta* but their luck was out when they discovered (too late!) that the cut-out's adjustment had altered and this was operating on neutral elevator instead of 'down'. Consequently, some eight pit stops were made during this first semi-final. In the same race Bedford/Allen had the misfortune to run-in on the 97th lap following a premature landing, while this pattern was repeated in the remaining semis. Indeed, only four of the nine teams recorded semi-final times. This left the final to Buys/Visser, Clarkson/Daly and Devonish/Davy with times of 4:53, 5:36 and 5:46 respectively. From such an appalling series of disasters for so much of the F.A.I. event, hopes were raised for the final, and a good crowd of spectators gathered around to watch.

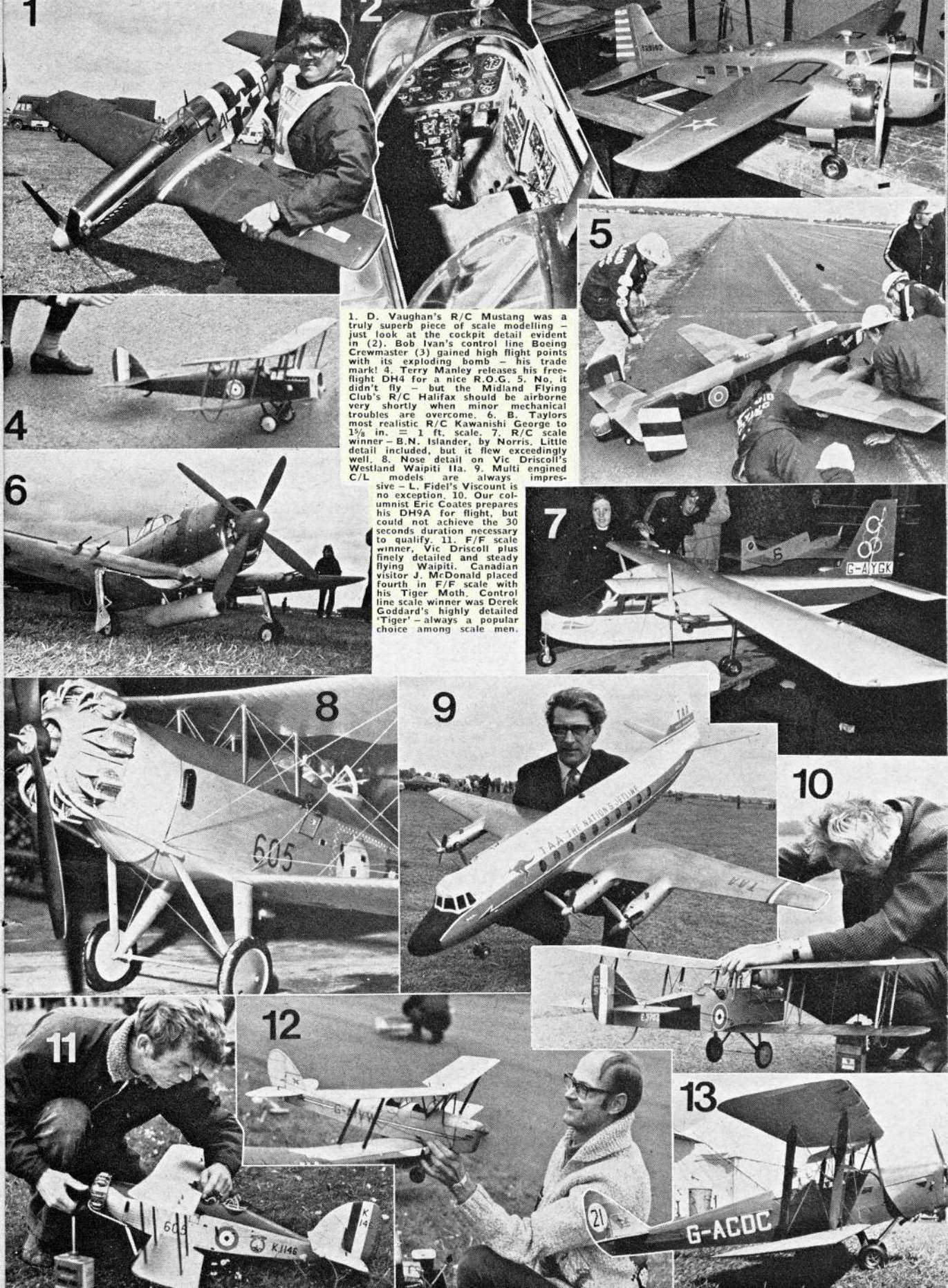
But what a disappointment! As an anti-climax to beat all anti-climaxes, then the final of this 'premier' event must take the prize. All got away quickly with the Dutch pair possibly just a fraction slower than Davy's *HP.15* model, with Clarkson's *MVVS* not far behind. However, following a good second pit stop, the Dutch pair had the misfortune to prang at 66 laps. At his second stop John Daly discovered that the top cowl of his model was coming loose so an elastic band was slipped over it, and away it went again. Meanwhile Joe Devonish was performing some nice, fast pitting. At 100 laps, misfortune befell the Stockport lads when the cowl slipped from under the band to fall off and cause their disqualification. This left just Les Davy flying to complete the distance, the undisputed winner. Until that is, the 149th lap. Les brought the model in, Joe grabbed it but the wing slid through his fingers and the model ran into the centre of the circle – thus no one completed the distance.

**Class B Team Race** likewise got off to a poor start, with less than half of the 31 entries actually making flights. Times were also relatively poor, with no-one beating four minutes in the first round, and it was not until later in the afternoon that the race got faster. Surprisingly (and to many minds thankfully), few teams used over-bored diesels, the majority preferring 'full-blooded' 29s. This is quite a marked change in policy, and perhaps is the result of more Class B meetings now being held. Previously, competitors frequently used old F.A.I. class models but now find it worth the time investing in a purpose-made machine with a big glow engine. One in-between approach was shown by the Russell/Gray/Lopez trio, from Feltham, who employed a

Brian Perry of the Wolves club placed second in the Carrier Landing event with his A.P.S. Seamew, powered by a Merco 61. Unfortunately he forfeited his scale points by allowing too much clearance around the motor – but for this he would have won the event.





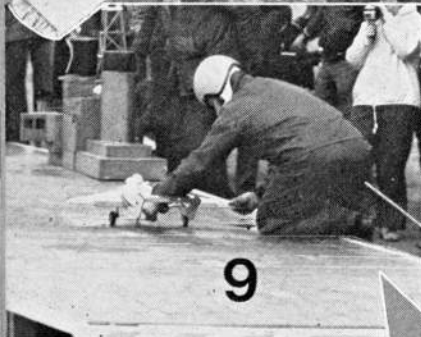


1. D. Vaughan's R/C Mustang was a truly superb piece of scale modelling - just look at the cockpit detail evident in (2). Bob Ivan's control line Boeing Crewmaster (3) gained high flight points with its exploding bomb - his trade mark! 4. Terry Manley releases his free-flight DH4 for a nice R.O.G. 5. No, it didn't fly - but the Midland Flying Club's R/C Halifax should be airborne very shortly when minor mechanical troubles are overcome 6. B. Taylor's most realistic R/C Kawanishi George to 1 1/2 in. = 1 ft. scale. 7. R/C scale winner - B.N. Islander, by Norris. Little detail included, but it flew exceedingly well. 8. Nose detail on Vic Driscoll's Westland Waipiti IIa. 9. Multi engine C/L models are always impressive - L. Fidel's Viscount is no exception. 10. Our columnist Eric Coates prepares his DH9A for flight, but could not achieve the 30 seconds duration necessary to qualify. 11. F/F scale winner, Vic Driscoll plus finely detailed and steady flying Waipiti. Canadian visitor J. McDonald placed fourth in F/F scale with his Tiger Moth. Control line scale winner was Derek Goddard's highly detailed 'Tiger' - always a popular choice among scale men.





1. Mick and Ron Tribe placed second in Goodyear as well as winning the Novices Final. (2) F.A.I. winners were Les Davy and Joe Devenish with their HP.15 model. 3. Victory again in the 1/2A event for Messrs. Ross and Heaton. 4. Wal Cordwell won the carrier event with a profile-scale Skua, preserving this Corsair for better conditions! 5. Chas. Taylor and Gordon Yeldham (centre) took the Davies B event with their 17-year-old racer - a year older than Robert Calvert (6) who receives congratulations from 'Pop' Warburton for placing first in the Junior Stunt event, for which Pop donated a trophy. Combat finalists (7) were Mick Loughlin and Mick Chilton (right) - the eventual winner. Gold Trophy holder once more is Jim Mannall (8) with his familiar Nimrod design. Everitt's attractive Sea Vixen (9) is released for its fatal flight when it collided with the Carrier Deck's superstructure. 10. A busy pair - John Dixon (left) and Martin Radcliffe display their speed models which placed first and second, as well as their Goodyear racers, both of which qualified for the finals. 11. Well - if you must fly combat, what can you expect! 12. Jean Morelle launches Claude Lienard's model, assisted by fellow Frenchman Alain Daflot. 13. A new design concept? Mick Davis with very 'hot' combat model.





Super-Tigre G.23 glow engine and Bartels 7 x 8 MVVS type prop in an old F.A.I. racer. This combination normally returns a range of 75 laps at 95 m.p.h., but under the ensuing conditions it was low on range, necessitating an extra stop just five laps short of the full distance, which brought their best heat time down to 4:38.

Fastest heat in the second round went to Chas Taylor, at 3:22. Not bad at all for a model which had an up-line break in the morning, thus necessitating a quick glueing job on the out-board wing when it was completely detached. The model is now seventeen years old, and still powered by the Checksfield-Stewart McCoy 29, turning an 8 x 8 Rev-up and running on a Taylor plug - which survived the whole contest.

Most fliers had a third chance, as semi-finals were run, and here the quality really seemed to return, with six times under four minutes, the Horton / Kirtan and Taylor / Yeldham teams performing best, at 3:27 apiece. Third team to make up the final were Heaton/Ross, now with a full-size 'B' racer, Eta 29 powered. And what a final it proved to be - the exact opposite of the F.A.I. fiasco! At the start, Taylor was first away, followed some four laps later by Heaton, two ahead of Kirtan. Taylor's McCoy and Kirtan's piped Eta 29 seemed evenly matched for speed, but Derek's engine was set rich, occasionally breaking into a four-stroke and he consequently landed first, at 21 laps. Kirtan managed 40, Taylor 47. All motors restarted well and each pit stop was virtually a classic. At the next refuelling point, however, Yeldham missed his catch and had to retrieve the model, wasting seconds as he ran back to the segment. Heaton's motor was still rich and John Horton took three or four attempts to restart his Eta. And so those three snarling beasts howled on (two really - Kirtan's piped motor being very quiet), the pit crews producing excellent service. First to finish was Taylor (who now 'feels a new model coming on'), at 7:21.5, followed nearly three-quarters of a minute later by Kirtan, slowed by an unscheduled stop at 138 laps. The Heaton/Ross motor eventually came on strong, but too late to affect the results. A classic finish altogether.

Poorly supported for some time now, the 1/4A event saw just 11 teams record times - although under the windy conditions this was not too surprising. The light models were badly affected by the wind and this was a strong contribut-

ing factor to the slow heat times, most being around the 4-5-minute mark. Most models were veterans of many contests and only one was not powered by an Oliver Cub - this being the Heaton/Ross entry, which is powered by an engine of Malcolm's own design and construction. They also recorded the best time by far, at 3:49. No semi-finals were run, so the fastest three went straight to the final - these being Muncaster/Langworth (4:30) and Campbell/Perkins (4:37), in addition to the aforementioned pair.

First in the air was the Heaton/Ross entry, followed by Campbell/Perkins, leaving Jack Muncaster furiously flicking to get his Oliver going. It eventually went and he made good progress, with an excellent stop after 48 laps, but lost more time at his third pit stop (142 laps), when the motor cooked and was most reluctant to restart. Meanwhile, Campbell/Perkins were in trouble with a leaking tank, which caused some six stops, as well as being hindered by the worst (straight into the wind) take-off point. Meanwhile, Derek Heaton's only anxiety occurred when the motor cut - lean prematurely due to dirt. This cleared, he went on to record a time of 8:29, nearly two minutes in front of his rivals.

Best-supported racing class was, once again, the Goodyear event - run to the 'old' rules, as the new ones, requiring two compulsory pit stops and 100 laps per heat, have proved to take too long for a large entry on one contest day. Best-supported in pre-entries it may have been, but the high wind caused high carnage due to the large side area of these profile-scale models. Frequently, all too frequently, the wind would get under the tail of a model, causing a near wing over, with disastrous results on meeting the tarmac. Because of these fatalities, many teams did not put in an appearance, preferring not to accept the risk. Among those who did, however, the standard was higher than expected, many teams recording times around the 4:30 mark. Models themselves were more varied than usual - the Ginny monopolisation being 'watered down' by *Little Gems*, *Cosmic Winds*, *Owls*, plus the occasional rarity such as *Busters* and *Johnson Specials*. Motors, too, were varied - Etas, Kosmic, many Super-Tigres, Olivers, PAWs, MVVS, plus the occasional H.P.15 and Rivers were to be seen, mostly now equipped with cut-outs, presumably inspired by the new rules, which make such devices even more desirable.

Neither diesel nor glow dominated the contest, although the Feltham pair of Dixon/Radcliffe were way in front of the opposition with heat times under four minutes from their Super-Tigre G.15-powered *Shoestring* and *Johnson Special* designs. They each entered one model and both, in fact, qualified for the final, although Radcliffe withdrew his entry, allowing the Tribe brothers to join them and Daly/Clarkson for this.

Running from the pilots' circle at the start of the final, Dixon picked up his electric starter (permitted under the old rules - though few if any realised it!) and applied it to the prop. It didn't work! Cast aside, the motor then started first flick... Their G.15 was considerably faster than the Daly MVVS diesel and the Tribe's Eta and with Martin piloting as well as John pitted, they won comfortably, more than 1½ minutes in front of the Tribe brothers. Clarkson/Daly finished more than a minute later - having been slowed by a non-starting motor.

There were several innovations in this year's Gold Trophy event. Firstly, the contest was held over two days, secondly, two flight circles were used and thirdly, each competitor made one flight for each of the two judges, the top ten fliers thereby going forward to a fly-off of two further flights. This system was used primarily through expediency in respect of the difficulty in finding sufficient judges, but it also proved worthwhile in that greater judging consistency was possible for the 'top ten'.

If the wind affected the team-racing enthusiasts, then imagine what it did for the precision aerobatic lads, with their large wing area, relatively slow-flying models! Despite this, 25 of the 36 original entries flew, to make this the best-supported Gold Trophy event for years.

With Steve Blake judging rather than flying, and Frank Warburton unable to attend, Jim Mannall was considerably less pressed than usual, and he was way ahead of the competition in the qualifying rounds, using a *Nimrod 4A* - his old yellow model now recovered in Solarfilm at a significant saving in weight.

Many were the tales of woe, with models wrecked in practice, patterns ruined by wind and poor motor runs giving near heart failure to several competitors. Pete Tindal put in some nice flying with a Chipmunk, as did Neil Billington with his model based on the Novi - indeed, the latter was probably the most improved pilot of the meeting but was unlucky enough to have the engine cut during the second round. Paul Tupker, a very competent international flier from Holland, used his three-year-old Nobler with Fox 35, but as this was his model for the Helsinki Championships, he perhaps did not try too hard and placed no higher than seventh overall.

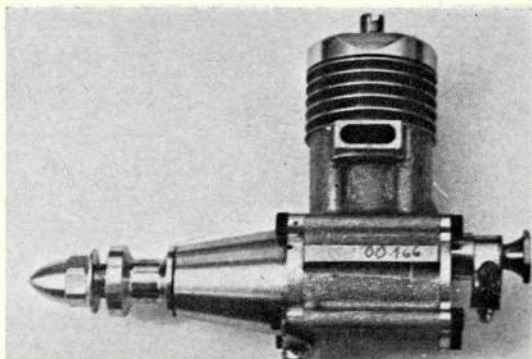
Many people seemed plagued with engine starting problems (perhaps a welcome excuse for not flying?) while even more missed certain manoeuvres out completely which, if the event had been flown to F.A.I. rules, would have resulted in lost flights. Although there were few actual crashes, the standard was lower than would have been expected, and on several occasions, models were seen to touch the tarmac during the flight.

The list of names qualifying for the

Jurgen Bartels (centre) presented two superb glass trophies to the best performers in F.A.I. team race using his propellers. The lucky recipients were Daly/Clarkson (left) and Visser/Buys, from Holland.







Another Dutch visitor was Paul Tupker who competed in the Gold Trophy event with his familiar Grondal Nobler. Weather conditions deterred him from taking too great a risk when flying, as this is his model for the World Champs. Above, the Bugl 15 used by Heaton and Ross. This motor's already establishing itself on the continent, and looks like being really popular among the top fliers. Although Malcolm is not yet used to handling this engine, it already compares favourably with his best Etas. This is the production version of the prototype seen at '71 Pecs International, but looks different due to its diecast crankcase and shorter crankshaft.

fly-off contained no surprises (except perhaps for Mick Reeves, putting in an appearance at the C/L end of the field again) but there was quite a struggle for second place between Messrs. Newnham, Billington and Tindal, which resulted in that order with just 12 points between all three of them.

**Combat** maintained its tradition of high entry (96) and was probably the least affected by wind in some respects. High winds produce really high-speed down-wind manoeuvring as the models 'wind-up' in successive loops, bunts, etc., but it also produces problems in that obtaining cuts is more of a 'hit or miss' affair, little snips being virtually impossible to obtain. This also tends to push a greater emphasis on the pit crew, as hitting the ground becomes an even greater likelihood and it is obviously imperative to have a reliable team preparing the reserve model, transferring streamers, etc. So much for the F.A.I.'s attempts to make it a 'pilots only' competition!

An anomaly of the F.A.I. rules was discovered, which caused some argument in the early rounds - that of the 'string' cut. The rules state that cuts of the string count zero - so if the whole streamer is detached by such a

cut, then that person can lose no points other than time penalties. Likewise, the traditional 'knot' cut is a virtual impossibility. Obviously, this rule will have to be reviewed - although its original intention was no doubt to prevent models attacking too closely.

Models were naturally enough stereotyped wings, but Mick Davis produced a 'new look' which could provide the next design direction, judging by its high-speed performance. The model features sharply-tapered wing tips and uses a Super Tigre G20/15 glow running on pressure (from a Pacific tank) and the resulting machine was quite a revelation to watch. So you thought you had a tight-turning model? See this going better at an indecent rate of knots!

Entries from French and Dutch teams also helped enliven proceedings. The French favoured the Cox 15 as a power-plant, but without using pressure feed, in rather small models of conventional layout, although they also produced a more traditional wing. However, although the Cox's screamed, they seemed underpitched and were way down in speed, while the models themselves needed improvement. In contrast, the Dutch team had a very 'British' approach, using Oliver-powered models based on the *Liquidator* but somewhat reduced in area to meet the calmer Dutch weather conditions. An unlucky choice for this meeting! Their standards have improved enormously, indeed Fred Meier placed fourth (after being beaten by Richard Evans) and this indicated that perhaps our invincibility just isn't true any longer.

The final itself was a classic, fought out between Mick Chilton and Mick Loughlin, the former using a 14 oz. *Warlord* powered by a home-tuned Oliver, the latter a Copeman Oliver-powered own-design wing. For much of the bout, the lines were crossed completely, but still they battled on until eventually, the streamer came detached from one model, only to snag on its opponent. Seconds, and several manoeuvres, later the two models separated momentarily, and the wayward streamer had somehow lodged itself back on its rightful model! Pity the scorers! However, after this really exciting contest, the verdict was victory for Mick Chilton.



John Horton's 'B' racer obviously runs on 'mild' fuel? Note battery contained in haversack on his back.

It was not anticipated that the **Carrier Deck Landing** event would produce many entries - it still needs more exposure for this contest to gain popularity - but even so most of the 13 entries attempted to fly. For this they each deserved medals for bravery, as anyone who has flown a fully-throttled engine into strong winds will know! The hardware evident was promising, consisting of a scale *Wyvern*, *Buffalo*, *Seamew*, *Fulmer*, *Firefly*, *Sea Vixen* and *Guardian*, although none actually qualified for the bonus 100 scale points, mainly due to excess clearances around the engine. Read those rules lads! Eventual winner was Wal Cordwell's profile *Skua*, but even he failed to make an 'authorised' arrested landing, more a hop, skip and jump down the deck. Brian Perry's *Seamew* arrived in a similar fashion, while Everitt's *Sea Vixen* was less fortunate, wrapping itself around the ship's superstructure when the pilot moved off-centre.

Last year's winner Derek Bird suffered from engine trouble, as did several other competitors, and this put him right out of the running with his usual dark blue *Guardian*.

Rather than the wind, it was the low temperature and damp conditions which affected the **Speed** enthusiasts. In particular, engines using tuned pipes were the worst affected, never really reaching ideal working temperatures, particularly the F.A.I. models on straight fuel, and consequently no such model figured in the results. Frequently, these motors could be heard to slow right down as they came into the wind to receive yet more unwanted cooling. Best F.A.I. flier was Ron Irvine, at 134.7 m.p.h. (94.8 per cent of the record). Hot favourite Brian Jackson failed to achieve an official run with any of his models - even his monoline TWA model when he tipped some nitro into the fuel to compete in the Open class. Must have been his worst-ever Nats! Indeed, the majority of fliers were unable to put in an official - out of a massive entry of 40, only 14 were so blessed.

Less affected were the big glows using high percentage nitro methane fuels, and best of these, indeed, best of the meeting, was John Dixon's Super-Tigre 29ABC, equalling the 5 c.c. record at 164.4 m.p.h. - quite an



achievement under the conditions, and obviously most promising for when the better weather arrives. Another Feltham member, Martin Radcliffe, who currently holds the 10 c.c. record, performed most consistently, reeling off 166.9, 166.9 and 165.7 m.p.h. with his Super-Tigre 60ABC-powered *White Fright* to place second with 99.2 per cent of the record. He is certainly one of the best monoline pilots in the country, and his model really 'grooved' throughout its flight, despite the blustery conditions.

Lone continental entrant was Jurgen 'Mr. Glass-Fibre Props' Bartels himself, flying a Rossi 15-powered asymmetrical model fitted with a neat cast magnesium pan and glass-fibre top cowl, both of which items he is now marketing. He was also experimenting with carbon-fibre reinforced glass-fibre props, but using the carbon as the core rather than vice-versa, which would perhaps account for the breakages encountered. He was right out of luck, his Rossi suffering both from the cold and a Miebach CFS switch which seemed to defy all attempts at finding the right setting.

Unluckiest man of the meet must have been Mike Billington, whose Super-Tigre 60 was really beginning to go - until, that is, his all-metal ship had an argument with the tarmac, which it regrettably, but not unexpectedly, lost.

Six youngsters braved the cold, blustery winds and rain to compete in the Junior Stunt event for the Frank Warburton Snr. Trophy. Several models were eliminated during practice, and indeed only the second-placed flier, M. Child, flying his APS *Reaction* did not crash on one or other of his contest flights. Eventual winner of this closely-contested competition was 16-year-old Robert Calvert who flew a *Thunder-taker* (a Merco 35-powered design based on the *Thunderbird*) - just rewards for a person who placed third last year and second at the Cranfield Junior Contest.

The age handicap system worked well, the only complaint concerning the current rules seeming to be that a 2.5 c.c. limit on engine capacity would be fairer, as the small models are very much outclassed by 'full-size' stunters. By coincidence, all entries were from the North - let's see competitors from all over the country next year.



Roy Collins launches his Super-Tigre powered F.A.I. model for a disastrous attempt - model over-rolled, went left, then crashed near spectators.



Mick Page of Peterborough club was another tail-less entrant who preferred the glider approach to the almost traditional rubber powered designs.

## FREE FLIGHT - by John and June O'Donnell

Unlike the C/L and R/C affair at Hullavington, the Free-Flight Nationals was run purely as a modellers' meeting. There was no attempt whatsoever to attract or interest the general public, either by advertising, signposting or any other means. Logically enough, there was no charge for admission to the meeting, and cars could be driven round the peritrac and parked adjacent to the flying area. In short, the official approach to the meeting was that of running it just the same as any other contest.

The scheduled programme called for the three F.A.I. events to be flown in a rubber/glider/power sequence, with the seven rounds spread over the Saturday and Sunday, whilst a multiplicity of 'open' events were to be run simultaneously on the Monday. These rather controversial arrangements were discussed at some length in my *March Comments*, so I will avoid undue reiteration here! Suffice it to say that the timetable invited comparison with the earlier Two-day F.A.I. Meeting at Syerston - even before the similarities of the weather (and the consequences thereof) became apparent.

Activity at the Nationals was severely curtailed by the weather. One word - 'windy' - would almost serve as a description of the whole three days, and certainly gives the right overall impression. In fact, the wind strength varied considerably, often over short periods. Other aspects of the weather ranged from heavy rain to bright sun, but perhaps I should deal with matters in some sort of chronological order.

Saturday's competitions should have commenced with the first round of Wakefield opening at 1.00 p.m. In fact, at that time the officials were still struggling (literally) to erect the control tent in the face of a strong and gusty wind. Even when this task was completed, there seemed little hurry to get the contest under way. Within minutes, the members of the S.M.A.E. Free-Flight Sub-Committee were seen gathered together and deep in discussion. Immediately afterwards, George Lynn (in charge of the contests by virtue of being S.M.A.E. Competition Secretary) announced that he had taken their recommendations to cancel the first round of all three categories on the grounds that the wind speed exceeded the F.A.I. limit of 12 metres per second (almost 27 m.p.h.), and to decide



Bob Wells from the Anglia club with a 'Bitsa' open rubber model (3 oz. structure, 3 oz. motor) mostly dating back to 1962. He made three maxs, but did not fly-off.





Anthony Fantham of Richmond placed second in the Junior Kit Glider Contest with a KeilKraft Caprice - which just comes within the specification for this class.

later whether to start the 'second' round on schedule at 3.15 p.m.

Reactions to this pronouncement ranged from relief to violent indignation! The opposing arguments are pretty obvious. On the one hand, there is the view that model contests should be a test of model performance - and not of willingness to accept a high probability of loss or damage. Conversely, there is the attitude that free-flight is very much a battle with the 'elements' and that one should be able to cope with the rough as well as the smooth.

What happened next was interesting. There was a sudden squally shower, that drove everyone into the shelter of their cars, and which appeared to vindicate the decision to suspend flying. Immediately afterwards, the sun came out, the wind dropped, and at 1.45 (the original time for the end of the first Wakefield round), someone was seen test-flying an A/2! This was quotable evidence to those who reckoned that the contest should have been flown 'regardless'.

The controversy may well have had some influence on the sub-committee's decision to start the flying at the time scheduled for the second Wakefield round. It is doubtful that the weather was really any better than that prevailing two hours earlier - and some spells were probably worse!

Models were required to be launched 'close to' (i.e. within a few yards of) a marked line running crosswind, and located about 100 yards downwind of the car park. This scheme was akin to the F.A.I.'s launching line but without the enforced separation of contestants. Apart from its effect upon tactical flying, the use of the line meant that the fliers had to prepare for flying without any protective shelter from the wind. This could not be construed as 'officialdom', as there were no quibbles against my moving my car to a strategic po-

sition where it would provide a wind-break.

First official flight of the Nationals came from John Boon, whose Wakefield demonstrated a safe getaway - and a marked absence from any 'assistance' from the air. It was much too windy for 'conventional' tactical flying, and the only reasonable alternative (as regards trying to find lift) was to 'wind and wait', which in strong wind usually amounts to little more than launching during the lulls! In this initial round there was one brief moment when conditions 'felt' right (to me, at least) and an all but simultaneous launch by Andy Crisp, Alan Jack and myself saw all three models in strong thermal lift - the only maxes of the round. No-one else was so fortunate, but over two dozen scores were recorded in the first (or should it be second?) round.

The real disasters came when the A/2 Glider round started. It was apparent very quickly that very few entrants (and/or their models) could cope with the strong, gusty wind. There were more wing breakages on tow than I have seen for years, not to mention the various forms of tow-line instability. All in all, there were exactly four good flights recorded in the first round - maxes by Peter Stewart and Dave Hambley and near misses by George Simpson and Dave Barnes. A further 14 fliers managed to record some sort of score - mostly of under a minute. The small number of participants (even allowing for those who wrecked a model without any score at all) tells its own story - after all, the entry list had 147 names on it!

F.A.I. Power followed with even fewer fliers (less than a dozen) but with rather less calamities. Average flights were around the two-minute mark. Fred Chilton managed the sole maximum of the round, although Russell Peers was not far short. Next best flight came from Nigel Clarke who was unfortunate to lose his only model, despite an intentionally short D/T.

The single rounds just described proved to be the only ones flown on the Saturday. At some stage it was decided to suspend any further flying until the next morning, when it was hoped to run the scheduled four rounds as per the published programme. The lack of any P.A. equipment whatsoever meant that the dissemination of announcements re these decisions was rather difficult. I for one only realised that flying was over when I saw George Lynn collecting the markers from the starting line. From discussion it would seem that the whole of Saturday's contest flying might well have been cancelled if the first steps in that direction had not caused so much objection!

The Sunday morning was much more encouraging. Wakefield should and did start early at 9 o'clock, when the weather was quite pleasant. There was but a light breeze and plenty of lift underneath an overcast sky. Apart from all those who seized their chance to test-fly, a further baker's dozen of entrants were tempted into flying in Wakefield. This was despite their being a flight down and with little real hope of making up this deficit.

'Late starters' undoubtedly had more hope in A/2 as initial scores were so much lower - and this situation is reflected in there being three times as many glider fliers on Sunday as Saturday! Power came in between the other two events as regards the lengthening of the score sheet.

The weather soon deteriorated however. By late morning, it was quite breezy for the third (actual) Wakefield

round - and the direction had commenced to change. An hour's break for lunch (with cooked meals available by courtesy of the R.A.F.) and a move of contest control saw the afternoon's flying moved part way round the airfield.

Wind and rain was the 'order of the day' for the rest of the afternoon and the remainder of the F.A.I. contest. The only consolation was that the wind blew in a good direction as far as using the length of the airfield was concerned and that it was not strong enough for further 'interruptions'. The number of fliers fell off again, particularly in A/2, whilst much of the flying could hardly be described as impressive. To be fair, lift detection was far from easy, and failure to get thermal help usually resulted in a very poor flight. The wind, starting line and the numbers involved, all added up to make 'tactics' difficult, and many more than Croydon club members took a keen interest in the emissions of Jack North's bubble machine. Several mass launches in Wakefield showed that lift, although present, was so limited in area that only one or two models would max out of a group all launched close together.

In these circumstances, fortunes could and did change rapidly through the day, and competitors' positions often fluctuated wildly from round to round. A detailed resumé is hardly practical and, in any case, would require excessive space. A few highlights will have to suffice and I can only apologise in advance to those who I fail to mention.

Out of those who started well in Wakefield, I was the only one to keep up the pace. There is little doubt that this was due to having the 'breaks' when they mattered. Saturday's single flight cost me my only 'respectable' Wakefield, and I had to resort to a reserve for the other four flights. The spare model was assembled for 'emergencies' and utilises a 1959 wing (usually resident on my A/1) and a single-blade feathering prop that goes back a few more years. The whole thing looks at least 10 years out-of-date, but it will still ride a thermal as well as its more modern counterparts.

Complete contrast came from the model flown by Dave Hewitt to second place. It was a replica of Josef Klima's 'World Champs fly-off model', built from details given in *Free Flight News* apart from an ad-lib fin shape. It has V.I.T. (with about 1/10 in. movement) plus autorudder actuated by a Seelig timer, a two-piece wing and 16 strands of Pirelli. Gauze bandage round the tail boom served to repair damage sustained on the first 'official'.

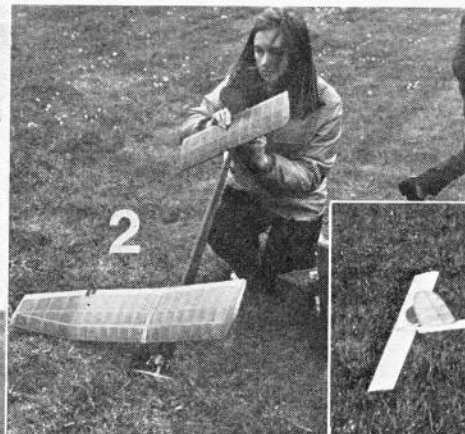
Successful places were very close, with less than three-quarters of a minute between second and ninth positions! Croydon members Ian Kaynes and John Blount vindicated the use of bubbles by coming third and fourth - although John lost much valuable time through having a very unsafe, tight, initial circle under power. Gary Madelin had the heartbreak of being well placed for four rounds, and then slipping from first to eighth through a last poor flight, possibly due to a hastily-repaired wing!

The A/2 event was anything but close, as George Simpson topped the list by a clear two minutes. In the conditions his score was outstanding. Surprisingly, he made a relatively poor (two-minute) flight in the 'easy' Sunday morning round - and then went on to do three maxes in the afternoon! He used an own-design model with distinctive-shaped wing tips. Airfoil employed was a Benedek.





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9

1. Colin Morris won A/1 glider with his Spanish Flea - just as the A.P.S. plan. 2. Sue Miller assembles her O.S. 15 powered Climax design; which combination gave her the Womans Cup. 3. Phillip Treverthick won his first-ever S.M.A.E. contest - the Coupe d'Hiver - with a Barron Knight. 4. John Powell, Open Glider winner, with a reserve Wichita, used for last flight only. 5. Russell Peers used a new large K&B 40RR in the Power fly-off, to bring him victory. 6. Henry Tubbs took the Vintage event with a GH.20. 7. Derek Wain placed second in the Power fly-off with an F.A.I. shaped and sized model, but with an ETA 29 up front. 8. J. O'D. himself with reserve Wakefield used for four flights after losing first model. Single-bladed feathering prop. is even older than the wing! Andrew Chilton (9) won both 1/2A Power and Frog Junior with TD.049 powered, flat-bottomed wing design. Auto rudder used, but not V.I.T. - not so in the case of Ray Monks who won F.A.I. Power (10). Tony Slates 'run to ground' after winning tail-less event (11). George Simpson (12) won A/2 by a substantial margin. Own design, 520 sq. in. model. 13. Russell Peers launches his open rubber fly-off model for its winning flight.



8



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11



12



13



Mike Fantham was the runner-up and used an old model for four out of the five flights. The exception was, of course, on the Sunday morning! Third was Brian Baines who pulled up very well after a rather shaky start. His model is a conventional-looking G/F rod design – but with an unusual airfoil (Shoaf 4738DF) on the version he used for four flights.

Terry Dilks came fourth without flying at all on the Saturday and despite a minute and a half last flight! Hindsight is such that it is easy to say that none of the F.A.I. events could have been won without a first flight – but glider could have been otherwise so easily.

F.A.I. Power was quite close, with Ray Monks proving the eventual winner. He flew an all-sheeted model with Ronytube fuselage for four out of the five flights – and admitted that it was not flying as well as he wished. Main trouble seemed to be a tendency for the power climb to flatten out as the model turned, though this was not consistent. Hardware comprised an ex-Miebach-tuned G.15, now fitted with a standard liner (instead of one to suit a pipe), a Kretschmer design g/f prop, and Culpin pan. Ray used an electric starter – but the real innovation was his home-made timer. This has musical-box works, operates all the usual gadgets, including the D/T, and has a very professional appearance. It runs in a remarkably quiet and smooth manner compared with any 'commercial' timer.

Russell Peers started his weekend well with second place in F.A.I. Power. He flew one model throughout, a conventional pylon design with a taper tip wing. Powerplant is a G.15 with a Cox-shaped head taking ordinary glow-plugs, now fitted with a McCann carbon-fibre propeller. Russell's model had a very good power pattern but suffered from a definite lack of horse-power in the air, despite a claim of high r.p.m. on a tach. Tony Child placed third but was rather unlucky (and puzzled) with a fifth flight that stalled all the way down. His model used a flat-bottomed elliptical tipped wing similar to that of John West's 1965 model, and a matching tailplane. Again a G.15 was used, this time a standard example that was reckoned to do 18,500 r.p.m. on a Top-Flite 7 x 4 nylon prop and KLG plug. A Tatone timer was used, with autorudder on the starboard side of the fin – but no V.I.T. Both Tony's and Russell's models proved to be about two ounces overweight when processed.

There were several 'hard luck' stories in this event. John Hook missed a round completely through waiting till near the end of one round, and then encountering starting trouble – a 'blown' plug proved to be the explanation. Phil Ireland had what was described to me as the 'best climb' of the contest, but broke off the top of the model's fin when the fourth flight ended in a tree. The effects of this were to ruin first the power pattern and then the model! Both John West and Danny Jarman lost models in strong lift on the Sunday morning. John's model had a borrowed Rossi, so he elected to spend the day searching rather than returning to fly his reserve model. Danny had a complete D/T failure and reckoned the model was heading for a watery grave in the North Sea. An aerial search the following weekend led to John West recovering his model from out of the crops two miles downwind, but he saw no signs whatsoever of any other models!

The final day of the Nationals was the Bank Holiday Monday, featuring what could only be described as a very crowded programme. All events were

flown simultaneously between 9 o'clock in the morning and 6 in the afternoon, with an hour's break for lunch. It was windy all day, but with bright periods and even sunny spells for much of the contest. There was apparently no question of these 'open' contests being curtailed due to the weather, as S.M.A.E. rules do not contain the wing-speed limit invoked for the F.A.I. events. I did hear suggestions that the max ought to be reduced (for A/1 in particular) but again there is no legislation to permit this – and perhaps it is as well. In practice, visibility was good and there was no real trouble in timing models for the required three minutes. Getting them back was another matter, as lift was both plentiful and strong. In consequence, thermal flights could, and did, travel considerable distances. The wind direction was not quite as convenient as the previous afternoon, and models were drifting diagonally across the 'drome', past a downwind hangar, across a wood, and over the scattered buildings that comprised the adjacent village. The models that cleared these obstructions then alighted in open, but heavily cropped, countryside. Moving contest control so as to utilise a longer stretch of airfield would have been possible except that it would have involved flying over the R/C thermal-soaring event, located in mid-field and apparently immobile.

The contests were hardly well supported, but most were contested keenly enough by the handful that decided to fly. Maxs came quickly from those who flew early. Whether this encouraged or deterred those still undecided about competing is a matter for conjecture!

I saw very little of Monday's flying through spending almost all day searching for my open-rubber models. My approach to what was obviously going to be a 'recovery contest' was to fly both my *Maxines* one after the other, and then search for the pair. Having retrieved the older model from a relatively close max, I then returned to use it for the third max. After this, two helpers and I expended much wasted energy trying to find a model for the fly-off! I was asked why I didn't use, say, a 2½-minute D/T in the expectation that the model would still clear the max before landing. Whilst such a technique would have worked on two flights, it would have been inappropriate for the middle one, that was in very mediocre air.

Russell Peers also threw models into the air with 'gay abandon', but he got away with it rather better. He started flying power as soon as the contest opened and had completed a treble by 11 o'clock – with one model. Two 'close' maxs gave him little retrieving trouble, especially as they were picked up for him; he did not chase the third flight before commencing rubber. This time he flew two models, and used the first one found for the last flight! There were at least two 'lucky' maxs in his two trebles. A power flight dipped behind the hangar at 2:55, reappeared momentarily, and was clocked off at 3:01. Then his final rubber flight power stalled badly before contacting strong lift at low altitude! Other competitors and their helpers completed Russell's retrieving for him, and he had all his models back by mid-afternoon. His only trouble-spot came when he flew Glider with an eye to the season's Championship, and took off both wing tips!

As only Rubber and Power needed a flyoff, it is perhaps appropriate to deal with the other events first. **Open Glider** had surprisingly poor scores in view of the plentiful lift early in the day. Winner was John Powell, of Norwich. He

flew two *Wichitas*, both with g/f rod fuselages. The first model was lost upwards on his second max, and the reserve spiralled out of another thermal for a modest third flight. Nevertheless, he had a substantial lead of 50-odd seconds over the runner-up, Dave Tipper, who took just a little 'time off' from his organisational duties as Chairman of the F/F Sub-Committee. Third place went to Derek May, flying a standard *Humblehound* complete with balsa fuselage. He did two near-maxs and one under a minute. Dave Barnes narrowly missed a place in this event – a repeat of his similar situation in A/2.

In comparison, top scores in A/1 were very respectable. They were flown to the same rules of 3 flights and 3 mins., not the 5 x 2 favoured elsewhere. Collin Morris was a clear winner with his *Spanish Flea*, exactly as featured in the A.P.S. plan. Gerry Pink and J. Watkins filled the next two positions.

**Coupe d'Hiver** was flown to the F.A.I. ideas of 100 grammes a.u.w., five flights and two-minute max. Winner was Phillip Trevethick, flying his first real contest and looking 'thrilled to bits' with the outcome. His model was a *Baron Knight* fitted with a two-blade folder instead of that shown on the plans – but still using six strands of Pirelli. Runner-up was Mike Fantham, just a little ahead of John Bailey and Graham Jubb.

Young Andrew Chilton won two contests with one set of flights. This was the outcome of the S.M.A.E. deciding not to run the **Frog Junior** as a separate event but to award the trophy to the junior producing the highest score in any of the ordinary events. Andrew flew in ¾A Power and won both this and the **Frog Junior**. His model was distinctive with swept-back leading edge on the tip panels. The wing used a flat bottom section, drawn by Pete Stewart. Power was 'standard' in being a T.D.049, turning a 5½" x 3" Tornado nylon prop. There was autorudder but not V.I.T. Close behind Andrew came Dave Bailey and C. Rushby.

The **Ladies' Trophy** was run in the same combined fashion as the junior event – and was won by Sue Miller with but a single flight in open power. Her O.S.15 *Climax* ended up off the 'drome' and gave considerable retrieving difficulties until returned by some gipsy children.

**Vintage** models were hand launched, in view of the wind, and was topped by Henry Tubbs, flying a *GH20 Wakefield*. He started with a 2:58 flight and persisted to an eight-minute-plus total. I am afraid that I do not know what second-place man Eric Smales flew, but Brian Stout used a *Diasphere* to come third.

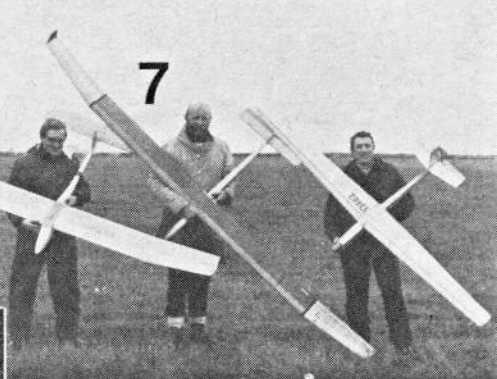
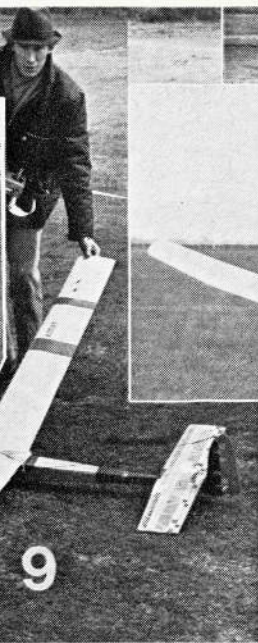
**Tailless** used to be a rubber 'benefit', but times have changed and this year's *Lady Shelley* event went to Tony Slater, flying a glider. Successive scores by B. Twomey and George Simpson were well over a minute lower.

The flyoffs necessary to settle the Rubber and Power events were held very quickly after the end of the contests at six o'clock. **Rubber** was scheduled for 6:15 p.m. and power at 6:30. Although there were three trebles in rubber, the fourth flight proved to be a flyover for Russell Peers. I had lost both models and Bob Wells did not appear to take his flyoff. It was reported that he had gone home early, despite having successfully retrieved the model used for his three maxs. As this was a 'bitsa', using components dating back to 1962, it would hardly appear too valuable to risk. In any case, Bob had already flown it three





Ray Favre presents an Aeromodeller subscription to Paul Kenny, 10-year-old Junior Kit Glider winner at Strubby. 2. David Hardaker won the R/C aerobatic class with his 'Bulldog' - many versions of this design were seen, several with glass-fibre fuselages and foam wings. 3. Sixty-three persons entered R/C pylon - typical start line action seen here. 4. Helpful organiser releases N. Watson's glider which won the Junior kit event at Hullavington. 5. Neil Webb flew this low-winged thermal soarer to third place in fixed task soaring event. 6. Line-up of the Junior kit winners at Strubby. 7. Trio of first placers at R/C Thermal Soaring event - F.A.I. and Open events flown. 8. John Beer releases his attractive but simple soarer although perhaps a slope soarer would have been more appropriate under those conditions. 9. Keen C/L flier now turned R/C thermal soarer, Gerry Johnson and 8th placed model in F.A.I. event. 10. Bunny Newman holds while son Alister winds. 11. Alister won the Junior rubber event at Hullavington. Hot favourite, and eventual winner of the pylon race was Allan Mann (12) with ultra-slim and streamlined HP40 powered model.





times in the wind! No opposition left Russell in the position of merely needing to make a token flight, which he then proceeded to do. He did not use normal turns on his 300 sq. in. model, and perhaps this contributed to the model wallowing about in a series of power stalls before settling down to a two-minute flight.

Power at least was fought out to the finish. Derek Wain had spent the afternoon searching for his open power model, and eventually returned empty-handed at 6.15 – to find the model waiting for him. Expecting it to be down in crops, he had obviously looked as long as possible, and was relieved that he didn't have to flyoff with his F.A.I. model. On the crucial extra flight Derek had a good, safe, if spirally, climb off a full engine run, followed by reasonable air for a very respectable 3.45. His model was F.A.I. size but had an ETA29 for power. Surfaces had the standard F.A.I. elliptical tips – but the fuselage had a simple sheeted pylon offset from the centre.

Russell Peers changed models for the Power flyoff. Deserting his usual ETA29 *Woodpeckers*, he produced the much larger K&B 40RR version first seen a fortnight earlier at the *Pannett* trophy. On the Nats flyoff the climb was definitely flat and a little tight, combined with an engine run of only 8 seconds or so. Nevertheless, it was adequately high enough to use its good slow glide and work its way into weak lift. Circles were rather wide, giving a slightly stalled 'mushy' glide – but it still made 4.40 for first place. With clear advantages in visibility, even if a decided handful to handle, this model might just be the start of a new approach to open power. Compared with most of the other large models seen over the years, Russell's is much more impressive. Much of this is due to it being just an enlarged version of a proven design – and not 'built like a battleship', nor resorting to inherent trouble spots like two-piece wings.

The other member of the flyoff was John Hook, who had a disastrous conclusion to his flying. He was using an O.S.40 in a standard size *Woodpecker* – and experienced an engine cut just after launch, giving a four-second flight and a snapped fuselage. He reported that the motor had done this before – but as it had been slightly rich on the previous contest flights he had expected no trouble on the flyoff!

It might be politic to mention those who just missed maxing out. Tom Smith reappeared on the contest scene to fly a brace of *Nig Nogs* to fourth place, dropping only a few all-important seconds on his third flight. He still favours the ETA29, although he had dispensed with the Union Jack wing structure on at least one model. John Boon was 'top of those who failed' in rubber. He successfully retrieved his Wiseman design model from its first max, only to have the wing broken by the *slipstream* of a passing bus whilst walking through the village. Losing the repaired model on the next flight meant he had to use a barely-flown brand-new model, that reflected its lack of trim in a 2½-minute score. Dave Firbank also started with a double max but finished his hopes and model by a crosswind launch.

'Outsiders' might expect the British Nationals to be rounded off by a suitable prize-giving, but such is not the case, as there is nothing in the way of awards for distribution on the day. The Trophies allocated to some events are presented at the end-of-season S.M.A.E. Dinner, whilst plaques have to be engraved with the recipients name (at the insistence of the Records

Officer) and hence take many months to negotiate the 'system'.

In actual fact, there were two small separate presentations at the Nationals – both to events that fall outside the normal contest programme. The first was the 'unofficial' **chuck glider** event and the other was the **Junior Kit** contest. Being privately organised, the H.L. Glider competition was able to feature a cup (to be held for 12 months) for the winner and shields for four other fliers – all arranged by Barry Kershaw, Roy Roberts & Co. Trophy winner was Roy Clarke, flying an own-design model with a wooden fuselage. Dave Truluck 'placed' with a modified *Sweeppette* of 20 in. span, resplendent in a *shoe-polish* finish. Preferred colour is ox-blood brown!

There was one very unusual aspect of the Nationals that I have been requested to mention. There was a marked absence of the usual problems connected with retrieving wayward models. Furthermore, two of the local farmers visited the airfield to see what was happening, and were most favourably impressed. One apparently had expected to see schoolboys and rudimentary gliders, and had to revise his ideas rapidly upon the sight of modern F.A.I. power techniques.

In retrospect, there should be much learnt from the 1972 Nationals. The 'split' can only be described as a doubtful success at best. The 'Nats' atmosphere was lacking – though the relative contributions of the separation of events and the inclement weather could be debated. Interrupting flying because of excessive wind is a very dangerous policy – and required both urgent consideration and some positive decisions before prospective entrants cease to attend windy meetings. Events want rearranging to remove the impression of F.A.I. bias. On the other hand, the venue was good, and the modellers more welcome than usual. A return visit to R.A.F. Strubby sounds like a good idea!

Finally, I would like to acknowledge the help I received over the weekend – from Alan Jack and Charles Rennie in Monday's fruitless search, and all those who supplied both June and I with model details and other snippets to make this report possible.

★ ★ ★

There were two simultaneous venues for the **Junior Kit Contest**, both at Hullavington and Strubby. Very strong winds at both places kept the entries down, although the free-flight meeting attracted significantly more competitors than did Hullavington.

The results show remarkable similarity of patterns with the glider entries very low and their flight times also low. Rubber times were quite good, considering the conditions, and several flights over one minute were recorded.

At Hullavington, Brian Bow and his helpers were really well-organised – complete with two tables, building boards, balsa, epoxy, cement, pins, knives, dope, etc., much of which was kindly provided by the *Modellers' Den* of Bristol. What a pity the entries weren't higher after all this effort. These excellent facilities were nonetheless put to good use throughout the day and many senior modellers would have been put to shame if they had watched the enthusiasm of some of the repair efforts. One entrant spent 1½ hours rebuilding his fuselage, only to be five minutes too late to fly!

M.A.P. Ltd. kindly donated prizes for the top three places in each section

and the *Modellers' Den* donated a box of building equipment for the youngest competitor (R. Newnham, 10 yrs.), while they also let the poor 1½-hour builder, M. Cohn, take away the remaining repair equipment, which was quite a haul!

Apart from having more entries, *Strubby* also differed from Hullavington in that the Contest Director didn't have the heart to ask the top five to make extra flights in such bad conditions, so the prizes were awarded on the results of the three qualifying flights.

Both contest directors remarked on the fact that many senior modellers did not fly in the terrible conditions and that all Junior Kit Contest entrants are to be congratulated for their 'bravery'.

## R/C Thermal Soaring

R/C THERMAL SOARING was one event to benefit from the decision to hold a 'split' Nationals since sufficient 'frequency space' became available to enable the addition of this new event to the Contest Programme. In fact, two soaring events were held, one on Sunday to F.A.I. rules, and on Monday to 'Multiple task' rules that only recently have been formulated.

R/C Soaring at the *free-flight* Nationals may seem a bit of an anomaly but this was far from the case, since not only are the models of free-flight proportions, but so many of the competitors have been well known in A/2 circles. In view of the severe conditions throughout the meeting, the advantage of a thermal flight without the long chase cannot have been lost on the hard-pressed free-flight competitors! Not that there were many thermal flights, indeed, only three flights came near to the 6-minute maximum.

Sunday's event was to F.A.I. rules for the *Radio Modeller Trophy* and attracted 41 entries, of whom 26 recorded flights. Contest Director Nickalos Neve set the maximum at six minutes from a 150-metre towline, 50 bonus points being awarded for a landing in the 25-metre diameter circle, and flight time over six minutes being deducted. Reduction of the towline length from 300 metres (nearly 1,000 feet!) to 150 metres resulted in a protest being lodged by some competitors, although the C.D. is permitted this option within the provisional F.A.I. rules.

Winner of the R.M. Trophy was Colin Thompson from the Cotswold club, with F/Lt. Nightingale of the R.A.F.M.A.A. as runner-up, third place went to Alan Brind of Newbury.

Monday's Multiple Task event involved the competitors in making one thermal flight, one flight over a speed course, a distance flight, and finally a precision flight and spot landing. With the wind even stronger than Sunday, and many models having suffered damage, the original entry of 32 was somewhat depleted, only half that number recording a score. Only one competitor completed the speed course – a fact that not only proved it was possible, but also resulted in Alan Brind becoming an easy winner! Ray Cooper from Warwick was thus unlucky to finish in second place, ahead of F.A.C.C.T. club's Niel Webb in third place.

Held for the first time at the British Nationals, Thermal Soaring proved successful despite the most discouraging weather conditions, and a full account of this and other R/C events can be found in our companion magazine, *Radio Control Models & Electronics*.



# RESULTS

## Open Rubber (Model Aircraft Trophy)

1. B. R. Peers (Falcons)	9:00+202
2. J. O'Donnell (Whitefield)	9:00
A. R. Wells (Anglia)	9:00
4. J. Boon (Falcons)	8:43
5. T. Dilks (Falcons)	8:37
6. J. E. Carter (Falcons)	8:04

## Open Glider (Thurston Cup)

1. J. Powell (Norwich)	7:38
2. D. Tipper (St. Albans)	6:47
3. D. May (C.M.)	6:22
4. D. Barnes (J) (Liverpool)	5:58
5. M. C. Reeves (Whitefield)	5:42
6. A. V. Fathers (C.M.)	5:35

## Tailless (Lady Shelley Cup)

1. A. T. Slater (Leatherhead)	4:13
2. B. Twomey (C.M.)	2:57
3. G. T. Simpson (Grantham)	2:40
4. M. Page (Peterborough)	1:33

## Frog Junior Trophy

A. G. Chilton (Crookham)

## Women's Cup

Mrs. S. Miller (Cambridge)

## Open Power (Sir John Shelley Cup)

1. B. R. Peers (Falcons)	9:00+440
2. D. J. Wain (Bristol & West)	9:00+004
3. J. Hook (Southampton)	9:00+345
4. T. W. Smith (B.A.C.)	8:53
5. E. M. Smales (Blackburn)	6:27
6. T. Payne (Northampton)	6:00

## Vintage

1. H. J. Tubbs (Leeds)	8:12
2. E. M. Smales (Blackburn)	7:13
3. B. M. Stout (Grantham)	5:59
4. J. B. Mayes (Sth. Bristol)	4:49

## 1/2A Power

1. A. G. Chilton (J) (Crookham)	7:39
2. D. S. Bailey (Swindon)	7:21
3. C. A. Rusby (Grimsby)	7:10
4. M. Duce (Liverpool)	6:16

## A/1 Glider

1. C. Morris (St. Albans)	7:00
2. G. C. Pink (South Bristol)	5:36
3. J. R. Watkins (Wolverhampton)	5:10
4. R. L. Bailey (St. Albans)	4:28
5. P. Freebrey (Northwood)	4:23
6. G. Hannah (St. Albans)	4:22

## Coupe d'Hiver

1. P. Trevethick (Grimsby)	6:21
2. M. Fantham (Richmond)	6:01
3. J. Bailey (Bristol & West)	5:49
4. P. G. Jubb (Liverpool)	5:43
5. R. Hoff (Sheffield)	5:36
6. I. Dowsett (Brighton)	5:24

## Chuck Glider

1. R. Clark (C.M.)	3:01
2. H. Piercy (Adelestone)	2:58
3. C/T. Truluck (RAFMAA)	2:54
4. B. Kershaw (Wigan)	2:44
5. W. R. Newton (Leigh)	2:43
6. A. Williams (Bassett)	2:37

## F.A.I. Rubber

1. J. O'Donnell (Whitefield)	12:55
2. D. Hewitt (Portsmouth)	12:09
3. I. Kaynes (Croydon)	11:59
4. J. Blount (Croydon)	11:58
5. M. Evatt (Northampton)	11:56
6. C. Williams (Richmond)	11:54
7. A. Jack (Tynemouth)	11:50
8. G. Madelin (Crookham)	11:36
9. R. Pollard (Tynemouth)	11:26
10. J. Boon (Falcons)	10:42

## F.A.I. Glider

1. G. Simpson (Grantham)	13:53
2. M. Fantham (Richmond)	11:53
3. B. Baines (RAFMAA)	11:33
4. T. Dilks (Falcons)	10:07
5. D. Barnes (Liverpool)	9:13
6. C. Williams (Richmond)	9:04
7. P. Whiston (Blackheath)	8:51
8. F. Sharp (Croydon)	8:44
9. D. Tipper (St. Albans)	8:42
10. M. Keevil (N. Surrey)	8:20

## F.A.I. Power

1. R. Monks (Birmingham)	12:33
2. B. Peers (Falcons)	12:14
3. A. Child (Brighton)	12:06
4. D. Wain (Bristol & West)	12:01
5. J. Hook (Southampton)	10:17
6. P. Ireland (Southampton)	10:10

## Junior Kit Contests - Hullavington

### Rubber

1. A. Newman	79+76 secs.
2. R. Willis	59+51 secs.
3. N. Watson	54+40 secs.
4. R. Griffiths	29+38 secs.
5. M. Gamble	4 secs.
6. M. Cohn	

### Glider

1. N. Watson	7+109 secs.
2. M. Lowe	49+ 82 secs.
3. R. Newman	116+ 47 secs.

## Junior Kit Contests - Strubby

### Rubber

1. D. Savage	168 secs.
2. N. Tillet	135 secs.
3. G. Moore	132 secs.
4. R. Green	91 secs.
5. J. Sullivan	85 secs.
6. J. Green	56 secs.

### Glider

1. P. Kenny	88 secs.
2. A. Fantham	80 secs.
3. R. James	76 secs.
4. P. Sargent	64 secs.
5. J. Green	30 secs.

Youngest entrant: P. Sargent

## Junior Stunt

1. R. Calvert (Blackburn)	143 pts.
2. M. Child (Allerton Grange School)	135 pts.
3. J. M. Kirk (Blackburn)	134 pts.

## 'B' Team Race (Davies 'B' Trophy)

1. Taylor/Yeldham (Southend)	7:21.5
2. Horton/Kirton (Wharfedale)	8:13
3. Heaton/Ross (Leigh)	9:00

## F.A.I. Team Race (Davies 'A' Trophy)

1. Devenish/Davy (Wharfedale)	149 laps Retd. (Model ran in)
2. Clarkson/Daly (Stockport)	100 laps Disq. (Cowling lost)
3. Buys/Visser (Holland)	66 laps Retd. (Crashed)

## 1/2A Team Race (RAFMAA Trophy)

1. Heaton/Ross (Leigh)	8:29
2. Muncaster/Langworth (Novo)	10:13
3. Campbell/Perkins (Hinckley)	10:25

## Goodyear Team Race

1. Dixon/Radcliffe (Feltham)	7:59.5
2. Tribe/Tribe (Elliot)	9:17.1
3. Clarkson/Daly (Stockport)	10:27

## Goodyear Novices Final

1. Tribe/Tribe
2. Taylor/Taylor
3. Taylor/Jones

## Combat

1. M. Chilton (A.C.E.)
2. M. Loughlin (Wanstead)
3. R. Evans (S. Bristol)
4. F. Meijer (Holland)

## Carrier Deck Landing

1. W. B. Cordwell (3 Kings)	75.8 pts.
2. B. B. Perry (Wolves)	58.3 pts.
3. Everitt	26.2 pts.

## Handicap Speed

1. J. Dixon (Feltham)	100% (164.4 m.p.h., 5 c.c.)
2. M. Radcliffe (Feltham)	99.2% (166.9 m.p.h., 10 c.c.)
3. I. Roffey (Elliot)	99.26% (166.9 m.p.h., 152.3 m.p.h., 10 c.c.)

## Aerobatics (Gold Trophy)

1. J. Mannall (Buckaneers)	919 1/2 pts.
2. J. Newnham	858 1/2 pts.
3. N. Billington	874 1/2 pts.

## CONTROL LINE SCALE RESULTS

Name	Aircraft	Club	Flying	Static	Total
1. D. B. Goddard	Tiger Moth	Three Kings	442	487.5	929.5
2. H. G. Venables	Fok. D.VII	Wolves	440	464	904
3. W. B. Cordwell	Glos. Gladiator	Three Kings	490	224	714
4. R. Ivans	Boeing Crewmaker	Wolves	464	200	664
5. B. D. Perry	Tipsy Junior	Wolves	434	205	639
6. L. Fidal	Viscount	Reswall	172	198.5	370.5
7. A. Westlake	Mew Gull	Telford	234	115.5	349.5
8. G. P. Burkett	S.E.5a	Three Kings	188	81.5	269.5
9. D. G. Morbin	Chipmunk	Three Kings	76	67	143

## FREE-FLIGHT SCALE RESULTS (Super Scale Trophy)

Name	Aircraft	Club	Flying	Static	Total
1. V. Driscoll	Westland Waipiti IIa	St. Albans	258	455	713
2. T. Manley	DH.4	Blackburn	259	403	662
3. V. Priest	BE2e	Leicester	150	195	345
4. J. McDonald	Tiger Moth	Canada	146	157	303

## RADIO CONTROL SCALE RESULTS (Radio Modeller Trophy)

Name	Aircraft	Club	Flying	Static	Total
1. R. Norris	B.N. Islander	Warminster	687	2350	3037
2. B. Taylor	Kawanishi 'George'	Ilminster	888	1978	2866
3. J. Sheldon	Tipsy Nipper	W. Drayton	1050	1520	2570
4. J. Carroll	Turbulent	Ireland	726	1517	2243
5. M. Gilham	Westland Widgcon	St. Austell	1069	1165	2234
6. S. Smith	Spitfire IX	Kidderminster	333	1819	2152
7. E. Herbert	Zlin 526a	Haslingden	936	1041	1977
8. H. Dagg	Miles Magister	Dublin	675	1225	1909
9. M. McFarland	Zlin 526a	Rossendale	738	1030	1768
10. A. Horne	Turbulent	Bromley	849	785	1634





## CLUB NEWS

IT IS, OF COURSE, right and proper that the governing body of the movement, the S.M.A.E., should endeavour to provide adequate insurance for its members, but surely it should not cripple itself in the process. I accept that it is for the general good of the hobby that most, if not all, members are suitably insured, but with the popular spread of the fast, wide-ranging and potentially deadly radio model, we have moved into a different situation from the days when the provision of insurance cover, at least for Associates, was more of a goodwill gesture rather than a vital necessity. The time has surely come when the people who incur the greatest risks to public and property should pay a premium commensurate with that risk, with the S.M.A.E., limiting itself to provision of insurance solely for competition purposes. It could perhaps, continue to provide the means whereby the individual member might obtain insurance cover on favourable terms, but related to the class of model he wishes to fly. The reduction in membership fees, particularly for Associates, would be such that a much larger membership could be acquired.

Reader, Mr. J. W. Law, noted in our June issue a reference to the difficulty of obtaining suitable pre-war vintage plans, and writes to tell us of a very abundant source of American plans. The plans cover both kit and magazine designs for Power, Rubber and Glider. The address to write to is John Pond, 4135 Avati Drive, San Diego, California 92117. Mr. Law has a John Pond list which he is prepared to loan to anyone interested. His address is 46 Beech Avenue, Newark, Notts.

For all its seeming omnipotence, Radio has not yet usurped all other forms of controlled flying. Witness to the fact that control-line is still alive and kicking is the report sent us by Mr. P. N. Godfrey of the **Winchester M.A.C.** Included with the report is a hefty cutting from a local paper in which the club got a good, lively write-up plus a couple of photographs showing a display of highly-developed models, mostly C/L. Particularly eye-catching was the nicely-detailed twin-engine scale job of our informant, Mr. Godfrey, which no doubt is familiar to the Winchester public, as too, the other models in the photographs, through the many displays the club puts on. In fact, it specialises in this sphere of public relations, and has a highly-trained team called the 'Yellow Chicks', but Mr. Godfrey gives no clue to the origin of the quaint nomenclature. Needless to say the team is very popular at Fetes, etc., where they fly both Radio and C/L, and also put on static shows. Membership is 25, most of whom appear to be operational. Room, however, for more members, and the Secretary, Mr. Headley, would be pleased to hear from you. His address is St. Winifreds, Lordwood, Albrook, Eastley.

The newsletter of the **Watford Wayfarer's M.A.C.** (or should it be Wayfarers?) has a few things to say in connection with the Sports Council's attitude to aeromodelling. No surprise is expressed, for a derisory, or alarmist, attitude to model flying is something that is now written into the scheme of things. If the errant model is involved in a minor mishap, the incident is blown up to the proportions of a Jumbo Jet flying inverted under London Bridge. Even so, the Watford Wayfarers cannot grumble too much about official attitudes, for they confess to having a quite sympathetic local council - and many are - but at the same time are not letting up in their attempts to reduce engine noise.

The **Southampton M.A.C.'s** Spring newsletter gets off to an optimistic, perhaps too optimistic, start in asking for warm, dry and windless days in the Summer. Well, the Spring was pretty well washed out and the remnants blown away, and the Summer seems to be following in the same tradition - but there's always the Autumn. Let us hope, though, that there is an anti-cyclonic upsurge to grace the very enticing free-flight programme laid on at the club's enviable Beaulieu venue. Apart from the area meetings there are two club galas and the free-flight trials. There is also an attractive Radio programme on the agenda, with comps throughout the season for Pylon and Multi Aerobatic. Not being *au fait* with the finer points of radio handling, I can only baldly pass on the information that Tony Mills has a low-wing A Pylon Racer with coupled rudder and ailerons. Appears that it cuts a nifty pylon. Again, looking for improved control around the pylons, Jack Anderson's *Instigator II* has no rudder but an aileron on the starboard wing. We now look forward to the first asymmetrical pylon racer.

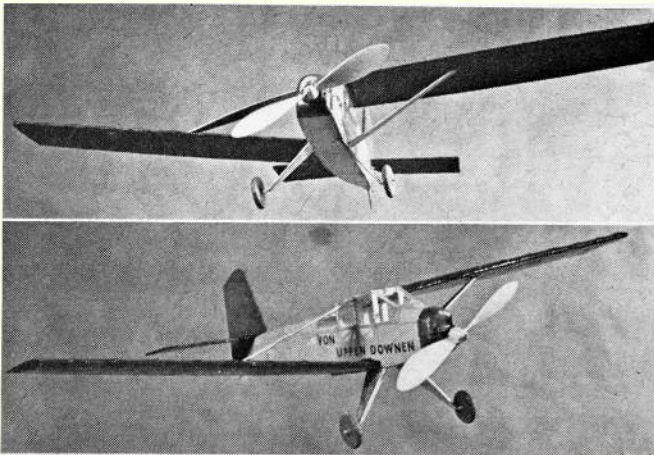
Looking through the Spring contest results in the **North Western Area's The Message**, we note that the names of veterans, H. Tubbs and J. O'Donnell are still topping the lists, with another well-known name, Russ Peers, prominently featuring. Weather, no doubt, was the reason for the May area meeting being somewhat down in entries on the March turn-out which, with 37 Glider entries, was something of a bonanza. Comforting to see that oft threatened site, Woodford, still showing on the contest schedule, together with Chetwynd, but Flookburgh is something new. Would seem to be a large field, or an army camp, for visitors are asked to look out for the bull, though the name suggests a piece of unexpected luck. If you want to hear about the latest allied model sport, just hang around. For hang around is just what you do, on to a large pair of glider wings, just as they did back in the days when the birds started to lose their air supremacy. The sport even has its own magazine, *Low and Slow*, and not *Sprint* and *Splint* as you might imagine.

A club that is fast making a name for itself in the C/L world is the **Cosmo Aeromodelling Club**. From its base in Bexley, Kent, this once fly-for-fun club has been challenging the big London C/L guns with considerable success. Mr. G. Richards, the Secretary, sends us the club's placings in the S.M.A.E. London Area C/L Championship Goodyear event held at the Hayes Circuit, Feltham, 1st, Cook and Ansell; 2nd, P. Tribe and M. Tribe; 3rd, Hughes and Willis; 5th, M. Tribe and P. Tribe; and 6th, Ferguson and Taylor.

All that nasty weather we had during the early part of the season was spread well over the Scottish regions too, according to a report and newsletter we have received from the **Scottish A.A.** At the Motherwell Gala, the rain just came down in buckets, completely washing out the day for the free-flight hopefuls. R/C Spot Landing was at least flown, with George McCree repeating his previous win, and in C/L Combat was won by S. Humbert and a Junior race over 90 laps by G. Irvine. Scale event was held static - no floatplanes - and was won by D. McIntyre with a kit-built Spitfire. Another Gala to get a mauling from the weather was the Clyde Valley Fliers' Gala. F/F and C/L were blown off, and only a Spot Landing event got off the ground. It's been R/C all the way up there as far as worsening the weather is concerned, for in the face of really vile conditions, an Intermediate Aerobatic Competition was flown at Hatfield Moss. Winner was D. Lyall of Edinburgh.

The true index of a club's vitality and enthusiasm is the active support the members give the contests it puts on, and in this respect, the **Sevenoaks & D.M.A.C.** should be well satisfied with the turn-out, for its Radio Novices event, no less than 16 entries - large by any club standard. The weather took a break from its perpetual motion to give a fine, calm day for the novices to get safely airborne. Manoeuvres were simple, with overhead eights causing most of the problems. Winner was S. Uwins flying a *Middle Stik*. A more unkind day and a much reduced entry, however, for the Spot 'n Spin contest. Won by I. Vaus, with P. Leach second. And it is these two, in the reverse order, who top the Pilot of the Year table after two rounds. Jack Cordery writes with a deal of wit and insight into the question of engine silencing, and where and how to fly radio models. He tends to examine noise from the 'residential' rather than the perhaps biased model flying end, and concludes that it is not always the volume of noise that is obtrusive but its persistence, and this could well emanate from a quite small

Well, you must admit, it is different! Reader J. A. Sizer built this model to combine the advantages of the Mono-plane and Biplane - or perhaps the advantages of high and low winged mono-planes, or perhaps . . . anyway, the 36 in. span, rubber powered model flies quite conventionally.





engine, particularly one that emits an undulating sound. He also thinks we should fly our models in properly-controlled areas away from other activities. Ideally, yes, but there are still many people who, for one reason or another, have to make use of public open spaces or not fly at all, and much depends on the nature of the open space, whether radio flying is or is not a danger and a nuisance.

More of a gala than a club comp. is the way I would describe the Second Club Goodyear Comp. held back in April by the **Three Kings Aeromodellers**, for no less than seven teams competed. Weather was good, if a bit gusty, and the heats were full of the usual tragi-comedy that comes of lines a-tangle, faltering motors, bits dropping off, etc., not to mention the striking of pitmen (all topical stuff) by models which appear to be equipped with some sort of cranial homing device. Winners were the Rushbrooke-Aldous team. A good show of Three Kings models were to be seen at the Wimbledon Community Association Handicraft Exhibition (don't let the Sports Council hear about this). And well received too, for Ken Gardner's *Spitfire* lifted the Silver award, and Wal Cordwell's *Cessna* the Bronze. But, dare we say it, they were beaten to the Gold by a Doll's House - and a non-flying one at that.

From Australia, a newsletter new to these columns: that of **M.A.R.C.S.** (Victoria). The club has 50 members and seems to approximate to a typical radio club in this country.

More official in tone, but still in that very model-conscious corner of the world, we have to hand the *New Zealand Newsletter* of the **N.Z.M.A.**, the secretary of which is none other than Ron Magill. This year the Association will be celebrating its 25th Nationals, the host club for the occasion being the Wellington M.A.C. We might think of New Zealand as a nudging neighbour of Australia, but there is, in fact, quite a tidy stretch of ocean betwixt the two; so it says much for the competitive spirit in the antipodes that the two countries meet so often in competition. Just now the Trans-Taman events are the focus of interest, with the free-flight events held at Richmond, N.S.W., over Easter. Apart from an initiating rainstorm, the weather, with little or no wind, appeared to be quite agreeable. Rivalry was close between the countries, with a proportionally small amount of points allowing New Zealand to retain the Trophy for the three events, Wakefield, Power and A/2. The particular strength of New Zealand seemed to lie in Wakefield, whereas the Aussies were more consistent in Power. Man of the meeting was undoubtedly New Zealand's Paul Lagan, top scorer in both Wakefield and Power. Next International lined up is the Rothmans Trans-Taman R/C event. This is a two-day affair for Aerobatics and Pylon to be held over the Labour week-end. Just one comment from the report of the Association's A.G.M. A club put forward the proposition that most R/C modellers had no time to build models but still liked the chance to fly in a contest. This seems to point the way to pure piloting events as opposed to the test of all-round modelling ability which has always formed the basis of model contesting.

Yet another well-stocked issue of *Airlog* from the **British Aircraft Corporation M.A.C.** Many useful articles plus a number of likely-looking plans. Only 'hard' club news is of the 1972 Model Building Competition. There were 38 entries covering a number of classes, including Multi Radio, Free-Flight and even R.T.P. Proved to be a good day out for the kids, for they got the chance of piloting an r.t.p. model at 1p per time. Enormously popular, each child getting a coloured photo of a B.A.C. craft. Also popular with the children, all ages, was Jack Edwards' beautifully-made Dick Dastardly craft, complete with old D.D. himself and a pigeon with rotating wings suspended in front of the model on thin wire. Overall winner of the event was John Hanlon with an F.A.I. Rubber model.

They seem to do things spaciouly down South Africa way, according to the **Rand Model Club's Tarmac Torque**. The 1972 C/L Nationals was held over the four days of Easter, giving plenty of time for the fullsome proceedings. Pity we haven't the space to cover the event in more detail.

From *Flight Lines*, the newsletter of the **Hamilton M.A.C.** (New Zealand), comes a handy tip for all who struggle with that intractable stuff called piano wire. Before tackling the job, knock off the shape required from a piece of similar gauge copper wire. Thus, any measuring mistakes can be rectified on the copper wire, saving time and yards of mangled wire.

Finally, it's comforting to see how responsibly many clubs control their radio flying. Top marks, particularly to the North Essex club, flying at R.A.F. Wethersfield recently. Low flying was restricted to the empty landing strip and all transmitters were impounded, with officials regulating their issue on a strict, one at a time colour code basis.

More live reports would be welcome.

Clubman

## Contest Calendar

July 22nd	LEEDS D.M.F.C. RALLY. A/2 (Min. £5 first prize). Open R/P. Mini Comp. Chuck. Vintage. Duration. Min. £24 total prize money. Also Vintage Precision. Details: J. Moseley, 37 Springmead Drive, Garforth, Leeds, Yorks.
July 29th-30th	R.A.F. M.A.A. CHAMPS. R.A.F. Leconfield, Yorks.
July 30th	MIDLAND AREA R/C & C/L MEET. C/L. Stunt, Goodyear, F.A.I., Combat, H'cap Speed, R/C. Class 2 Scale, F.A.I. Pylon, Open Pylon (Min. wt. 6 lb.) & Spin and Spot landing. T. & G. Start 10.30. R/C Info & Pre-entry, 25p, to T. O. Isom, 64 Cuffling Drive, Leicester LE3 6NF. C/L Info & Pre-entry, 25p, to B. Parkinson, 14 Kenilworth Road, Beeston, Nottingham NG9 2HX.
July 30th	ST. ALBANS SUMMER GALA. F.A.I. R/G/P, 7 rounds from 10.30. Chuck, C. d'H., A/I. Venue: Chobham Common.
August 2nd	PERFORMANCE KITS SPORTS RALLY. Sports & Vintage models at Old Warden, Biggleswade, Beds. All welcome.
August 6th	5th AREA CENTRALISED MEETING. Area Venues. Team Power, F.A.I. Rubber, A/I.
August 6th	S.M.A.E. R/C PYLON RACING. F.A.I. & Formula 1. Venue: Nth. Luffenham, Rutland.
August 6th	WESTERN AREA C/L RALLY. F.A.I., Good-year, 'A' Rat (Western Area Rules), F.A.I. Combat. Entries close 12.00. Venue: R.A.F. Fairford. REPORT TO GUARD ROOM WITH S.M.A.E. CARDS.
August 6th	BUCKANERS STUNT COMP. Pre-entry (25p) & Details from J. Mannall, 3 Totnes Close, Bedford, Venue: Fimmere, nr. Tinge-wick, Bucks.
August 13th	DERBY M.A.C. AEROBATICS GALA. C/L Aerobatics. Smooth grass surface. Venue: Municipal Sports Ground, Osmaston Park Road. Pre-entry 25p to J. Heanen, Ross-lane, Cross Close, Littleover, Derby.
August 13th	NORTHAMPTON M.A.C. COMBAT RALLY. Trophies & Cash prizes. 20p pre-entry to R. Bush, 17 Wimbledon Street, Northamp-ton. 30p field entry. Venue: Midsummer Meadow off A428, east of town centre.
August 19th-20th	1st F/F WORLD CHAMPS TRIALS. Day 1 - F.A.I. Glider (10.00-18.00). Day 2 - F.A.I. Rubber (9.00-18.15). F.A.I. Power - 1 hour before lunch each day.
August 20th	NORTH BERKS THERMAL SOARING MEET. 10 a.m. start. Near Garforth on A338 Ox-ford-Wantage road. Field entry.
August 20th	BURNS BROWN - COMBAT RALLY. Venue Lowthair Road Playing Fields, Luton. Pre-entry essential from G. Johnson, 37 Oxford Road, Kirtlington, Oxon.
August 20th	S.M.A.E. R/C AEROBATICS.
August 27th	DEVON RALLY. Open R/G/P. All in F.A.I. (Torbay Trophy). Chuck. Unlimited re-entry. Venue: Woodbury Common, nr. Exmouth. 10 a.m. start.
August 27th	WOODFORD RALLY. Open R/G/P. Mini Comp (A/I, J.A. C. d'H.). Chuck Glider (best 5 from 9). F/F Scale, C/L: F.A.I. & Goodyear T/R, Stunt Combat, Speed, Scale, R/C Class 2 scale.
September 3rd	NORTHERN AREA RALLY. 32 events for R/C, C/L, F/F including indoor and Jetex. Venue: R.A.F. Lindholme.
September 3rd	S.M.A.E. THERMAL SOARING. Venue: R.A.F. Cottesmore, Rutland.
September 3rd	S.E. AREA C/L CHAMPS. Stunt, Scale, Combat, Goodyear. Venue: Elliotts Airport Works, Rochester, Kent. Details: H. J. Tindal, 19 Wakehurst Drive, Southgate, Crawley, Sussex.
September 3rd	EXETER & DISTRICT R/C OPEN DAY. Fun events, Class II Scale. Pre-entry (free) to R. Allum, 68 Causey Lane, Pinhoe, Exeter, Devon. State frequencies.
September 10th	S.M.A.E. INDOOR SCALE. Rubber & CO. only, at Cardington, Bedford.
September 10th	C/L TEAM TRIALS FOR CRITERIUM OF EUROPE. Stunt, F.A.I., Speed. Venue: North Luffenham, Rutland.
September 10th	6th AREA CENTRALISED MEETING. Area Venues. Team Rubber, F.A.I. Glider, J.A. Power.
September 10th	S.M.A.E. R/C PYLON RACING. F.A.I. & Formula 1. North Luffenham, Rutland.



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## Prices of Admission

Price of admission at the door will be 30p adult, 15p child.

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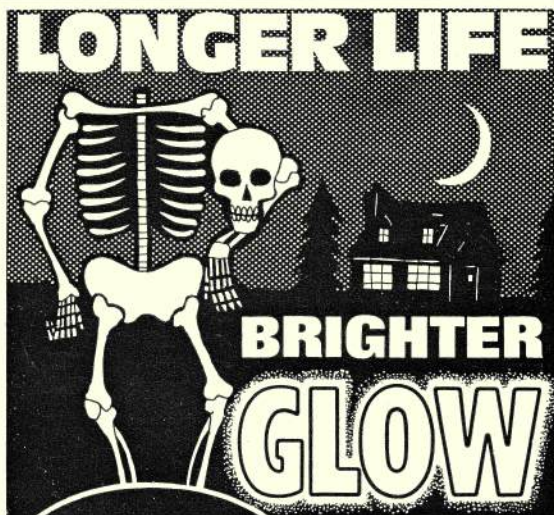
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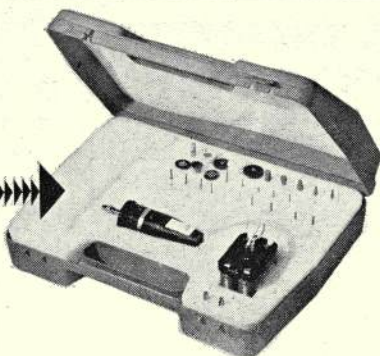
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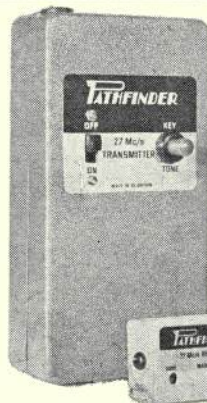
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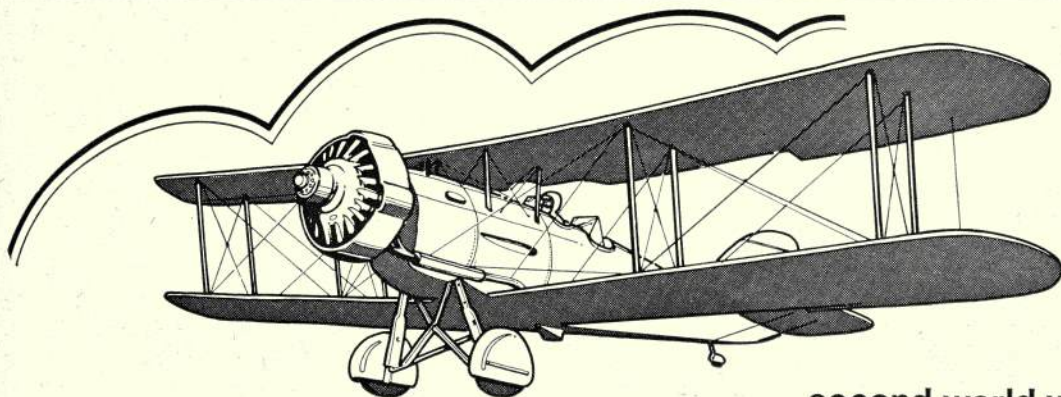
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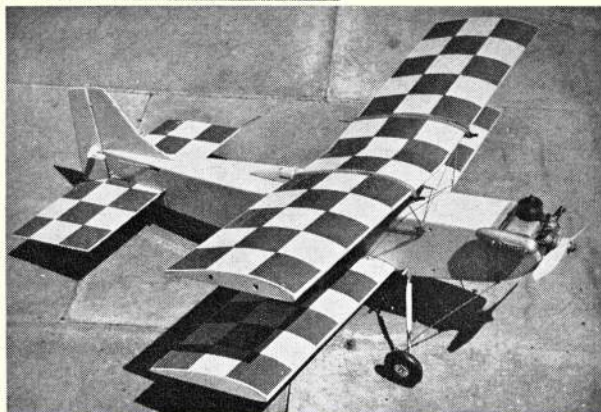
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