Aero Modeller

MAY 1971

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HOBBY MAGAZINE

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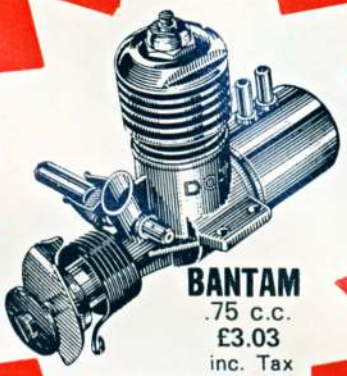

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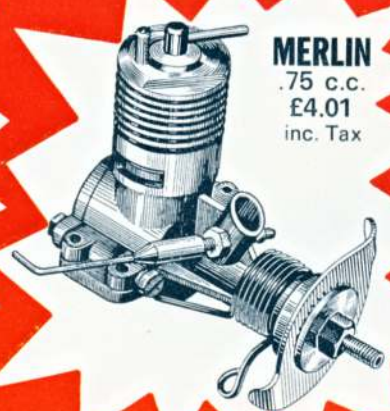

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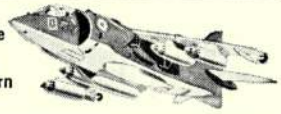

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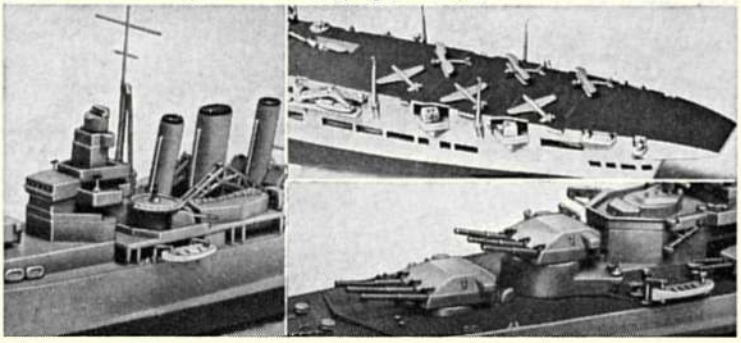

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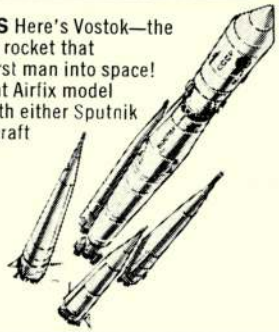

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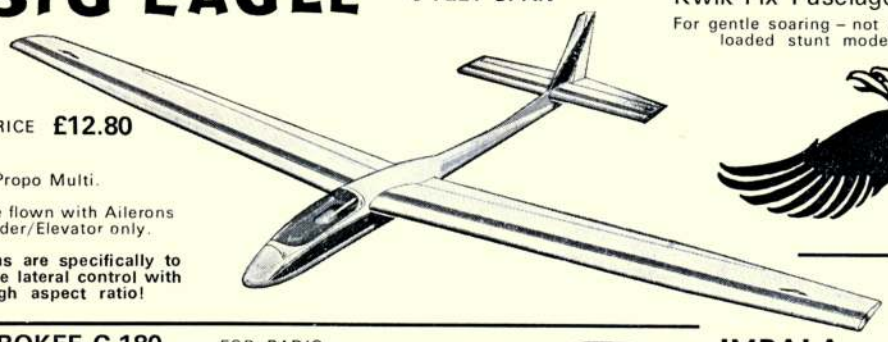

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INCORPORATING
MODEL AIRCRAFT

May 1971 Volume XXXVI No. 424

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Advertisement Manager **ROLAND SUTTON**

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COMMENT

Almost two months of postal strike held back a log-jam of post that has affected a large percentage of our readers. We apologise to patient subscribers who had to wait so long for March and April issues to arrive, to A.P.S. Plan purchasers whose orders were trapped in the dam and to a few clubs whose 1971 contest fixtures were similarly held up and thus not included in the published contest programme. Now that the floodgates have opened and production, despatch and post are (almost!) back to normal we look forward to the flying season from behind a mass of accumulated correspondence. Among the delayed letters is an encouraging one from America. The A.M.A. Charter plan to transport competitors and supporters from Europe to the U.S.A. in September is already well supported. Thus the first World Champs to be held outside Europe for 16 years is assured of success, and will, we trust, help to establish these events on a truly *International* basis.

on the cover

Japanese kits for radio controlled scale models are slowly but surely penetrating the scene in the U.K. Typical of their adventurous approach is the twin engined Cessna 310J (with David Walker).

next month

Full size free plans for three sports models on the bi-monthly pull-out feature plus the **'Chobham Hawk'** by Bill Manuel, doyen of the slope and thermal soarers. This large rudder-only glider is multi-purpose and is featured in colour on the cover. Engine Test, Scale plans for the Caudron CR714 fighter, Free Flight Scale Part Four by Eric Coates and lots more, on sale May 21st.

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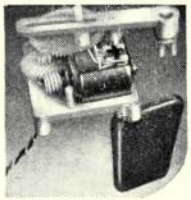
3PN

S500

3P SWITCHER


S504/G504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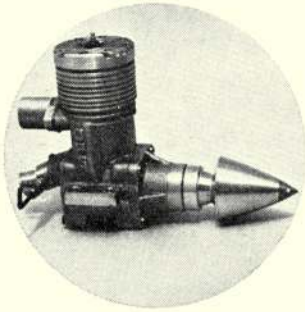

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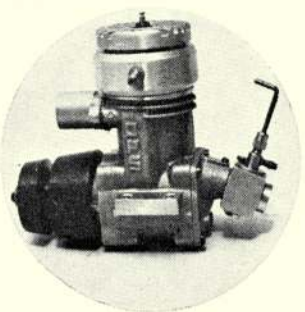

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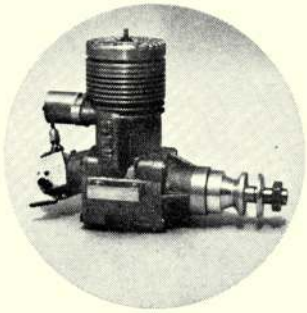

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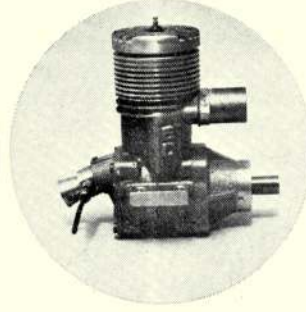

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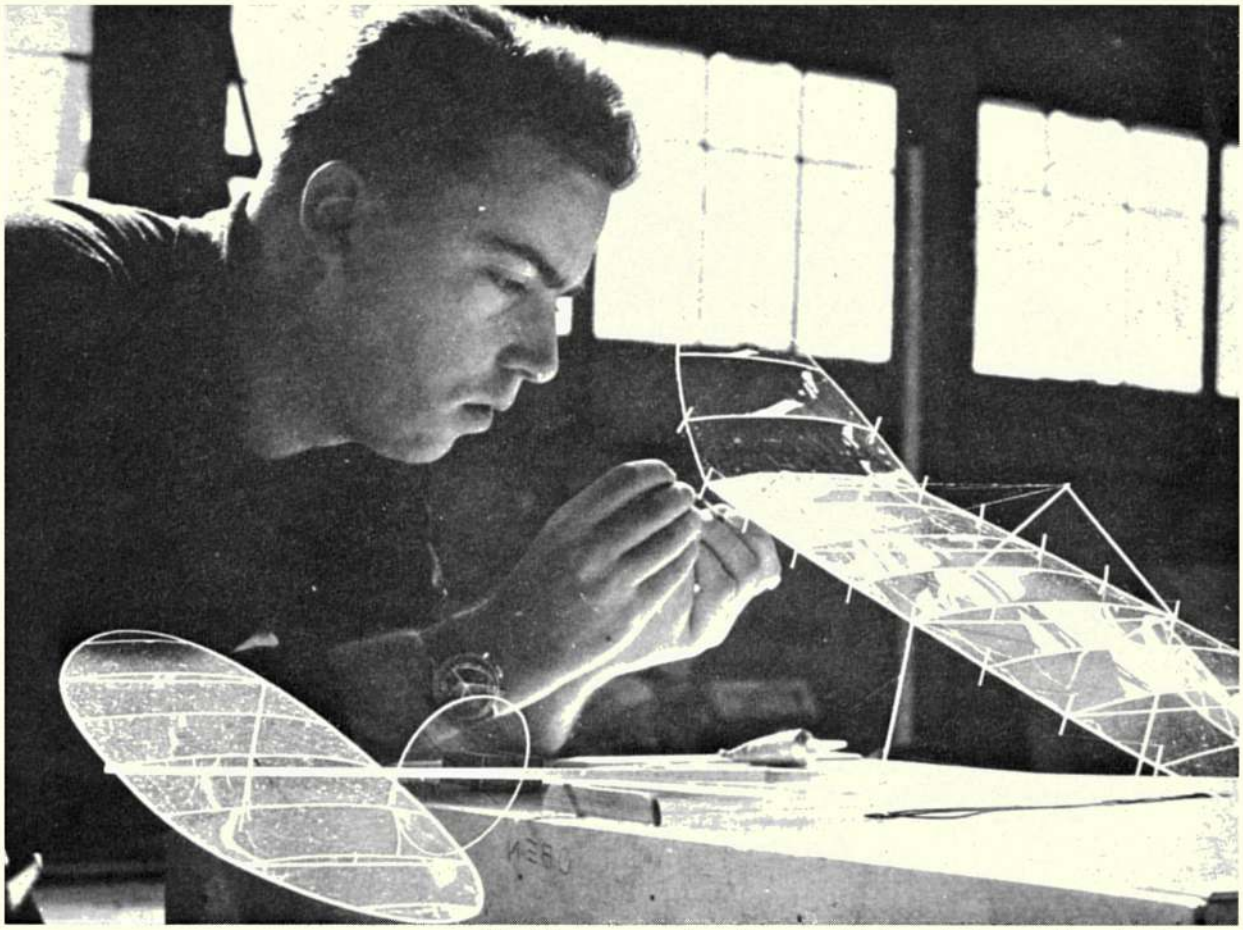
Radio Models

R/C Cars are, once again, a lead feature of R.C.M.&E. in our May edition, when we continue our coverage of this brand new branch of the R/C hobby, with full size construction plans for a simplified R/C G.T. type car designed by top American expert Roy Moody. In ⅛th scale to the R.O.A.R. rules, Roy Moody's car is a triumph of simplicity in design – ideal for beginners to the R/C car field who wish to build their own cars from scratch. We've even modified the design here and there to suit readily available basic components such as wheels, axles and centrifugal clutch to ensure that the constructor is faced with a minimum of 'metal bashing'. Our aircraft plan this month is David Boddington's **Big Barnstormer,** a big 72 in. span version of David's popular **Barnstormer** design, this one for 10 c.c. engines and multi radio. Strictly a sports model this, and one introduced into our Plans Service by popular request. Regular features in this issue include **Scale News,** plus other favourites like **Radio Motor Commentary** by Peter Chinn, **Straight and Level** by Peter Russell, and our series on R/C Yachting by Bob Jeffries.

MAY ISSUE – ON SALE APRIL 9th

From newsagents and model shops or direct, price 15p+3p. Model & Allied Publications Ltd., 13-35 Bridge Street, Hemel Hempstead, Herts.



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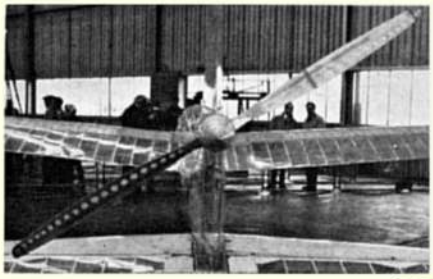

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Heard at the HANGAR DOORS

Air Vice-Marshal J. F. Powell with the painting donated by ex-Cpl. J. D. Bone, see news item.

SHUTTLEWORTH COLLECTION now possesses an airworthy Auster AOP 9 Army observation aircraft which will be flown at the displays during 1971. Based at Old Warden, Nr. Biggleswade, Beds., the AOP 9 is the one which was flown by Major Somerton Rayne in the England-Australia air race and thus it joins the excellent company of similar England-Australia racers and record holders, the famous De Havilland Comet, winner of the Mac Robertson race 1934 and Jean Batten's Percival Gull. Always a popular model subject, but rather elusive for students of the type, this Auster AOP 9 will be specially welcomed by flying scale model enthusiasts for study in detail, and if you haven't a chance beforehand at the Shuttleworth Air Displays on April 25th or May 30th, then see it at the Aeromodeller All-Scale Rally, Old Warden, on June 20th.

CZECHOSLOVAKIAN modelling magazine *'Modelar'* reports a meeting of C.S.MoS. (S.M.A.E. equivalent) on 16th January at which it was announced that Rudi Cerny was retiring from his post of Secretary from 28th February. Generous compliments were paid to R. Cerny's great contributions to Czech modelling. His careful observation of the finer points of administration and representation of interests of the movement within the F.A.I. have been sincerely appreciated. Rudi now takes on the job of distributing modelling material for C.S.MoS and Zdnek Novotny replaces him as Secretary. No mention was made of Rudi Cerny's very important position as Vice-President of the International Modelling Commission (C.I.A.M.). In this post, he is inevitably considered the primary candidate for Presidency of the F.A.I. committee at some future date. When Technical Secretary, he had been personally responsible for the monumental task of rephrasing the International Sporting Code, and his work as a Jury member at Championships has been invaluable. Long experienced in competitive free flight modelling – indoor and outdoor; he was also responsible for the memorable championships at Sazena. It is our sincere hope that his retirement from the Czech secretariat will not in any way prejudice his vital position in the Federation Aeronautique Internationale.

CLUB TRANSFER collectors will will appreciate the call for help by the Calgary Radio Aero-Modellers Society (CRAMS) who will be exhibiting their models at the world-famous Calgary Stampede Exhibition in July. This exhibition has an average attendance in excess of ¾ of a million. Theme of their exhibit will be *The World of Modelling* featuring a 6 ft. rotating globe which they wish to cover with decals from Modelling Clubs around the world. All Model Clubs interested in joining them in this venture are requested to send club decals to Mr. Carl Prada, 1006 – 13 Avenue, S.W., Calgary 13, Alberta, Canada. (See p. 707, December issue for the CRAMS own decal which no doubt they'd swap.)

DATES to note for Internationalists begin with a change by the *Federation Français Aero-Modeliste* for the Criterium Pierre Trebod which would have clashed with the World Free Flight Champs. The event is now programmed for August 28/29th at the airfield of Marigny Le Grand, near Sezanne for F.A.I. Rubber, Power and Glider. Postal delays held up arrival of notices for the Hungarian R/C Glider contest at Budapest 29th-31st May and the Italian 'Coppa Europa' for the same class of model at Rieti, 8/9th May. Control line combat fans travelling in Czechoslovakia around 29th-30th May will be interested in the International contest at Brno.

ITALIAN FREE FLIGHT team for the World Champs is now confirmed as: *Glider,* Tino Cosma, Paolo Soave and Carlo Varetto. *Power,* Gianpaolo Barbabella, Bruno Fiegl, Sergio Savini, and *Wakefield,* Piero Gervaisi, Roberto Licen, Amedeo Lonardi. 'Joe' Savini now has the opportunity of flying for the land of his mother tongue; having already flown for the land of his adoption (U.K.).

REVELL CONTEST for a free trip to the U.S.A. in the Autumn is open to all modellers collecting 4 'stars' from Revell plastic kits and answering a simple quiz on the entry form obtainable from any dealer. The contest is in two phases; part one commences March 26th and finishes June 19th. Two winners will be selected and announced during August. The second part commences June 26th and closes September 13th. Two more winners will be selected and all four will jet to California on October 16th returning on October 23rd. The itinerary of the trip takes in visits to a Hollywood movie studio, Marineland, Disneyland, the Revell Inc. factory, Knottsberry (wild west) farm, etc., and is expenses-paid by Revell.

BOSCOMBE DOWN, the centre for air testing is the subject of a Film/Lecture by Norman Parker on May 12th at the monthly meeting of the London Society of Air Britain from 7 p.m.-9.45 p.m. Visitors are welcome at the Holborn Central Library Lecture Theatre, Theobalds Road, London.

PAINTING of an aeromodelling scene by J. D. Bone has been presented to the R.A.F. Education Branch (see picture above). It was painted 12 years ago when serving at R.A.F. Waddington and took first prize in the R.A.F. Handicraft Exhibition. As readers can see, it conveys the 'Sunday Scene' extraordinarily well.

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JUNIOR CONTESTS

In last month's column, details were given of two contests aimed specifically at youngsters, to be held at this year's **British National Championships.** Both the free flight 'kit contest' and the control line stunt event are open to anyone whose 17th birthday is after May 30th – although, as explained before, older competitors in the control line event will be handicapped.

A map of how to find R.A.F. Hullavington is given on page 272. On arriving at the airfield, would-be competitors for the Kit Contest should make their way to the control tent, located at the upwind end of the field, and which will be manned from mid-day on the Sunday. After paying your entry fee of 15p (which includes third party insurance), collect your card – and after familiarising yourself with the flight procedure, you are free to fly as you please.

Control line competitors will find their control point near the general control line circles, but located on the grass area, on the Monday afternoon. For this event, proof of insurance is essential – either a current S.M.A.E. card, an M.A.P. insurance card, or some similar scheme. Pay your entry fee to the organiser, who will enter your name on a list and give you an indication as to when you will fly.

Further details may be obtained, on receipt of a S.A.E., from either R. A. Favre, at 90 Courtlands Drive, Watford, Herts, WD1 3JA (free flight) or from N. J. Chapman, of 55 Langdale Avenue, Mitcham, Surrey (Control Line).

Incidentally, apart from the above mentioned Junior Stunt contest, the London Area are also holding such an event at their Championship meetings, held throughout the season. The rules are the same, except that entrants may be up to the age of 29 – although they will, of course, only receive 5 per cent of their score due to the handicap system! Organiser is again Norman Chapman and his Three Kings club members. See Contest Calendar for dates and venues.

Dear John,

Last summer I bought from your Plans Service a plan of an Auster A.O.P.9 (Order No. FSP/580) and have now nearly finished it. I intend to fit a D.C. Merlin .8 c.c., but is this powerful enough for such a big model – it is 36" span? Also, can you tell me what sort of glue should be used to glue the celluloid windscreen in position – I have tried impact adhesives, but it looks rather messy.

London, S.W.9. *M. Ridley*

The D.C. Merlin has ample power for this aircraft – it should not fly too fast anyway!

Balsa cement has long been favoured as the best adhesive for celluloid, but an epoxy resin such as Araldite will give a stronger joint. Perhaps even more suitable is Devcon '5 minute' epoxy, which although more expensive has the advantage of drying colourless, and, as its name suggests, dries very quickly.

When glueing an 'open' type of windscreen in position, such as is used on aircraft of the Tiger Moth era, it is best to cut 'ears' on the base, and let these into the top decking for extra strength.

Dear John,

On the plan for a combat model which I have, the instructions say that it should be covered in nylon. What adhesive should be used to attach the nylon – as I gather it is best applied wet. Is the extra expense of nylon really worth it? I have only used tissue before and there is a big difference in price!

Hinckley, Leics. *S. Longhurst*

Nylon covering is far stronger than tissue, and increases the whole strength of the model. Tissue splits easily – as I expect you have discovered by now – but nylon will not, so you will save money in repairs! However, an acceptable substitute is to double cover the model in the usual way – either applying the tissue wet, or watershrinking it later. Apply a coat of dope, then recover as before. Finally, apply more coats of dope until the pores are filled. By this means, the dope will bind both of the layers of tissue together, forming a very strong covering of acceptable weight.

However, should you use nylon as recommended, suggest you use P.V.A. (white glue) as the adhesive. If desired, this can be watered down and applied by brush to the woodwork, making it easier to use. Should it begin to dry out before the nylon is finally positioned, it can be re-softened by applying more water.

Dear John,

When I visited the British Nationals at Yeovelton there was a special event for control line models landing on a wooden aircraft carrier deck. I have not seen this sort of contest since, and wondered why, as it seemed a very exciting sort of event. Will any similar competitions be held this year?

Tunbridge Wells, Kent. *M. Goodson*

The Navy Carrier deck landing event has been popular in the States for many years, but, owing to a lack of suitable facilities, has never really 'caught on' over here. The deck, which was made by the Royal Navy, and used at Yeovelton was difficult to transport due to its physical bulk and thus was rarely used. Now, thanks to the efforts of members of the Three Kings Club, this original deck has been repaired and a trailer made to transport it, so that the whole unit may be towed behind a car. With this major obstacle now overcome, a Deck Landing contest may well become a regular feature in the British calendar – the first airing will, in fact, be at this year's Nationals.

The event calls for several skills – firstly, the model takes off from the Deck and is timed over ten laps to establish a high-speed score. This is followed by a low speed run, and the difference between these speeds is recorded. Finally, the model must make an arrested landing to achieve maximum points. The winner needs to be an accurate flyer as well as being capable of extracting maximum power from his engine – allied by reliability at low, throttled back speeds.

CONTEST CALENDAR

April 18th — **F.A.C.C.T. THERMAL SOARING RALLY** at Enstone, Oxon. 10 a.m. start, field entry.

April 25th — **LONDON AREA C/L CHAMPS.** Stunt and Junior stunt – silencers obligatory, at Fairmile Common, Esher, Surrey, 10 a.m. start. Details from N. J. Chapman, 55 Langdale Avenue, Mitcham, Surrey. ½A T/R, F.A.I. T/R, Combat at Charville Lane, Hayes. Details J. M. Carson, 35 Yeading Court, Hayes, Middx.

April 25th — **LUTON D.M.A.S. SLOPE SOARING RALLY,** Ivinghoe Beacon, Single Channel with Spot Landing, Multi Aerobatics. Pre-entry forms (pre-entry essential) to T. Clark, 'Windyridge', 126 Alexandra Avenue, Luton, Beds. Telephone: 22742.

April 25th — **S.M.A.E. AREA CENTRALISED MEETING.** F.A.I. Power, Open R/G. Area Venues.

May 2nd — **ELLIOT M.E.C. C/L RALLY.** Goodyear (2.5 c.c. max) Stunt, F.A.I., T/R, Combat. 15p (3/-) pre-entry to C. Atkins of 12 Hillcrest Road, Chatham, Kent. 25p (5/-) on field.

May 2nd — **DEVON RALLY.** Open R/G/P. All-in F.A.I. (5 rds). Chuck glider. Unlimited re-entry. Woodbury Common, Nr. Exmouth.

May 2nd — **NORTHERN AREA VINTAGE COMP.** S.M.A.E. members only. At Topcliffe.

May 8/9th — **EASTBOURNE M.F.C., SLOPE SOARING.** Single channel-spot landing, Pylon race, limbo. Multi-aerobatics, 'lucky draw' pylon, novelty. Details K. Binks, 15 Brampton Rd., Hampden Park, Eastbourne. Venue, Long Man, Wilmington.

May 9th — **THREE KINGS C/L OPEN STUNT** and **SCALE MEET,** at Croydon Airport, silencers obligatory. Details from D. G. Woods, 133 Ravensbury Road, Southfields, London, S.W.18. Tel. 01-947 0752. 10 a.m. start.

May 9th — **NORTH LONDON R/C M.F.C.** Open Fun-Fly meeting (Aerobatic schedule). Restricted to competitors and their families, Baldock, Herts.

May 16th — **FLYING DRUIDS MULTI R/C AEROBATIC COMP.** F.A.I. schedule at Middle Wallop airfield, Andover, Wilts. 10.30 start.

May 16th — **MIDLAND AREA RALLY,** Open R/G/P. Tailless, Chuck. C/L Stunt, F.A.I. T/R, Goodyear, Combat, RatRace, Speed. R/C Fly for fun, Open pylon. S.M.A.E. members only, at Syerston.

May 23rd — **ST. ALBANS M.A.C. THERMAL SOARING RALLY,** at Nomansland Common, Wheathampstead. 10.30 start. No super regen.

May 30th/31st — **BRITISH NATIONALS** at R.A.F. Hullavington, Wilts.

June 6th — **YORK M.A.S. RALLY.** Provisional venue Elvington.

June 6th — **S. MIDLAND AREA THERMAL SOARING.** Multi and Single. Venue to be announced. Pre-entry to G. Dallimer, 6 Angel Way, Stevenage, Herts.

June 13th — **HAYES-FELTHAM C/L MEET.** F.A.I. T/R, Goodyear, Combat at Charville Lane, Hayes. Details J. Carson, 35 Yeading Court, Masefield Lane, Hayes, Middx.

June 13th — **S.M.A.E. AREA CENTRALISED MEETING.** F.A.I. Rubber, Open P/G. Area venues.

June 20th — **AEROMODELLER/SCALE MODELS/R.C.M.&E. ALL SCALE RALLY** at Old Warden, Biggleswade, Beds.

June 20th — **ST. ALBANS M.A.C. SUMMER GALA.** Open R/G/P, Chuck Glider, Vintage. Rounds start 10.30 a.m. Venue Chobham Common.

June 20th — **SOUTHAMPTON C/L STUNT** at Beauliegh Airfield, 11 a.m. Pre-entry (25p) to G. Alison, Kestrel, Church Lane, Fawley, Southampton.

June 27th — **ASHFORD (Kent) R/C SCALE CLASS II RALLY.** Prizes value £75. Venue and details to be announced.

June 27th — **FINCHLEY M.A.C. GALA.** C/L Stunt, Combat (A & B) Rat Race (A & B) 20p (4/–) pre-entry to J. F. Goodwin, 77 Gallants Farm Road, East Barnet, Herts.

July 3rd — **WOLVES CONTROL LINE FLY IN.** C/L fly for fun and stunt contest and 'most entertaining flying'. Details, W. A. Hatfield, 563 Stafford Rd., Fordhouses, Wolverhampton, WV10 6QE.

July 4th — **N.W. AREA RALLY.** Open R/G/P, Chuck. C/L Stunt, F.A.I. T/R, ½A, Goodyear. R/C 'Woodford Style' aerobatics. Topcliffe.

July 10/11th — **SHEFFIELD TWO-DAY SLOPE SOARING RALLY** (venue – peak district site). Single Channel, Multi & Scale.

July 11th — **LONDON AREA C/L CHAMPS.** Stunt and Junior stunt. Silencers obligatory, at Fairmile Common, Esher. ½A T/R, F.A.I. T/R, Combat at Charville Lane, Hayes, Middx.

July 11th — **S.V.A.S. OPEN DAY.** F/F scale and Vintage. All welcome at Old Warden, Beds.

July 18th — **S.M.A.E. CENTRALISED C/L MEETING.** ½A T/R, F.A.I. T/R Goodyear, Speed.

July 25th — **NORTHERN AREA F.A.I. RALLY** at R.A.F. Topcliffe. S.M.A.E. members only.

July 25th — **SOUTH BRISTOL M.A.C. GALA.** F/F-Open R/G/P, Vintage, All-in F.A.I. (7 flts) C/L – F.A.I. T/R, Goodyear, Combat. R/C – Thermal soaring to F.A.I. – S/C or multi. Venue to be announced. Refreshments available.

July 25th — **NORTHERN AREA PYLON RACE MEETING,** R.A.F. Topcliffe. F.A.I. & F.1 (S.M.A.E. members only).

July 25th — **SOUTH BRISTOL M.A.C. GALA.** R/C Thermal Soaring to F.A.I. rules – single channel or multi. Venue yet to be announced.

July 25th — **SOUTH COAST R/C RALLY.** Single channel R/C Spot landing. Open sport pylon, biplane pylon, Novelty, R/C scale, at Golden Cross, Nr. Lewes, Sussex.

August 8th — **S. MIDLAND AREA C/L RALLY.** Goodyear and Ratrace at Enstone Aerodrome off the B4030 Bicester-Chipping Norton road. 25p pre entry to G. Johnson, 37 Oxford Road, Kirtlington, Bicester, Oxon.

August 8th — **PERFORMANCE KITS FLYING DAY,** Sports, Vintage, etc. Old Warden, Biggleswade.

August 8th — **S.M.A.E. AREA CENTRALISED MEETING.** Team glider, F.A.I. power, C'd'Hiver. Area venues.

August 14/15th — **SOUTHEND TWO-DAY R/C RALLY** – Leigh Flats.

August 21/22nd — **S.M.A.E. CENTRALISED F.A.I. F/F MEETING.**

August 23/27th — **MANX NATIONAL OPEN SOAR-IN CHAMPIONSHIPS** (Slope & Thermal). Bring the family. Details and holiday brochure from H. Bailey, 'Sunrise', Linden Avenue, Port St. Mary I.O.M. Tel: P.S.M. 3184.

August 29/30th — **COTSWOLD R/C SOCIETY TWO-DAY PYLON RACE MEETING.** Venue to be announced.

August 29/30th — **KENT R/C AIR SHOW,** at Rochester City Airport, F.A.I. aerobatics, Open aerobatics, Scale Class II F.A.I. Open and Biplane pylon racing. W.W.II 'Dogfight' display.

August 29th — **WEST OF ENGLAND SCALE AIR DAY,** Westland Airfield, Yeovil, Somerset.

August 29th — **TORBAY RALLY.** Open R/G/P. All-in F.A.I., Chuck glider. Unlimited re-entry at Woodbury Common, Nr. Exmouth.

August 29th — **WOODFORD RALLY.** Details to be announced.

September 5th — **NORTHERN AREA RALLY,** at R.A.F. Lindholme, near Doncaster.

September 12th — **FLYING DRUIDS MULTI R/C RALLY.** F.A.I. schedule at Middle Wallop airfield, Andover, Wilts. 10.30 start.

SCOTTISH EVENTS

April 25th — Radio control spot landing. Inter club "Caley" Shield.

May 2nd — Open Glider, Hartfield Moss, Renfrewshire.

May 9th — Control line rat race, Goodyear, combat. Motherwell.

May 16th — Radio control single channel aerobatics. Blackburn, W. Lothian.

May 23rd — Free flight for interclub. "Caley" Shield.

June 6th — R/C spot landing, control line combat, free flight power, chuck glider. Newmains.

June 13th — Junior glider competition. De-centralised.

June 20th — Control line ½A, F.A.I., B and Mouse team racing. East Kilbride.

June 27th — Open rubber at Hartfield Moss, Renfrewshire.

August 22nd — Paisley Trophy free flight comp. Hartfield Moss, Renfrewshire.

September 5th — Intermediate R/C aerobatics. Hartfield Moss, Renfrewshire.

September 12th — Control line for inter club "Caley" Shield, East Kilbride.

September 19th — Control line rat race, Goodyear, combat. Motherwell.

Fuller details of all Scottish events may be obtained from S.A.A. secretary on receipt of S.A.E.: J. Glenn, 5 Brownhill View, Bonkle, Newmains, Wishaw, Lanarkshire. Tel. Wishaw 75838.

READERS' LETTERS

BEAUTY . . .

Dear Sir,

In an article in the February edition of *Aeromodeller*, people complain about the shape of F.A.I. team-racers. By reading this we came to the opinion that those people have not understood the right meaning of this class.

It cannot be the purpose of a racing model to look like an airplane. In any international class models are 'flying objects' to suit a particular purpose and are built to suit that purpose in the best way. You cannot compare a competition model with a normal sports model – what, for example, has a prototype car or a Formula 1 in common with a normal car?

If one wants to make a true model of an aircraft, then build scale models (or Goodyear racers). Maybe in these classes the models are beautiful enough to fit into this idea of a 'true plane'.

The purpose of a team racer is to fly 100 laps in the shortest possible time. Here the team can realise the shape of model which they think is the best – you cannot transfer the aerodynamic laws with a scale rule! Your own thoughts are necessary! What is the best and strongest wing shape, best profile, how to realise a fuel stop, a retractable landing gear? That's the stimulus for new-looking models.

Team racing is a sport, if you only reduce a full-size aircraft in a very crude way, you always will be looked at as 'playing with toys'.

Many attempts were made to change T/R rules: a pilot doll should be in the fuselage, the model should have two wheels, etc. What is this good for? If you want to transport little dolls you can make your own class! No one suggests that, for example, F.A.I. gliders or F.A.I. power models should look like a full-size aircraft, carry a pilot and have a landing gear. You would be laughed at!

We agree that T/R is too complicated for a beginner, but must a beginner's model have an original painting on its fuselage? If you want a 'real aircraft', we propose to fly ready-built plastic models. They look much better than a hungry-looking, ½ in. wide, profile fuselage model with an open-air fuel tank!

By the way, did you ever compare Drazek's or Plotsinsh's models with the ugly birds shown in the February edition?

Our opinion is to let everybody fly what he wants and get lucky with it. But you must be allowed to build all your thoughts in, and to compare its efficiency with that of other people's.

Manfred Bader
Konrad Kaul

Asperg, West Germany.

. . . IS IN THE EYES OF . . .

Dear Sir,

I was a spectator at the 1970 Control Line World Champs, and I was very glad to see the German speed team do so well, especially my friend Arno Wamper. Alas, I had to leave the site during the final flights. At home I received the results from our team manager and was very annoyed when I heard that the German team had not been given second place – which was deserved if the flight times are added together. I was even more surprised when I read your article which stated that Arno Wamper was the East German champion. I don't know the rules (concerning team members) exactly – perhaps our team wasn't complete with the American Curt Burrus flying for Germany. If this is not the case, I cannot understand this great mistake by the organisers just to forget one team member or to give him another nationality.

On another subject I just cannot stand any longer an opinion which is often (and by many authors) published in your magazine: F.A.I. team racers again and again, are called 'weird-looking beasties' (Jim Kloth, *Aeromodeller* February) and the like.

This is the type of (craftsman? I don't know whether this term is correct) who builds aeroplanes, but they could just as well build a model of Westminster Abbey from used matches! They are *not sportsmen*. A model is a design of its own and doesn't have to look like something else. It has to do a special job in the best possible way – in our case, fly fast and stable, start quickly, safely and land equally well. This is its purpose and the real modeller (the contest flyer) receives the highest possible satisfaction in designing the best airplane and to continually develop his craft to the highest state of the art. This is sport, and this is natural, and this is good. If Mr. Kloth and the others are so sentimental to like only beautiful toys, he may do so but he should not be allowed to make a judgment on a subject about which he understands nothing!

By the way, beauty of technical things is of a different nature than that of aesthetic art. For example, has anyone ever designated a Nordic glider ugly because there is no pilot? Do you think a racing motor bike becomes prettier if you add a modern style scooter cowling? Anyone who is too lazy or unable to build a top-class team racer should stay with the Goodyears!

Claus Maikis

Stuttgart, W. Germany.

Apologies for our error in 'changing' Arno Wamper's nationality – he is, of course, the West German speed champion – as reported in our September 1970 issue.

Curt Burrus's inclusion in the West German speed team has caused some controversy, and the German Aero Club is being asked to explain why a Sporting Licence was issued to a foreign national, contrary to the terms of the F.A.I. Statutes. However, the organisers accepted him as an official team member, and treated him as such, as is shown in the individual results.

Several British modellers have also queried the exclusion of W. Germany from the team result list, but the positions we printed were those issued by the Belgians, and later confirmed by the F.A.I.

. . . THE BEHOLDER

Dear Sir,

Reading the February *Aeromodeller*, I noticed a reference to C/L flyers at contests. Perhaps Mr. Average Sports Flyer might be misled.

Control line modellers in competition enjoy a camaraderie which I think holds interest and helps contests run smoothly. In F.A.C.C.T. club's early days this camaraderie made us come back time and time again only to be knocked out in the first round when flying combat. After about a season or so with helpful advice from Northwood & Co., we managed to get through to the second or third round. At that time there was a chap there by the name of Pete Tribe who, in one bout, could teach you a lot about combat flying; I dare say he would still do today.

My club has moved on to team racing and stunt after seven years of combat, and the attitude of the flyers in these events is exactly the same as it was when we first started competition flying. When I used to fly my *Flite Streak* in stunt there was always a few wry smiles, deservedly so, but I can recommend it as a good stunt trainer.

The South Midlands Area will be running two competitions for C/L apart from Cranfield his year, as we did last year. One of these is a Goodyear and Rat Race comp., the other the Burns Brown Combat trophy meet, dates and venues to be announced later.

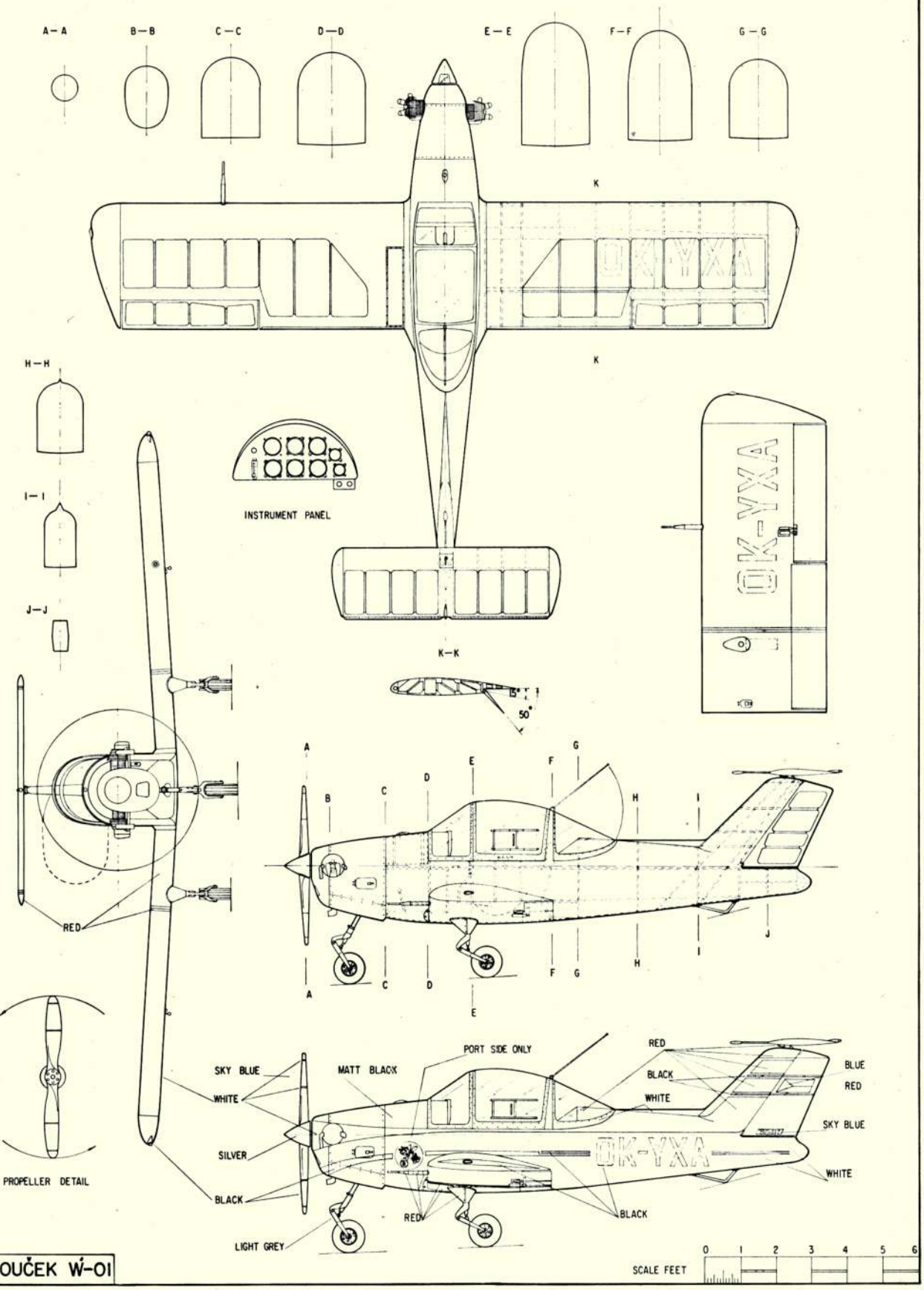
Goodyear got off to a good start last year. Some flyers may feel that the event has already become specialised, but fast motors can be obtained very easily for a reasonable price. Consider the price of a hot engine for combat, it must be around £12 these days. The 3.5 c.c. limit has made fast motors a bit cheaper to come by: Veco .19, O.S. .19, Enya .19 and the older McCoy, K&B and Fox .19s would be very good. The Oliver and Rivers 3.5s are also very useful. Jim Kloth's articles will provide a lot of hints and tips that will be very interesting, his reference to scale like colour schemes is one I consider to be of the greatest importance, as this will help keep the event from becoming stereotyped as some events have.

There are, I'm sure, members of the S.M.A.E. who feel that to get into competition modelling is both difficult and expensive. Goodyear and combat provides a comparatively cheap and easy way, so why not come and have a go. I know the 'us and them' feeling one gets when you are not flying in comps, but most competition flyers are only too ready to talk or brag about their models, so come and have a natter next time you are at a comp.

I hope I may have prompted some readers to consider C/L; it's just as rewarding as R/C or F/F and you don't have to be a car worker or an athlete to do it. I fly both single channel and F/F for sport and the occasional thermal soaring meet, but C/L stays foremost in my modelling.

Our club, although small, has a fair distribution of all three classes, and there is no reference (except in fun) to the 'chuck it and fetchit' gang, or the 'bricks on strings brigade'. I'm sure that for all aeromodelling to progress in this country, it is essential that there is recognition of C/L, F/F and R/C by each other and recognition of the S.M.A.E. as a society which has contributed to public acceptance of the hobby to a large degree, by organising the Nationals, and also in providing airfields for comps and flying.

Kirtlington, Oxon. *G. H. W. Johnson*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SCALE FEET
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AIRCRAFT DESCRIBED No. 203

BROUCEK W-01

VLADISLAV WERNER has been an aviation enthusiast for many years, learning to fly gliders at Rana in 1946, and later graduating to a pilot's licence for powered aircraft. His first thoughts of building his own aircraft germinated after reading a questionnaire in the Czech magazine *Wings of our Country*, which asked whether it was possible for an individual to build his own aircraft under the prevailing strict constructional regulations.

From this first spark of interest, his enthusiasm grew, and was not dampened by the views of several flying experts who deemed his project impossible. Being employed as a technician at the *Research and Experimental Aviation Institute*, he had amassed considerable theoretical and practical experience of his hobby, and thus armed with this knowledge he began the design of his project - basing it upon detailed aerodynamic and statistical calculations by experts Ing. V. Broz and Ing. J. Tichacek. Many blueprints followed, and gradually the overall picture began to evolve, the aircraft being designed to incorporate the best aerodynamic and stability characteristics.

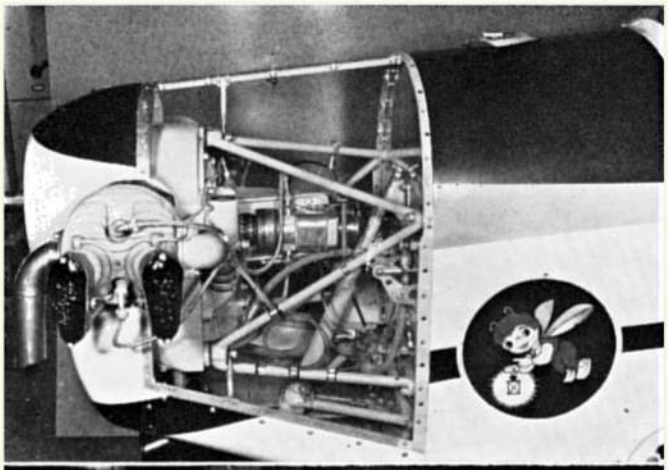
Before construction could begin, Werner first had to build his own workshop in his garden - no mean task in itself, and an example of his enthusiasm and dedication. Apart from the design aspect, his greatest difficulties lay in securing the raw materials - aircraft quality wood in particular is near impossible to obtain in Czechoslavakia. Items such as the undercarriage units, instruments and cabin fittings were obtained from scrapped aircraft, which had to be subjected to rigorous inspection and quality control.

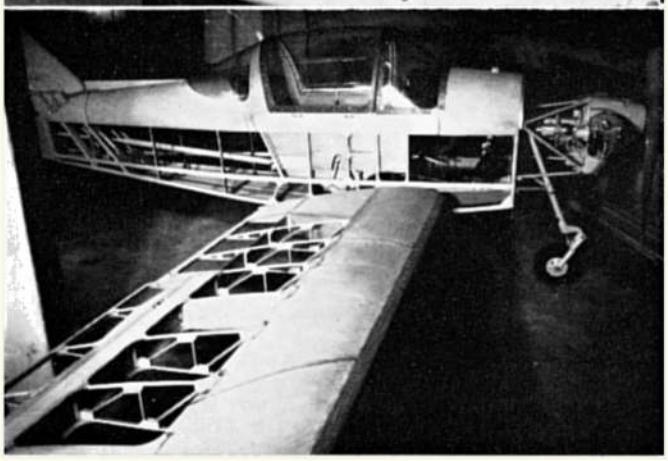
The wing is a one piece unit, featuring a box type of mainspar, which forms a torsion box when combined with the plywood leading edge sheeting. Remainder of

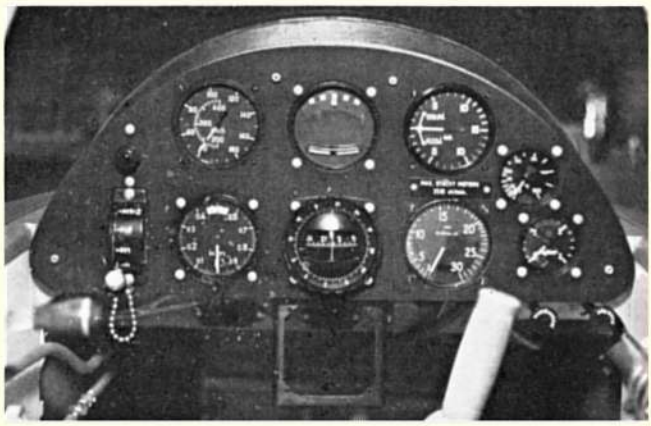
Above. Tricycle undercarriage and all-moving tail add to the sporty appearance of this attractive home-built. Large canopy is hinged on the starboard side to provide easy access. Subject would make an intriguing scale model, radio controlled, control line or free flight.

REPRINTS OF THIS FEATURE WITH 1/48th SCALE DRAWINGS PLUS LARGE DYELINE PRINTS OF THE 1/24th SCALE ORIGINAL ARE AVAILABLE AS PLAN PACK AH 2923, price 35p (7/-) FROM AEROMODELLER PLANS SERVICE, 13-35 BRIDGE STREET, HEMEL HEMPSTEAD, HERTS.

Low angle shot reveals the undercarriage legs in greater detail with their 'knee' action suspension. Mass balance of the tail unit is clearly seen, also the neatness of the 2-cylinder engine installation. Nose wheel is steerable.







Above, the adequate instrumentation with max engine r.p.m. placarded at 2510 – and a 400 Km/hr air speed indicator! Cockpit is also equipped with radio. Above left, an idea of the thoroughness and workmanship behind the design of this aircraft is obtained from this view of the engine installation. Left, conventional light-aircraft construction is used throughout, with built-up ribs and much plywood sheeting.

Power plant selected was a Praga B2 aircooled, horizontally opposed twin, developing a modest 40-46 h.p. and turning a fixed pitch, two bladed propeller.

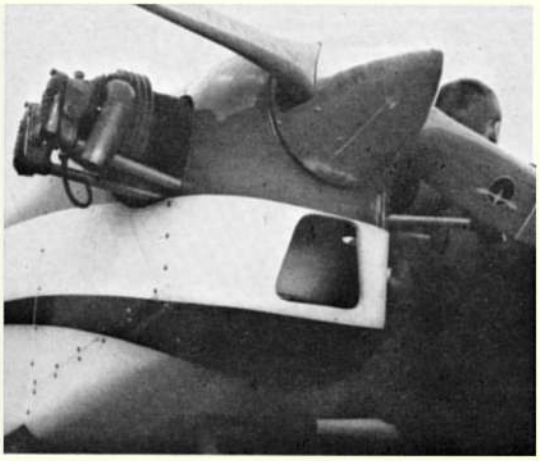
The nett result is that after five years hard work by Werner and his friends Zdenek Kejdana, Lada Danda and Pavel Simek, plus inexhaustible patience from his wife, he now has a most attractive light aircraft parked outside his house, resplendent in its colour scheme of red, white and black. Having received its Certificate of Airworthiness by the Czech authorities, it first flew in April 1970 with Ing. Rudolf Dochon at the controls - who is the chief test pilot for the *Research and Experimental Aviation Institute.*

Dimensions		Performance	
Span	20ft. 1in. (6.085 m)	**Max Speed**	105 mph (170 Km/h)
Length	15ft. 10in. (4.84 m)	**Cruising Speed**	87 mph (140 Km/h)
Height	5ft. 5in. (1.66 m)	**Landing Speed**	51 mph (83 Km/h)
Wing area	71 sq. ft. (6.6 sq. m)	**Ceiling**	12,467ft. (3,800 m)
Laden weight	1,168 lbs. (530 kg)	**Range**	248 miles (400 Km)
		Take off run	(climb to 80ft.) 1,312ft. (400 m)
1,312ft.	(400 m)	**Landing distance**	853ft. (260 m)

the wing is fabric covered. Situated inboard of the ailerons are three-position flaps, providing a maximum deflection of 50 degrees. Constructed of plywood, they are hinged to the rear spar at two points. Ailerons are mass balanced, and like the wing are covered in ply and canvas. They also have two hinges connecting them to the rear spar.

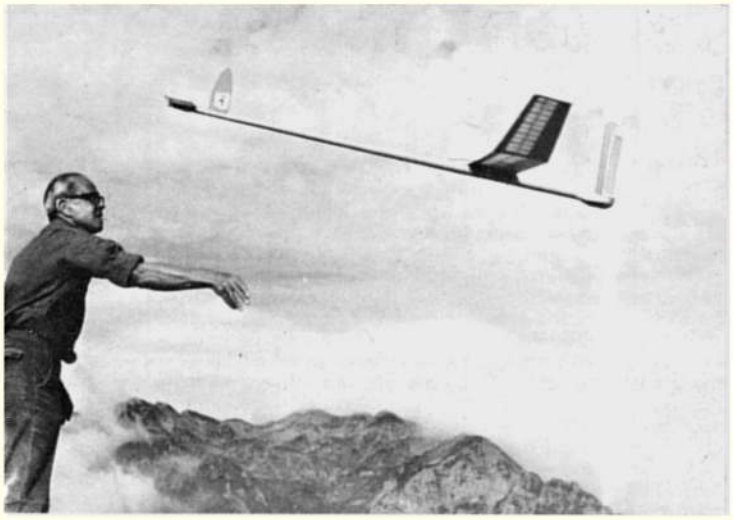
The semi-monocoque fuselage is made of wood and is entirely plywood covered, the rear part of the fuselage terminating in a swept fin, making this unit integral. This is reinforced internally with a box spar for the tail plane attachment, and is again plywood covered. Access to the cockpit is gained via the hinging centre section of the canopy - excellent visibility being provided by this unit. A simple instrument panel is flexibly mounted and carries the minimum number of instruments necessary for flight and engine requirements. A Tesla Kolin two-way radio telephone is installed, originally being intended for use in gliders. The oleo pneumatic tricycle undercarriage is neatly fitted, the main legs being bolted to the main spar, and the steerable noseleg being attached to the front bulkhead.

The all-moving symmetrically sectioned tailplane is massed balance, and features a plywood sheeted leading edge and centre section.



Detachable engine cowl fits snugly around the Praga B2 cylinder heads. Opening in the nose cowl is to cool the crankcase.

A colleague, Dipl. Ing. Ludwig launches his model anticipating yet another successful retrieval via the 'Monte Tomba' formulae. Note the characteristic 'nose down' attitude, and the fact that the model is already rising. Magnificent scenery in the background identifies the Alpine site.



HANS GREMMER

describes his successful experiments with

Programmed Return of Magnet Steered Gliders

SLOPE SOARING with a conventional free-flight glider is not an entirely satisfactory experience. Frequently the model after launch and 'hanging' into wind for a short period, turns around and flies over the lee of the hill, dropping rapidly in the resultant lack of lift, and travelling some considerable distance in the process.

The next advance on this was the use of a magnet-operated rudder, which enabled the model's flight path to be pre-determined, into wind, thereby keeping the model in the area of lift and flying a straight course away from the slope. Whilst certainly more efficient in regards to achieving duration, this form of automation still possesses the disadvantage, particularly in calmer weather of presenting the operator with a long walk for retrieval. For example, if a model flies for 300 seconds into a low wind, and advances at a rate of 3 metres/sec., it will cover a distance of 900 metres. Bearing in mind that the retrieval entails scrambling down the slope face followed by a cross- country walk, and then the ascent of the slope once more, only this time carrying a model...well, as anyone who has 'trained' on a diet of beer and cigarettes can confirm, this is best avoided!

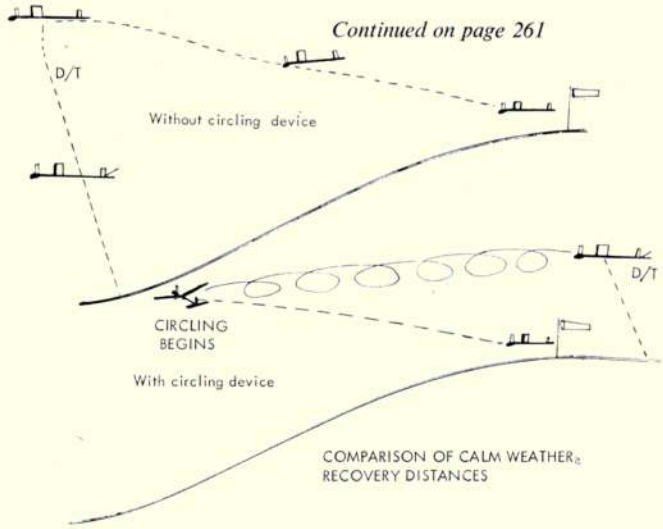
Some competition flyers use the practise of disturbing this straight-flight course by introducing a circling period, which is merely aimed at keeping the model within the limits of the line keeper's eyesight and very few attempts have been made to bring the model back to the operator.

The author has now succeeded in developing a fairly reliable formula to bring the model back to the launching area during calmer conditions. The main problem was to establish the correct ratio between the model and wind speeds. This ratio determines the duration of the whole flight (consisting of the straight flight period and the circling period) and that of the straight flight period. The duration of the whole flight is fixed by the length of the dethermaliser fuse, while that of the straight flight is determined by the fuse for the circling device.

The formula could thus be expressed as:
t1 : t2 = v1 : v2 when:
t1 = total flight time (fuse length)
t2 = straight flight time (fuse length)
v1 = model speed
v2 = wind speed

An anomometer is required to establish the wind speed, and can also be used to give the approximate speed of the model. This is done by checking the wind speed that makes the model motionless just above the ground - the flying speed of an average weight magnet-soarer ranges from 5 - 6 m/sec.

Continued on page 261



Topical Twists

by Pylonius, illustrated by 'Sherry'

Through thick and thin

If there is one thing that makes me go green with envy and to wish I was not born with the original fish fingers, it is the sight of a precision built Wakefield of the modern, 'watchmaker' school, so, naturally, when I see a letter giving these models the thumbs down in favour of the portly, peg legged machine that hopped rather bulkily into the generation-gap skies of the early 1950s I am more than a little dumbfounded, and can only presume that the writer's nostalgia has got the better of his aero-modelling judgment. Oddly enough, one of his main points of criticism of the 'flying broomstick' breed (for your best buy see this week's copy of 'Witch') is that they are such advanced flying machines; too difficult for the average modeller to attempt, and utterly hopeless for the expert without access to a fully equipped machine shop.

This latter statement so intrigued me that I decided to look out some of these mechanised lairs, to see just how the teams of engineers and draughtsmen go about producing the modern Wakefield. Getting on the track of the first super machine I was led not to some industrial production line but to a very domestic home extension where the only evidence of mechanisation was a do-it-yourself power drill and a pair of manually operated pliers lying on a Workbench-cum-writing table. The trail of the second Wakefield ended in the corner of a bedroom, where, in spite of the most extensive ransacking of the wardrobe and airing cupboard not one lathe or white coated mechanic could be found. Much the same went for the potting shed workshop and the cellar...

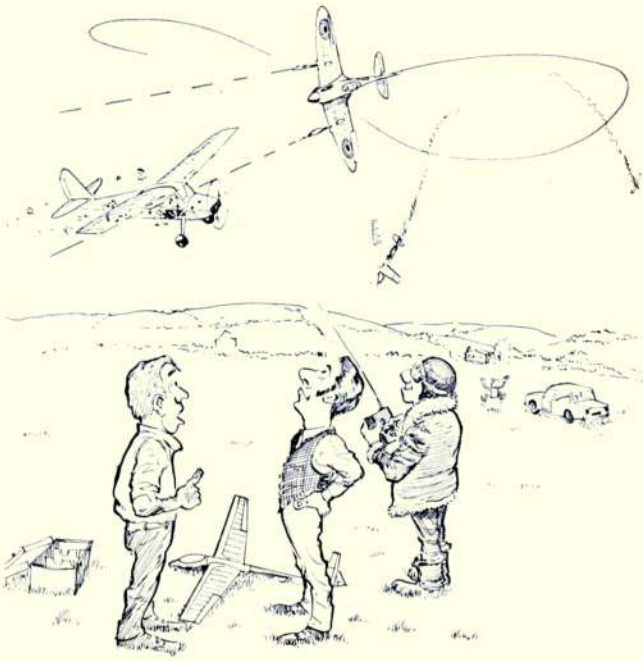
Our letter writing friend also claims that the models of yesteryear looked more like aeroplanes than our modern, slimline craft. Granted they did have a faint resemblance to a Sunderland flying boat on about the same level as today's model is to the Concorde, but since the model flyers of the fifties were trying to produce efficient flying machines rather than Scale replicas they would have been nicely at home with the thin 'uns we fly today. Come to think of it, they are!

The thing that does frighten me though, is his proposed contest format. Were the powers that be to attempt to restore the 'golden age' in this way, they might invite our friend along to judge the aesthetic part of the proceedings, particularly as he is the only person who knows what an aeroplane should look like, for we might hear some chap saying, *'What, me won the Wakefield Cup? I only came here for the Vintage event.'*

Early birds

Fate can play some odd tricks. Take, for instance, the Scale model. If there was one class of model which you would think would lend itself to mechanical and electronic treatment it is this. But not a bit of it. Stick one on the end of a pair of lines and it will fly well enough, but the somewhat skittish, chase-its-own-tail monotony fails to bring out the full vintage flavour. Or again, load it up with radio gear and it will bat around the skies in a fine roaring frenzy, but fast radio models, like the whirling colours of the spectrum, tend to blur into the same anonymous image.

How then do Scale models fly at their best and most realistic. Why, in the old fashioned, chuck it and run, free flight away.



'I think old Bloggs carries his scale flying just a bit too far'.

Sheer rubbish

So many of my models have finished up in the dustbin rather than come to some glorious flying field end, it is fitting that I should take heed to the idea of using dustbin liners as a new form of model covering; they will make a fitting shroud.

Still, I am not at all that happy about the forecast of all of us using see-through polythene sheeting around our models in the near future. Such diaphanous sheeting is all very à la mode, glossy and so forth, but what happens when the model lands on a barbed wire fence or brambly bush? It wouldn't do much good for me, for whereas there are people who always land on the proverbial bed of violets, my models, in the absence of a gaping drain hole, opt for anything that reduces the tissue to a state of near nudity. And what dire things would happen to all that tight springy film I dare not think.

Sweet F.A.I.

There are, generally speaking, two attitudes to tactical flying: one that does it in the honest belief that it is just as much a part of aeronautical skill as knowing where to put a piece of 1/32nd, and the other that also does it but deplores the practice as unsporting. Exactly what the F.A.I., think of it we are not told, but under the new ruling woe betide any that wander from the straight and narrow in search of fame and glory. They, like everybody else will have to toe the line in the most literal sense of the term.

This, however, puts the tactical flyer very much on the spot in more ways than one, particularly since one of his less publicised devices is that of augmenting the motor thrust by a well practiced hop, skip and jump. And with engine runs being cut down to the odd tick or two that initial impetus becomes all the more important. In fact, we may well see the day when the term 'over-run' will refer not to the engine duration but to the contestant's footwork.

NEW ZEALAND NATIONALS

Paul Lagan and Gary Burrows report on the LINCOLNATIONALS 27th December '70 to 2nd January '71

THE CANTERBURY PLAINS have a total annual rainfall of twenty inches and with only one inch falling in the six weeks prior to the 23rd Nats, conditions were very dry at the Yaldhurst Radio Control and Free Flight site with dust, grass seeds (biddy-bids) and a very real fire risk, all adding to the 'natural' hazards of this ex river bed. Things were much brighter back at the Nats Headquarters. Control Line and accommodation were at the Lincoln Agricultural College in a very pleasant setting. Most of the 200 contestants and their families utilised the single rooms left vacant by holidaying students – veritable 'hotel' accommodation – however, many purists continued in the tradition of 'roughing it' and stayed under canvas at the local domain.

New Year's Eve took its toll again this year. With celebrations packing up about 3 a.m. and the first round of A/1 starting at 5.30 a.m. there were some pretty sorry sights around. Tony Hill had a traumatic experience when he started off in fine style towing his A/1 for lift, sprinting for some 200 yards when he suddenly stopped and slumped and the model fell off the line – New Year's Eve caught up on him with a real rush. A rather green Tony returned slowly from upwind to check his 50 second score!

Events this year were sponsored by firms, clubs and individuals, which lead to a very impressive prize list containing picnic sets, rugs, crockery, stopwatches, etc.

Free Flight

Competition was again very keen in F/F events, spiced a little this year by the chance to obtain a team place for the coming World Champs in Sweden. The Christchurch Club proved the value of local knowledge by winning all but one of the F/F events. Except for A/1 and A/2, weather followed a pattern of cool breeze for the first two rounds (5·30 a.m. to 8 a.m.) then hot and calm with widespread periods of downdraft air between the relatively infrequent thermals for the remainder of each morning. A/2 suffered from a strong wind (up to 25 m.p.h.) which required a rugged (British?) model to last the distance and A/1 was flown in steady drizzle.

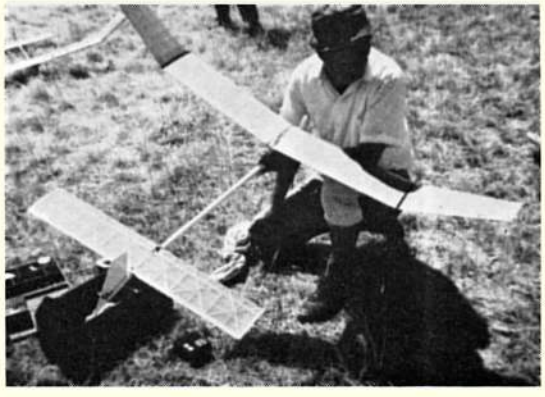
Highlights of the F/F events were most certainly the fly-offs in Open Power and Open Rudder. In Power, Murray Stringer spurned the use of a D/T on his *Sloworm* (after all, he was using Ron Magill's motor so why worry?) whilst the other two in the fly-off considered a six minute fuse would be adequate. All launched into the same bubble and Murray's risk paid off when he glided down in sight for 18 minutes the others having D/T'd down for around 8 mins+ when still well in sight – all used ½A models. In Rubber, nobody used D/T's, however, Bruce Keegan and Paul Lagan launched a little too early and it was Alan Morrison and Ron Magill who connected with the big bubble to fly O.O.S. well-up – Ron used the same model as last year (15 min fly-off then, you must be slipping Ron) and it had a size, hence a visibility, advantage over Alan's.

There were over 50 entries in A/1, A/2 and Chuck Glider. Paul Lagan's *Kiwi II* proved ideal for the rough and tumble of A/2 (flown over 5 rounds as were all FAI events) and there were four of Paul's design in the top ten. Kelvin Lilley used a much modified *Strolling Bone* to win A/1. In Chuck Glider, the maximum possible is 9 mins (6 flights of 1½ min max) and Ron Magill's winning time of 8.25 was grand flying. A novel feature of chuck glider was an unlimited fly-off to break a second place tie. *Sweepettes* and *Buck's Chucks* (a Gary Burrows design) were the best performers here and most top men used D/T's.

In FAI Power, Paul Lagan flew a new *Ronytube* glass fibre fuselaged 18 *Tons* which, with a G.15 turning his 7 x 4 Bartels prop at 22,000+ went up very fast indeed, however, Paul 'lemoned-out' in one round and Joe Johnson's model (of 18 *Tons* parentage) gained him his first team place. Wakefield was won in fine style by Alan Douglas (Lagan '67 Wake as in 1967/68 *Aeromodeller Annual*) with some shrewd flying.

Payload was again dominated by Cox ·049 models although Joe Johnson's G.15 model with *Nig Nog* components caused quite a stir without actually recording a flight.

Heading photo shows Tony Hill and Jim McLeod readying the latter's F/F scale entry, a Bristol F2b Fighter.



Paul Lagan used his latest '18 Tons' in both F.A.I. and Open Power. Model features glass-fibre rod fuselage and cast engine pan.

Joe Johnson's Super Tigre G15 powered Payloader weighed 32 ozs. complete with a 12½ oz. dummy. 'Nig Nog' wing and tail surfaces employed. Contest still popular in N.Z. although fell from favour several years ago in this country.

Heather Clayton put the boys to shame when she won the Ladies Event with her little *Delinquent* – scoring three straight maxes!

The N.Z. teams for the World Champs were determined as – A/2: Paul Lagan, John Ensoll, Colin Duthie (Christchurch); Power: Joe Johnson, Paul Lagan (Christchurch), Brian Roots (Wellington); Wakefield: Alan Douglas (Gisborne), Alan Morrison (Timaru), Paul Lagan (Christchurch).

At present, Paul Lagan is planning on making the trip to Sweden, however, the others will again be proxied (no doubt by British proxies once more).

Radio Control

The feature of the Radio events was the newly instituted Pylon Class to Formula Kiwi rules. The Kiwi rules permit F.I and FAI Formula racers and normal FAI class Aerobatic models to compete on a common basis in an attempt to give as many people as possible flying experience before rigid specifications are formulated. The rules have proven to be very successful in practice and both the Pylon meetings to date run under these rules have been well attended. Over 1,000 spectators watched this event at the Nats and were treated to some good, close racing. Bill Cook's *Midget Mustang* and Neville Dawson's *Minnow* were clear winners – each circulating at around the 2:15 mark with Series 70 K&B's.

Class C (FAI Aerobatics) was not as well supported as previous years – most Class C flyers hail from the North Island and many decided to give it a miss this year. One very welcome flyer was Australian John Quigley who flew his *Styx* very smoothly into 1st place and Alf Leong couldn't quite regain last year's Nats winning form with his modded *Kwik Fli*. Class B (Intermediate) is really catching on here at present and the most successful model so far has been Angus Macdonald's *Skinny B* – both Angus and Alf Leong flew this design in the event.

Class A Radio is for 'bang-bang' rudder-only, however, there is a move afoot to allow proportional control in future. The most accomplished Class A flyer in N.Z. at present is Grenville Thompson (who also flies a mean FF/ model) and he flew very well again this year.

Indoor

Cowles Stadium has an absolute ceiling of 42 feet but has lights hanging 10 feet below this to make things very difficult. There hasn't been much progress in the indoor rubber classes over the past few years – however, flyers have become more consistent. Class B is for 'Easy B' types and Class D is Open Microfilm.

Indoor Chuck Glider is another story and the top men here perform well up to the best USA standards. Paul Lagan's winning flight constitutes a new N.Z. Record and the top four all bettered the previous best Nats time in this site. Paul *didn't* use a *Sweepette* – instead a 15 in. span *Bunker Hill* weighing 4·8 grams.

Control Line

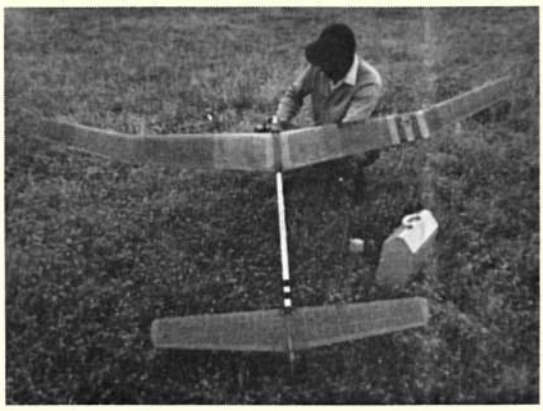
As mentioned earlier, C/L entries were down this year, although the standard in some events was better than ever. One such event was Class B Team Race where, despite using ·016 in. lines, the top three all bettered the old N.Z. Record! The final was fast and furious and resulted in a rare dead heat. The two concerned were given the chance of a fly-off but decided to call it a draw. FAI Team Race also produced some close, if slow, racing – the South Island dominating this event.

C/L Stunt was its usual high standard and the top four were very close with Peter Wheeler being very near to dethronement after his long reign (next year, Peter . . .). Murray Stringer had a good day in the wind of the first C/L afternoon when he won both ½A Team Race and Combat with some fine flying.

Speed events enjoyed a little more interest than usual but unfortunately not many times were recorded. In 2·5cc Speed, Harvey Westland used

Left, Ron Magill seems amused by the frantic efforts of his assistants in helping him change a broken motor just 3 minutes before the end of the Open Rubber flyoff – which he then won! Below, Alan Morrison readies his Wakefield – note the vastness of the flying field in the background. Right, Arthur Macauley uses king-sized chuck gliders, complete with timer operated D/T.

Left, John Malkin readies his glider for flight while Brian Roots watches the opposition disappear downwind at a spectacular rate.



Jan Henry believes in building them big! Here (right) he readies his McCoy 60 powered 'Safari Senior' Open power entry.

his home-made three port motor and Ian Henry had a piped Rossi in his usual excellent model but Ian had a bad run of luck in all four speed classes and didn't record a single flight!

Scale

Best Scale model at the Nats was Nev Dawson's R/C *Zlin Akrobat* which flew very well and eclipsed the opposition. C/L Scale was won by Gerald Nally's *Ballerina* – Owen Bruce from Whakatane could not attend this year with his *Ansaldo*. In F/F the hardy annuals fought it out again with only a couple of new models to be seen.

RESULTS

LADIES EVENT (3 x 3)

1.	Mrs. H. Clayton	9:00
2.	Mrs. R. Douglas	6:36
3.	Mrs. A Hewitson	5:49

½A TEAM RACE (5½ miles)

	Heat	Final
1. M. Stringer	5:12.6	6:21.0
2. B. Long	5:42.6	7:29.5
3. P. Staples	6:12.5	78 laps

COMBAT

1. M. Stringer
2. P. Staples
3. B. Turner

FA1 TEAM RACE

	Heat	Final
1. P. Wheeler	6:00.5	12:49.3
2. W. Forbes	6:03.4	13:11.9
3. M. Harris	6:12.2	16:16.0

C/L STUNT

1. P. Wheeler	857
2. B. Turner	855
3. M. Woods	835

BB TEAM RACE (10 miles)

	Heat	Final
1.=D. McAnelly	6:40.0	7:18.0
1.=P. Staples	6:59.0	7:18.0
3. R. Vazey	7:18.8	97 laps

2.5cc SPEED

1. C. Westland	132.4 m.p.h.
2. D. Staples	122.5 m.p.h.
3. M. Harris	114.7 m.p.h.

3.5cc SPEED

1. P Staples	137.4 m.p.h.
2. M. Harris	119.2 m.p.h.

5cc SPEED

1. P. Staples	128.6 m.p.h.
2. G. Nally	113.2 m.p.h.

10cc/JET SPEED COMBINED

1. M. Harris	125.0 m.p.h.
2. D. McAnelly	108.0 m.p.h.

A RADIO (RUDDER ONLY)

1. G. Thompson	549
2. J. Comrie	470
3. E. Galloway	462

B RADIO (INTERMEDIATE)

1. A. Leong	1359
2. R. Johnson	1305
3. A. MacDonald	1191

C RADIO (FA1 PATTERN)

1. J. Quigley	6685
2. A. Leong	5780
3. N. Richardson	5115

PYLON (FORMULA KIWI)

1. W. Cook	15	(2:22.4)
2. N. Dawson	14	(2:15.6)
3. R. Johnson	12	(3:09.8)

NORDIC A/2 (5 x 3)

1. P. Lagan	13:18
2. P. Staples	12:08
3. J. Ensoll	11:31

FA1 POWER (5 x 3)

1. W. Johnson	14:43
2. W. Forbes	13:11
3. P. Lagan	13:07

WAKEFIELD (5 x 3)

1. A. Douglas	14:15
2. A. Morrison	13:55
3. P. Lagan	13:40

OPEN POWER fly-off

1. M. Stringer	+14:49
2. T. Martin	+9:32
3. A. Pearce	+8:28

OPEN RUBBER fly-off

1. R. Magill	+12:37
2. A. Morrison	+11:47
3. B. Keegan	+2:50

PAYLOAD (5 x 3)

1. A. Pearce	13:36
2. B. Roots	12:11
3. G. Thompson	12:09

CHUCK GLIDER (6 x 1½)

1. R. Magill	8:25
2. A. Morrison	6:50
	+5:06
3. M. Stringer	6:50
	+2:55

NORDIC A/1 (5 x 3)

1. K. Lilley	12:59
2. B. Roots	12:40
3. T. Martin	12:25

½ HOUR AGGREGATE

1. G. Thompson	10:47
2. C. Duthie	10:40
3. R. Vazey	10:25

INDOOR CHUCK GLIDER

1. P. Lagan	40.2
2. T. Martin	37.2
3.=M. Stringer	36.4
R. Magill	36.4

INDOOR CLASS B

1. P. Lagan	7:14
2. M. Stringer	5:38
3. G. Burrows	5:32

INDOOR CLASS D

1. T. Martin	9:31
2. P. Lagan	6:54
3. M. Stringer	5:16

C/L SCALE

1. G. Nally Ballerina	827
2. B. Stanish Avro 504K	723
3. P. Staples Focke Wulfe	678

F/F SCALE

1. L. Morgan Tony	526
2. P. Staples Storch	521
3. J. Morse Luton	481

R/C SCALE

1. N. Dawson Zlin	1700
2. R. Johnson Piper Cub	1294
3. L. Holland Gipsy Moth	1186

F/F CHAMPION
P. Lagan, Christchurch

C/L CHAMPION
P. Staples, Wanganui

R/C CHAMPION
A. Leong, Hamilton and R. Johnson, P. North

JUNIOR CHAMPION
B. Turner, Kaiapoi

OPEN CHAMPION
P. Lagan, Christchurch. R/up M. Stringer, Christchurch

Well known N.Z. flyer Murray Stringer launches his modified 'Slow worm' on its winning Open Power fly-off flight.

continuing with Eric Coates' series...
Part III: Design Features

The Westland Lysander is an aircraft which many have tried to model, though seldom with success in respect of flying performance due to high wind loadings, caused by the enormous fuselage.

FLYING SCALE MODELS

LAST MONTH we considered the aerodynamic and stability aspect which govern the selection of a suitable prototype. We will now look at a few mechanical aspects, particularly with regard to biplanes, which may also influence our choice.

At this stage I think it may be an opportune time to refer to nomenclature used for the various parts of a biplane. Although these terms may be familiar to some, I find more and more younger people are confused by some of the names of the various struts and wires. As we shall refer to these parts quite a lot in this and future articles a study of Fig. 1 should be worthwhile if you do not quite know the difference between a cabane and an interplane strut.

Biplanes normally fall into two classes: Single Bay and Double Bay. Most small biplanes, including the majority of single seat fighters, fall into the single bay category while most two seaters are usually rigged as double bayed machines. Occasionally one comes upon a three bayed machine but these are usually multi-engined machines which are best left alone. Most biplanes are rigged positive, or forward, stagger; quite a number have no stagger at all and just a few have negative, or back stagger. The DH5 and Beech 17 are possibly the best known examples, although back stagger machines are best avoided owing to their inherent poor stall recovery problems. The main reason for forward stagger is to reduce the airflow interference between the two planes, if this stagger is reversed the upper wing is in the backwash of the lower wing when stalled. Automatic stall recovery is very slow with this layout, most builders of back stagger models have found the ground has hit the model before it has managed to recover! See figures 2 and 3.

A lot of modellers avoid 2 bay biplanes because of the extra set of interplane struts and doubling up of wires which is a pity because some of the best flying scale subjects are amongst this category. Virtually all the stable two seaters of the 1914-19 war were thus rigged while very little extra work is required in 2 bay rigging and, as will be seen in a future article on rigging, some advantages are to be had.

We must now consider wing sections. Most aeroplanes of the 1914-18 period used RAF 15 or very similar under-cambered sections. This is an excellent model flying section; its only drawback being that it is somewhat on the thin side. However, if we are to reproduce the character of the original, both in appearance and flying performance, it is essential that we do not deviate very much from the original. Some degree of thickening, 20% at the most, is permissible if structural considerations demand it. This is not really necessary however provided that some degree of the flying load is carried by the rigging. I have no time for the people who thicken up the wings to a Clark Y type of section and then produce a pair of cantilever wings; using the rigging, if they fit it, purely for ornament. Such methods should be reserved strictly for Fokkers! With later types of aeroplane when a bi-convex section was used then some modification can be introduced to the benefit of the flying performance,

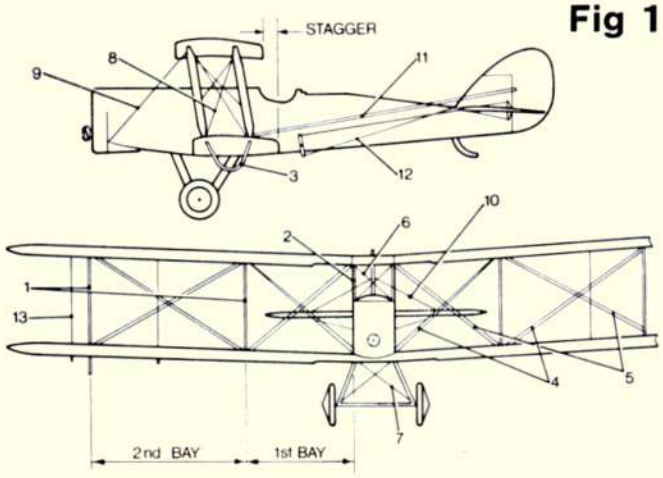


Fig 1 **TYPICAL RIGGING OF 2 BAY BIPLANE (DH 9a)**
SINGLE BAY SIMILAR EXCEPT INNER BAY OMITTED

(1) Interplane struts – fore and aft (4 on single bay, 8 on double bay).
(2) Cabane struts – holds up centre section.
(3) Tip protector.
(4) Lift wires – take the flying load – often double.
(5) Landing wires – take the weight of the wings when landing.
(6) Cabane bracing wires.
(7) U/C bracing wires.
(8) Incidence wires – brace the interplane struts.
(9) Drag wire – takes the wing drag loads – usually only on 2 bay A/C.
(10) Tail bracing wires.
(11) Rudder control cables.
(12) Elevator control cables.
(13) Aileron interconnection cables (only fitted if ailerons on both planes).

Gloster Gladiator possesses ideal configuration for free flight, and is a most attractive craft. Upper picture shows the Shuttleworth Collection's version, while below is an example destined for the R.A.F. Museum.

without noticeably detracting from the appearance of the model. Fig 4 shows the flattening of the undersurface of the bi-convex section I used on the Nimrod, the flat bottom makes for easier building and also slows the flying speed down, always a desirable feature, as most model aircraft fly in excess of scale speed.

I mentioned last month that invariably thin symmetrical sections are used in full size practice, at least up to 1940 anyway, for tail surfaces. These should be adhered to implicitly as nothing looks worse than thick tail surfaces.

We will now look at suitable engines for F/F scale models. These are somewhat different to other classes of model. The main requirements being:

1. Ability to swing a large diameter propellor in relation to its capacity.
2. Ease of cowling.
3. Ease of starting and ability to run with poor cooling without protesting.
4. Controllability.

In order to achieve (1) a fairly long stroke is necessary Because of cowling difficulties the rotary shaft valve engine is most unsuitable. Rear induction is most desirable, either by rotary disc valve, or sideport in the cylinder. Without doubt the old fashioned long stroke engine with sideport induction is by far the most suitable.

Forward staggered wings stalled. (Minimal interference)

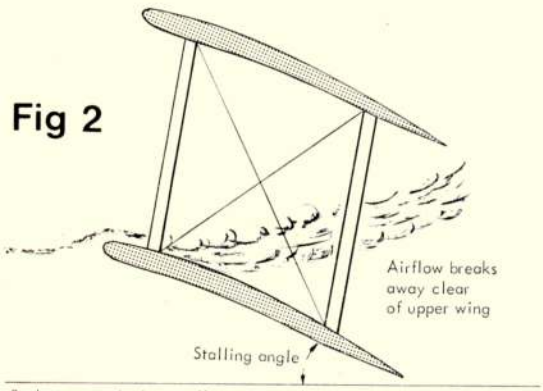


Fig 2

Back staggered wings stalled. (Upper wing completely in backwash of lower wing causing violent stalling characteristics and poor recovery properties).

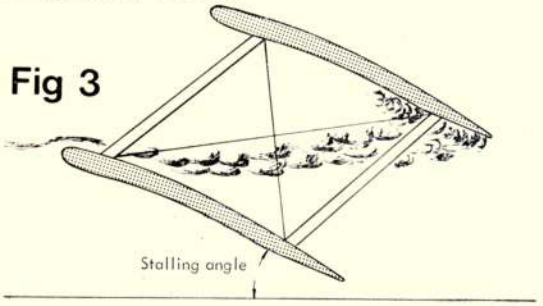


Fig 3

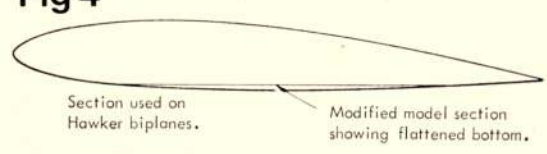
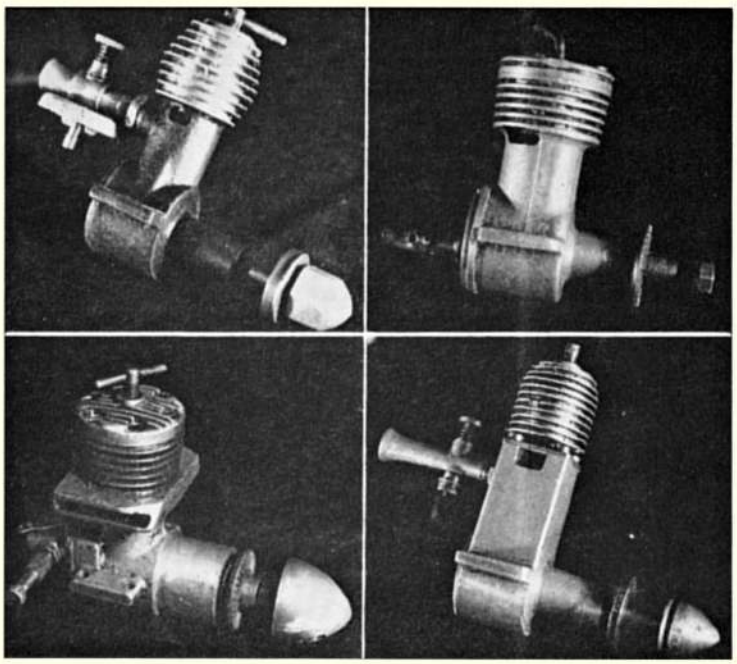


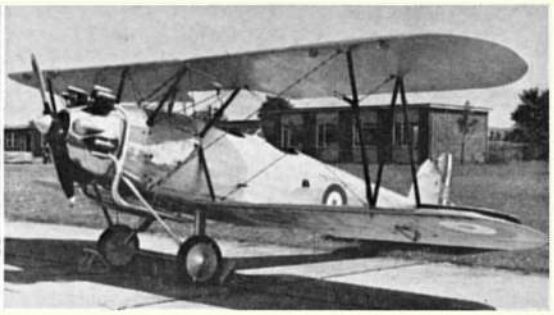
Fig 4

The throttle and choke can be approached by removal of the upper rear part of the cowling; usually following a scale break line. The fuel line is easier to route also. Perhaps the only drawback of this type of engine is its height which may be difficult to accommodate in the cowling of a small model. Invariably these engines start easily and because they do not rev very fast, run fairly cool and do not worry very much about being almost totally cowled, although some degree of airflow through the cowling is essential. Unfortunately few, if any, engines of this type are manufactured today and I regret that the small glow motors offered in profusion today by the model trade are totally unsuitable for our use. They will not turn a propellor large enough to clear the cowling of the average scale model; nor is controllability one of

Ideal power units in the author's eyes are these 'old timers', the Mills .75 c.c. (top left) with the E.D. Bee Mk. 1 next to it. Below left, is the E.D. Racer and finally the Mills 1.3 c.c. Few modern engines are really suitable for scale work, with the exception of the Davies Charlton range – the .75 Merlin being widely used.



Apart from the short nose, which causes rearward centre of gravity problems, the Avro Tutor is a fine subject – this example belonging to the Shuttleworth collection. Ability to inspect the full size is most important to the competition minded builder.



Only recently has a kit manufacturer (Veron) recognised the potential of the Hawker Tomtit – although their version is intended for R/C use only. Upper and lower wings are identical in construction – a good labour-saving point!

Three privately owned D.H. Hornet Moth biplanes display a variety of colour schemes. Ideal 'first' subject to choose due to simplicity of cowling engine, lack of centre section struts and good general proportions. Rather surprisingly modellers have rather overlooked this sleek design, but should we receive sufficient requests for a plan we could shortly supply the goods!

their strong virtues. Some of the larger glow motors, developed for R/C use, are much better in both respects but are generally too large for our use. Some of the last remaining small diesels manufactured in G.B. can be used quite successfully but being chiefly rotary shaft valve types suffer installation problems accordingly. They will, however, turn reasonable sized propellors.

In my view two engines stand out above all others as F/F scale power units – the Mills 0·75 c.c. and its bigger brother the Mills 1·3 c.c. Unfortunately neither are still made, production ceasing about 5 years ago. They enjoyed a production run of 15 years or more and being superbly engineered hardly ever wear out. There are many available on the second-hand market at wildly varying prices, a good example fetching about £5 these days; and well worth it. Do not worry about external appearances, we don't want it as a collector's item to put in a glass case, and do not worry about the piston fit either – the one working part that wears out over the years. The excellent reboring services advertised at the back of this magazine will put that right for you at about £1·50. These two engines will power virtually all models the F/F modeller should wish to build. The 0·75 c.c. is happy with models down to 25 in. span ranging up to about 36 in. in the case of a biplane, and 40 in. as a monoplane. If the model is very light and has low drag these sizes can be exceeded but I do not recommend this practice as one has no reserve of power, if the model turns out overweight (they usually do), or for flying in a breeze. Remember you can always reduce the power on too-powerful a motor, but you cannot make it produce more than it is capable of. The 1·3 c.c. takes over where the 0·75 c.c. leaves off and will power a biplane up to 50 in. span and about 36 oz. in weight, and monoplanes up to 60 in. span.

One has to be very careful however about power units, particularly with biplanes, when the span exceeds 40 in. A model of a single seat fighter will require considerably greater power than a two seater of similar span. A good example being the R.E.8 of Terry Manley, illustrated last month, which spanned 52 in. and flies well on a Mills 1·3 c.c. Compare this with my S.E.5a, also illustrated last month, which only spanned 45½ in. and yet required an ETA 15 flat out to fly it properly. The answer of course lies in the relative drag and weight of the two aeroplanes. The cross sectional area of the fuselage of the S.E.5a is much greater than the R.E.8 also, although smaller in span, the wings have considerably greater chord. I would

A highly aerobatic two-seat trainer, the Bücker Jungmann has long been among the author's favourite subjects, he having won several contests with models of this machine.

not recommend that single seater fighter biplanes are built to such a large scale as my S.E.5a (1/7) as invariably they are rather heavy and require a lot of power, making them difficult to trim and rather unforgiving in a prang.

Whilst we are digressing about sizes let me say that I think that for general fun flying the ideal size for a F/F scale model is about 30 in-36 in. and the weight, even on a well-detailed model, shouldn't exceed 20 ozs. I find this class of model by far the easiest to trim and fly, if you make a mistake trimming, more often than not it "bounces" without more than superficial damage. The larger model is more suited to competition flying as it enables a greater amount of detail to be incorporated. However the weight climbs rapidly with increase in span and "bouncibility" is rapidly replaced by "crunchibility".

Returning to power units, apart from the Mills pair, other suitable units made in the past and sometimes available on the second-hand market are the Amco 0·87 c.c., very rare these days, and the E.D. Mk 1 c.c. Bee. The latter usefully providing a squat power unit between the two Mills engines in power output. Unfortunately the Bees were not as well made as the Mills engines and of those that survive most are in poor condition. For people that like to build big and require something with more power than the 1·3 then, without doubt, the best unit is the old E.D. 2·46 c.c. Racer; now making a welcome return back into production (what about a new Bee, E.D.?). Although relatively short stroked, this engine will turn a useful sized propellor and is a good starter as well as being very controllable. I cannot recommend the old E.D. 2 c.c. engines; although they are reasonably plentiful on the second hand mart, as they vibrate rather a lot and are just that bit too tall for cowling on all but the bulkiest models. Neither recommended is the big Mills 2·4 c.c. which had a relatively short production run. Although, like its small brethren, it was beautifully made it is rather a bad mannered engine, being very fussy about carburation as well as being very tall.

That concludes our survey of suitable engines. I am afraid we have to rely very much on the designs of the 40s which have not been surpassed for flying scale use and alas have virtually disappeared from the manufacturers products – as have most of the manufacturers. This is indeed a great pity for I am sure there is a market for a well made sideport engine of about 1 c.c. not only for the scale fraternity, but for the legions of F/F sport fliers who would be far better suited than with the screaming glow motors of today.

You will have noticed that all the engines I recommend are diesels. Apart from their ability to swing a large prop the diesel is also more suitable because it does not require the chore of attaching a starting battery, and the fuel it uses will not attack cellulose finishes, which I find superior to all others for scale work. I always use fuel of my own mix using mineral oil (Castrol GTX) in preference to Castor. This can be wiped off from the airframe much more easily than the gooey mess that castor oil leaves; so preserving the appearance of the machine for a much longer period. Although Castor oil is a superior lubricant for hot running, high revving, engines, mineral oil is quite adequate for the type of engine used for scale models.

Top three photographs depict D.H. Puss Moths, while the lower one is a Leopard Moth – the undercarriage and wing plan being the distinguishing feature. These monoplanes share a similar fuselage with the Hornet Moth (see opposite). Even in monoplane form this aircraft has seldom been tackled, despite the relative ease with which they may be viewed for additional detail information.

Next month we shall commence to look at the structure of scale models in detail.

Both the Avro 504 (in the foreground) and the D.H. Tiger Moth are each in their own right very popular subjects – both these examples being preserved for the R.A.F. Museum. The 'Tigger', superb flying performer, is an all time favourite, and our plan (FSP/555 price 50p) is still the best seller of all types of model aircraft!

Coupe d'Hiver 1971

report on the 27th Annual International, held at Chavenay, France by JOHN O'DONNELL

THIS YEAR'S COUPE D'HIVER at Chavenay was the 27th in the series – and the eighth at which British participation has been sponsored by this magazine. Somewhat surprisingly the number attending from this side of the channel has failed to increase.

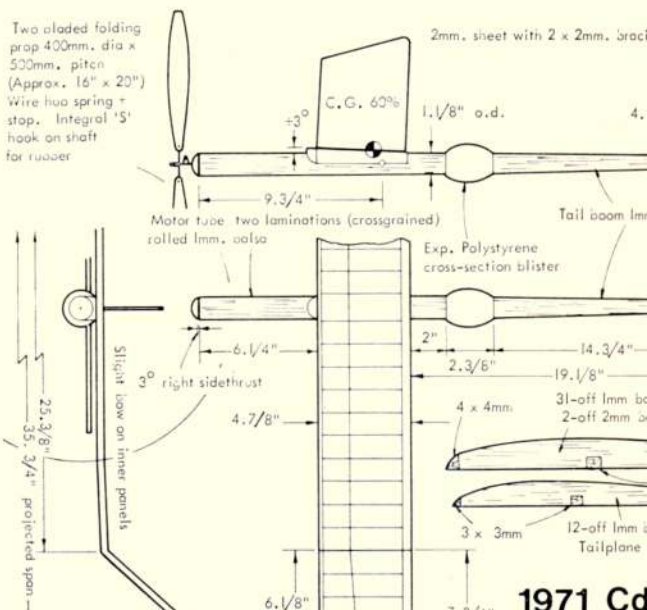
Inter-related reasons, including the G.P.O. strike and the lack of available information, led to the actual *Aeromodeller* party being reduced to only four "regulars". As all came from the North of England, their continental weekend commenced with an overnight drive prior to catching the early – Saturday – morning flight from London Airport. The model boxes caused the usual troubles with their unsuitability (in more ways than one) for the mechanised baggage handling system. The substantial boxes now used by *all* the party enabled the contents to travel unscathed.

The BEA flight, the disembarkation formalities at Orly airport, the coach ride to Les Invalides terminal, and the taxi ride to the Hotel Terminus – Vaugirard (near the Porte de Versailles) followed in an uneventful and well-established procession. By early afternoon the party was rested sufficiently to undertake a shopping-cum-sightseeing tour by Metro. Subsequently, the temptations of the Paris "night-life" were resisted by thoughts of the contest "on the morrow" (weaklings! – Ed.).

Meanwhile, another British group had been travelling by a very different route to the same destination. A party from the Cheltenham club took a motor caravan (by cross-channel ferry) and camped out overnight. They would hardly claim to be contest experts – but reckoned the interest and experience well worth the effort of personal attendance at Chavenay. The large tent that they provided for shelter, complete with tea brewing facilities, was much appreciated by the more lightly equipped air travellers!

Compared with British contests, the Coupe d'Hiver is better organised – even if some of the procedures and detail seem rather involved and laborious. The event was run from a largish caravan from which flight cards were issued (to the supplied timekeepers, *not* the competitors), collected and collated.

Despite the quite recent adoption of the Coupe d'Hiver class by the FAI the Chavenay event is still run to the original French ideas of three flights and R.O.G. Competitors were allowed a second entry with a separate model. Each



entry was given a number, and issued with labels suitably inscribed to be affixed to the model's fuselage, wing and tail. There were three separate rounds, the first being 2 hours, whilst the others were 1½ hours: flight cards were not given out during the last 15 minutes of each round. Between the first and second rounds there was a lunch interval of 1½ hours – the French obviously still believe in having a 'Sunday dinner'! Proof that the foreign entries were both welcome *and* expected was evident in the posting of rules in both English and German as well as French.

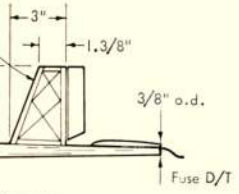
I am always surprised at the size of the entry especially as it is a one-event meeting. Even allowing for the double entries, it still takes a lot of people and enthusiasm to produce the 148 *scores* that were eventually recorded. With the inevitable 'dropouts' from the pre-entry, the total number involved must have approached the two hundred mark.

The contest was favoured with good flying weather. There was a definite breeze but it remained light – perhaps 10 m.p.h. at times but usually less. As there was a clear blue sky and bright sun for much of the day it was natural enough for thermals to be both plentiful and quite strong. This was despite the day being bitterly cold, as anyone obliged to 'stand about' soon felt! Almost unprecedented to English eyes was the spectacle of full-size lightplane flying (even glider aero-tows) being conducted throughout the day, from the same field. Indeed the full-size flying was immediately upwind of the Cd'H contest and take off site.

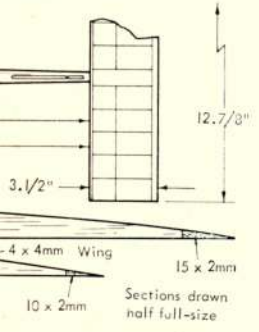
The wind direction was blowing rather near the lightplane hangars, and occasionally veered so that models went over or behind these obstructions. There was also a single field of cultivated plants immediately outside the drome, and by mid-afternoon this field was being guarded by a farmer and two or three gendarmes who were directing retrievers round its edges. Surrounding fields were merely ploughed, and being hedgeless gave a remarkably empty looking countryside.

Nevertheless the contest proceeded smoothly. Much of the flying was very good and maxs were commonplace. Although fliers were clearly watching the weather there was little of the out-and-out tactical flying often evident at home. Presumably this is a result of having to queue for timekeepers, and then being supposed to fly within six minutes of getting them. This requirement did not appear to apply if the flier suffered motor breakage or other troubles. Launching was apparently confined to the area loosely defined by the laid-out take-off boards – either by legislation or by mutual consent. R.O.G. was *very* casually regarded and many models were blatantly hand-launched from an R.O.G. stance, but without touching the ground.

The progress of large contests is always difficult to follow. At Chavenay the position was compounded by the time-lag in



lled balsa



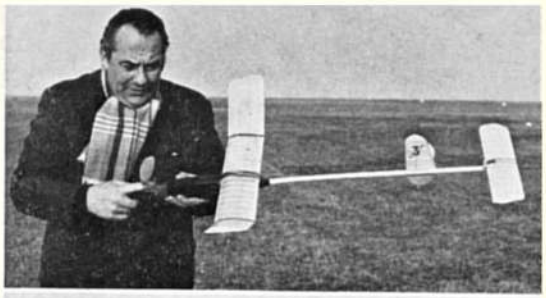
Sections drawn half full-size

Winner

Sauvage

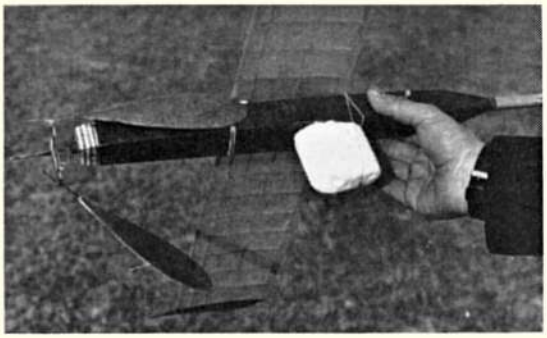
er, left glide
3x1mm Pirelli

Wing	23.5gr
Tail	4.5
Prop. assemoly	18.0
Fuselage	27.0
	73.0 gr.



Opposite, the intrepid British contingent consisted of (left to right, back row) Ron Coleman, Dave Norman, John Andrew, Basil Cooke, Henry Tubbs, Ron Firth and Frank Elton. Kneeling in front are (l. to r.) Piers Coleman, Jeremy Coleman, Mrs. Coleman and of course John O' the pen Donnell. Not all the models were flown by those holding them!

Right, top, Lelenx of Paris 'finger winds' his pod and boom model during test flying. Certainly a device unlikely to breakdown! Note forward position of fin. Second down is Arthur Schaffler, who reached the fly-off with his old model, about the condition of which he was rather apologetic. Below him is Christian Menget, winner of this event in '69, with a new model featuring a 'Flamingo' wing section – as can be seen in the view of the tip rib. Fourth down shows youthful entrant Patrick Bertin receiving assistance from a lady D/T lighter. At bottom, Jean Claude Souveton prepares for the fly-off, assisted by his wife, top lady entrant.



A close-up of Jean Boutillon's (ACPT, Paris) rule-meeting cross-section blister, made from polystyrene foam. Oddly enough, the French are considering a span limit!

Detail photo of Arthur Schaffler's nose assembly shows use of outrigger prop. A 3-D saw-toothed turbulator is used on the wing, and note also thread on top of wing tissue.

the totalling of scores and by language difficulties. Perhaps I should also add the flying of three models and the need to photograph at least some of the activity!

As the chances of a fly-off became more certain, our hopes of participation therein seemed to decline. The British entrants could provide several 'tales of woe' – but no trebles. Leeds club members Henry Tubbs and Frank Elton had built new models that *looked* more at home at Chavenay than in England. They had box fuselages of tadpole shape, with the wings mounted directly on top. Frank's better model even had the fin underneath – and both his entries had high power (8 strands of 6 x 1mm Pirelli) and short fast climbs. He started well with a max from each model, then found a 'hole' with each, and finally one 'up' and one 'down' in the third round.

Henry Tubbs suffered from trim troubles, even with the normally reliable and unchanging *Garter Knight* that he proxy flew once again for Tom Medley. Ron Firth had a general lack of climb, and an inexplicable spiral dive. The Cheltenham fliers were clearly and admittedly inexperienced, Ron Coleman having just returned 'to the fold' after a lay-off of nearly 20 years. He lost the prototype of his three C d'H models after 4½ minutes o.o.s. on a lunch hour test flight. Dave Norman had a very high aspect ratio model – but broke off a wing tip through taking evasive action avoiding a crashing French model. John Andrews and young Piers Coleman also entered but had no luck at all.

I had three models to fly, including Frank Monts' proxy entry, but couldn't concentrate the good flights together on one model. My second entry (with brand new surfaces on an 'open' fuselage) went up in a most spectacular thermal assisted climb – and took many minutes to descend on D/T. I reckon it came down in the next village, about 2 to 2½ miles downwind, at about 10 mins. The model reappeared at the contest late in the day, and too late to fly again. From pidgin French at the level of *dans les maisons* I think I confirmed its landing spot. Certainly I was lucky to bring it home again. As I had spent the lunch break in a fruitless search, the traditional group photograph had perforce to be taken after the close of the contest when the Cheltenham party were anxious to dash to catch the Le Havre ferry!

There proved to be five competitors with trebles, four Frenchmen and one German. The fly-off was held quite quickly after the 4.30 end of the contest, with the participants having to report at 4.45. As the wind direction had swung slightly, the five competitors, helpers and timers walked across the drome so that the models would not drift onto the hangars. The fly-off period was only four minutes long, so there was little delay after the start was signalled shortly before 5 o'clock. The weather had deteriorated somewhat being a bit windier, colder and overcast.

The first two to launch seemed to climb normally, whilst the other two French models went round right and flat. The German model of Arthur Schaffler spiralled in after only a few seconds. Final positions reflected the initial climbs. Winner by a scant three second lead was Michael Sauvage flying the design depicted in the 3-view with this report. His model was of quite ordinary construction, and, apart

Dave Norman from Cheltenham flew this attractive but un-English style, high aspect ratio design. Oddly enough, the French are considering a span limit!

Youthful runner-up in the fly-off was Jean Louis Garrigou following in footsteps of father Roger – in fact, maybe he's even leading him!

Eventual winner, Michel Sauvage of ACC took top honours by beating second-place man by a mere three seconds.

from the cross section blister and extreme tip dihedral, not untypical of many other French designs. The use of 3 x 1 mm Pirelli, instead of the usual 6 x 1, permitted the equivalent of seven strands to be used.

Runner-up was young Jean Louis Garrigou flying a neatly finished model, and undoubtedly owing much to the help of his very proud father, Roger, who is a regular in the C d'H top placings. Third was last year's runner-up, Jean Claude Souveton. His wife, Elizabeth, is an annual entrant and took the Ladies' award this year. Fourth place went to Jean Pierre Challine with a hump topped box fuselage design. Arthur Schaffler was rather apologetic about his old and well worn model – interesting from the use of glass-fibre tape wraps to strengthen the uncovered balsa tube fuselage, and thread diagonals on top of the wing tissue.

Following the fly-off, competitors adjourned to one of the hangars to await the prizegiving. A glance at the officials' table indicated that awards were going to follow the usual Chavenay pattern – and eventually they did. All competitors' scores are totalled and arranged in order, and a complete result list prepared. This is time-consuming, but necessary in view of the giving of souvenir awards to at least half-way down the list. Top places are well rewarded with trophies, cash, choice of engines (usually Micron products), and a variety of airline travel bags, flags and other items. Even 60th place was worth an airline advertising keyring. Presumably most of the prizes are donated by the firms and companies represented, but this can only result from much organisational effort. In addition to the normal placings, there were presentations to the winning nation, best non-French entrant and top ladies and juniors. All in all it was quite a marathon.

Thanks to flying back by BEA, instead of strike bound Air France, there was less of a panic-stricken rush to get to Orly in time. There was, in fact, time to buy the duty-free allowances – but not to eat! It always comes home to me on this trip how little of the total travel time is actually spent fying. We took nearly four hours to get from Les Invalides terminal to clearing customs at London. Of this only forty minutes were airborne!

1971 COUPE D'HIVER

Chavenay, 28th February, 1971

1.	M. Sauvage	ACC	360 + 129
2.	J. L. Garrigou	AMAIF	360 + 126
3.	J. C. Souveton	PAM	360 + 90
4.	J. P. Challine	PAM	360 + 67
5.	A. Schaffler	Germany	360 + 4
6.	R. Durand	ACPT	350
	B. Boutillier	UAC	350
8.	H. Dreher	Germany	345
9.	E. Souveton	PAM	344
10.	R. Garrigou	AMAIF	343
11.	B. Raulin	ACS	343
12.	L. Taupin	ACC	339
13.	M. Sauvage	ACC	338
14.	J. Griveau	Indep.	332
15.	G. Cognet	PAM	330
	E. Gouverne	ACdel'est	330

Remaining G.B. placings (and proxies)

20. F. M. Monts (proxy J. O'Donnel) U.S.A. (323); 34. F. Elton (300); 42. J. O'Donnell (286); 43. T. Medley (proxy H. G. Tubbs) U.S.A. (283); 62. R Coleman (250); 63. D. McDonald (proxy C. Meuget) U.S.A. (249); 73. F. Elton (235); 78. R. Firth (230); 89. H. G. Tubbs (208); 101. R. Coleman (180); 122. O'Donnell (120); 123. J. Andrews (119); 129. J. Andrews (92); 134. H. G. Tubbs (73); 135. D. Norman (66); 143. R. Firth (37).

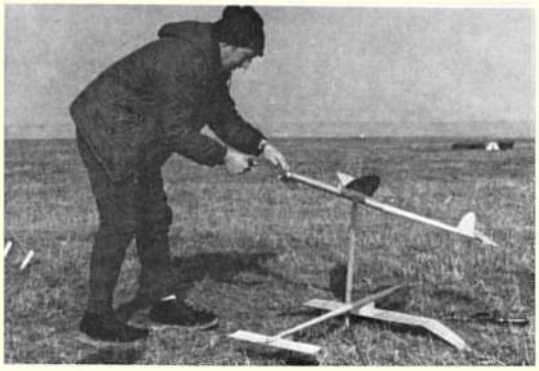
148 scores recorded

INTER-NATION: 1. France, 6 points; 2. Germany, 39 points; 3. U.S.A., 126 points; 4. G.B., 138 points.

JUNIOR: 1. Pascel Meritte, 315 seconds.

LADY: 1. Elizabeth Souveton, 344 seconds (9th overall).

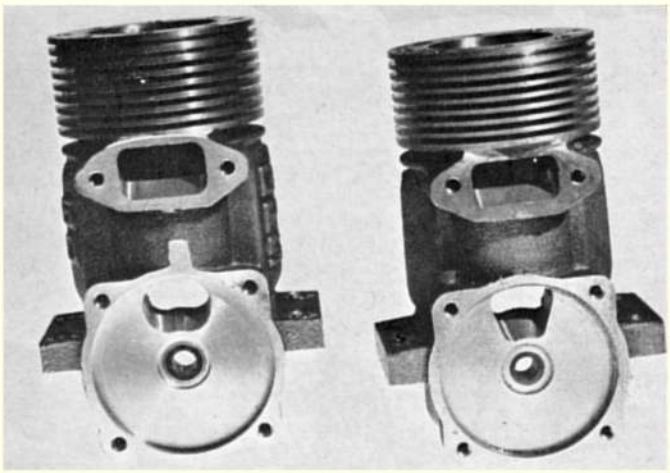
The weekend only assumed its wintery aspect towards the end of the drive Northward – where widespread evidence of snowfalls brought home appreciation of the good weather and easy travel that we had *enjoyed*.



Above, Jean Pierre Challine 'takes up slack' before winding for the fly-off, in which he placed fourth with just a 67 second flight. Far right is another view of Arthur (Elfriede) Schaffler, this time preparing his 'better' entry on his self-winding rig. However, this was not the one to reach the fly-off . . . a moral to be learned somewhere.

Latest Engine News

by Peter Chinn



O.P.S. Speed-60 main castings. Latest version left. Original 1968 model right. Note revised intake port, bigger transfer passages and needle-bearing for rotary-valve shaft.

Irvine engines

Ron Irvine has just added the O.P.S.60 to his range of imported model engines and the first consignment for the U.K. market should be arriving from Italy during May. These engines are of an improved type that has just been put into production.

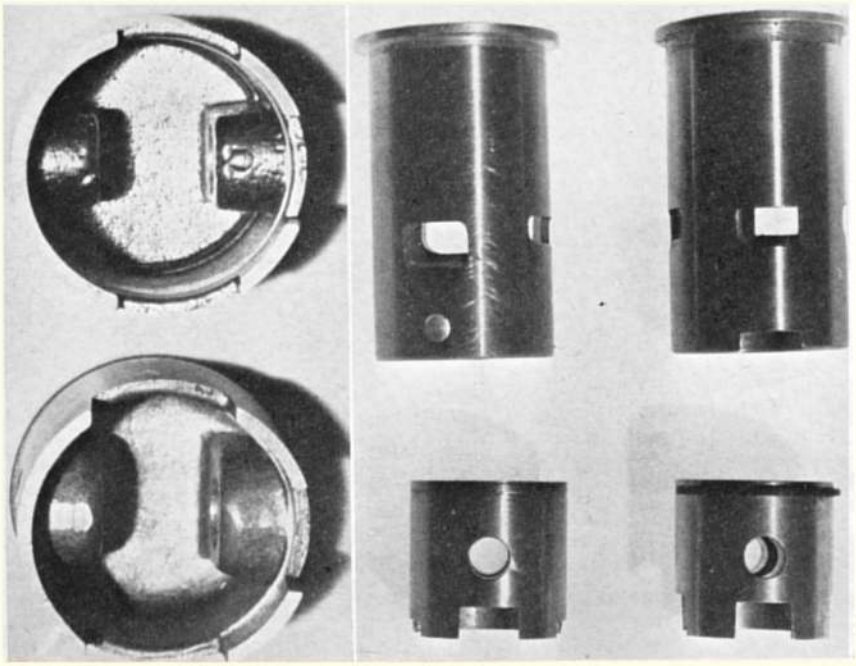
It may be recalled, from earlier reports in these columns, that prototype O.P.S.60's first made the headlines by cleaning up most of the Italian 10 c.c. speed events during the 1968 season. Regular production was planned for 1969 and the engine seemed all set for a successful future. Unfortunately, changes made to the production version were not successful and the engine subsequently received some unfavourable comment from various quarters.

It appears that the decision to modify the original design was taken after a change of management at O.P.S. and the adoption of a policy aimed at reducing manufacturing costs in order that the engine might be marketed at a more competitive price.

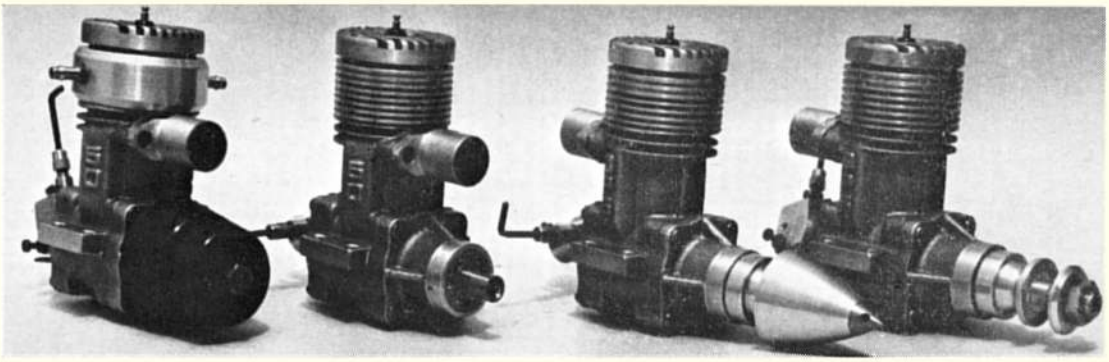
Obviously this was not a wise move and, in June of last year, there was another change of management at O.P.S. as a result of which a return has been made to the 1968 design but with a number of improvements. The rear-mounted rotary-valve reverts to an external steel disc type, in place of the more orthodox internal plastic type rotor used for the 1969 production model, but incorporates a further refinement in that the valve shaft now runs in a small caged needle bearing. The main casting is also similar to that of the original engine but has larger transfer passages and a wider induction port from the rotary-valve chamber. A thicker cylinder liner with larger transfer ports is used and the piston has also been modified. An ABC type piston and cylinder assembly will be available to those who prefer this type of construction.

Prototypes of this new O.P.S.60 proved very successful in Italy in various speed contests last year. Known as the "Series 70", the production model is being made in four versions. These are the "Speed 60" for regular control-line speed use; the "RC Speed 60" (throttle equipped version of the C/L engine for R/C speed models); the "RC Boat Speed 60" (water-cooled with power take-off at rear and R/C carb located forward) and the "Car and Racer Speed 60" (same layout as marine model but aircooled, less flywheel and with non-throttle type carburettor). This last named model is not being imported into the U.K. at the present time, but both aircraft versions and the marine model will be available.

All four version are designed for use with tuned exhaust systems and three types of pipe are listed. O.P.S.



Far left, the new lighter O.P.S. Speed-60 piston (shown above) is compared with old type. Immediate left, the ABC type piston and cylinder for the 'Series 70' O.P.S., compared with a standard 1968 ringed version.



New 'Series 70' O.P.S. 'Speed-60' engines from Italy cater for all interests. Left to right: marine version, racing-car version, C/L speed version, R/C speed version. Note the 'reversed' housings on the marine and car models.

now claim an output of 2·5 b.h.p. at 22,000 r.p.m. for the "Speed 60" model.

O.P.S. have also been working on a regular R/C multi engine with side exhaust and "proper" R/C throttle and hope to have a production version on the market within a few months.

Rossi engines

Also obtainable in Britain through Irvine Engines are the current Rossi 2·5 c.c. and 10 c.c. engines, the first delivery of which is awaiting customs clearance as we write these words. These consist of the well-known Rossi 60 in both speed and R/C types and the new R.15 in speed (piped) and free-flight (non-pipe) versions.

New specialist

Orders for the Barr-Theobalds A.R.M. ("American Racing Machine") 2·5 c.c. team-race diesel are, we understand, now being accepted by John Barr, 7418 Collett Avenue, Van Nuys, California 91406, U.S.A. The engine, priced at $65·00 (approx. £27·08), is a production version of the TWA based racing diesel successfully used by Barr and Theobalds last season and features a Schnuerle loop scavenged cylinder and rear drum rotary-valve.

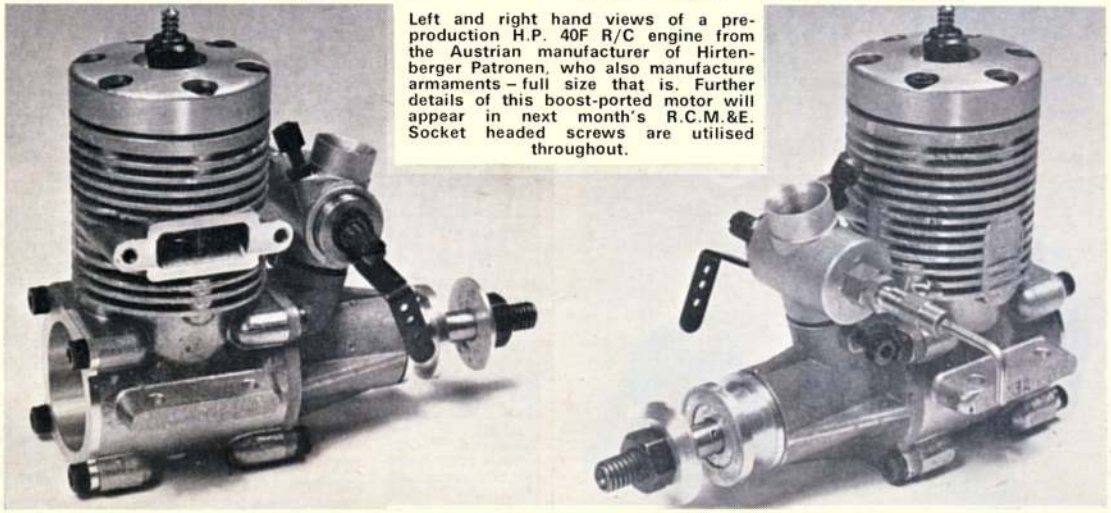
American speed expert Jack Frye (see July 1970 *Aeromodeller*) has announced that he is going ahead with small series production of his ultra high performance racing 60. It will be priced at about $200·00 or approx. £83.

O.S. Graupner

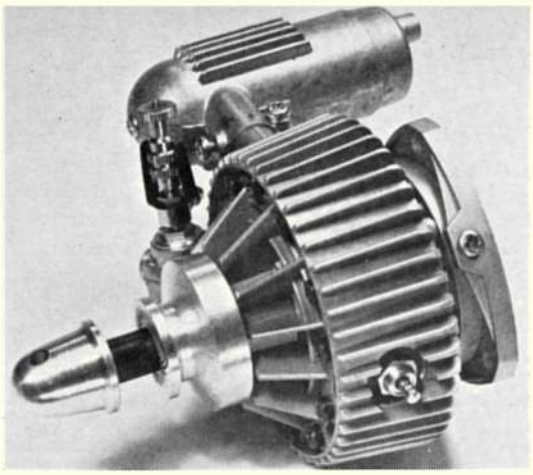
Talking recently with Kazuhiro Mihara, the O.S. engineer responsible for the development of the O.S.-Graupner Wankel motor, we learned something of the behind-the-scenes activity that is going on at O.S. in rotary engines. Much of this is not for publication at the present time, but there appears to be no doubt that O.S. are in the rotary piston engine business to stay.

Towards the end of last year, upwards of three hundred O.S.-Graupner Wankel motors were being produced per month, yet demand is still outstripping supply. That the standard 5 c.c. unit is capable of considerably increased potential is evident from the fact that mildly hotted-up factory engines have been putting out 50 per cent more than their rated power. There is also a strong possibility that the experiments with 10 c.c. Wankels will bear fruit in the shape of a production version (most likely a single rotor design rather than the projected twin rotor type) towards the end of this year or early next year.

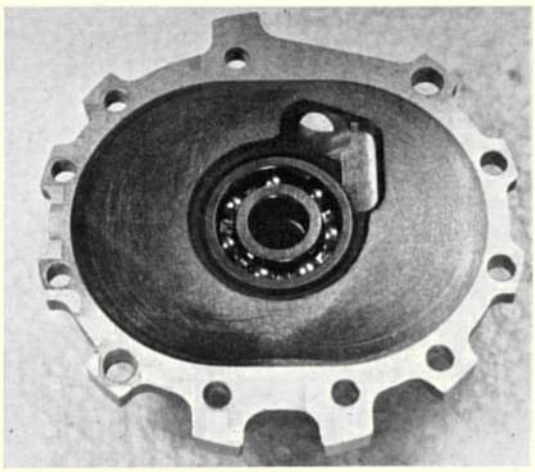
Meanwhile, the current 5 c.c. unit incorporates a number of internal changes compared with the original model described and illustrated in the December 1969 "Latest Engine News". Modifications have been made to the eccentric shaft, the front bearing set-up, the prop drive assembly, the rotor, rotor housing and the front plate. A silencer for the engine is also now available.



Left and right hand views of a pre-production H.P. 40F R/C engine from the Austrian manufacturer of Hirtenberger Patronen, who also manufacture armaments – full size that is. Further details of this boost-ported motor will appear in next month's R.C.M.&E. Socket headed screws are utilised throughout.



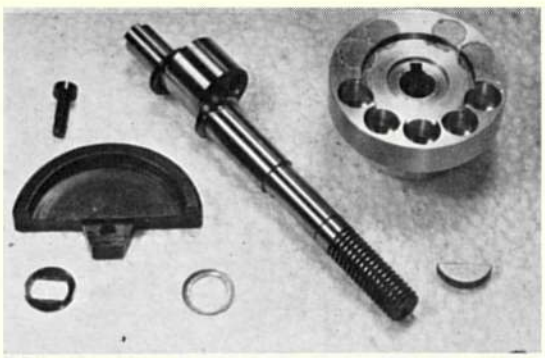
Current model of the O.S.-Graupner Wankel engine complete with its special silencer.



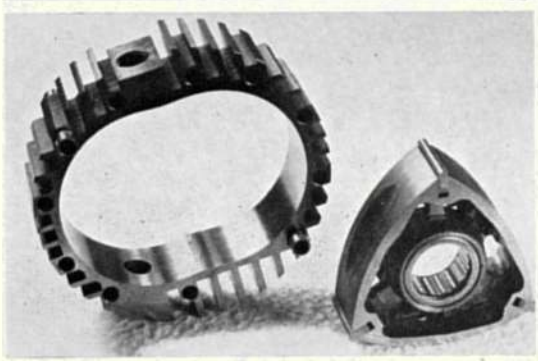
O.S. Wankel motor. New front plate with inclined intake port and twin ball-bearings.

The eccentric shaft is now in one piece with the prop shaft, has the front counterbalance and prop drive unit keyed to the shaft with a Woodruff key and is supported in two ball journal bearings and a needle bearing instead of one ball-bearing and a needle-bearing This makes for better alignment, smoother operation and provides a thrust bearing for starter use.

The rotor (now made from a shell moulding) and rotor housing are slightly thinner than those of the pre-production models (14·5 mm. instead of 15·0 mm.) in order to bring the engine's displacement to below the 5 c.c. limit at 4·976 c.c. Another more recent change has been the adoption of an exhaust port of a circular shape which, while having little effect on performance, gives a somewhat quieter exhaust note. Modifications to the front plate, in addition to accommodating an extra bearing, include an inclined intake passage and slightly reshaped port.



The O.S./Graupner Wankel motor now features revised eccentric shaft with front and rear counterbalance.



Superb machinery and casting evident in these photos of the Wankel's improved rotor housing and rotor unit. Note new circular exhaust port.

One of the problems with all Wankel engines is that one side of the trochoidal rotor housing is always subjected to much greater heat than the other because combustion is concentrated in one area only. This means that the housing will tend to expand away from the rotor on that side, thereby increasing clearances. In a full size Wankel motor the problem can be dealt with by increasing the volume of liquid coolant (or, in the case of an aircooled engine, substantially increasing the cooling-fin area) in the vicinity of the hot section so as to even out the temperature around the housing.

Unfortunately it is much more difficult to achieve a more uniform temperature around the rotor housing with an aircooled model Wankel without very substantially increasing the diameter and weight of the engine and, since O.S. did not want to do this, Mr. Mihara has adopted the highly original idea of setting the engine up with differential clearances so that when it reaches its running temperature, an approximately uniform axial clearance is maintained.

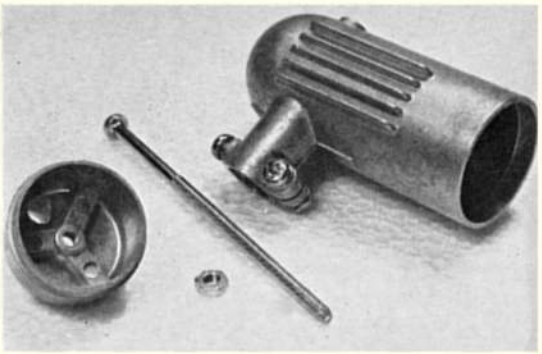
Since the model Wankel motor does not enjoy the benefit of an axial sealing grid on the rotor, this has involved some extremeley precise fitting and the optimum axial cold clearance on the rotor is now of the order of 0·002 mm. (0·00008 in.) on the expansion side and 0·010-0·012 mm. (0·0004 to 0·0005 in.) on the induction side.

This modification has had the desired effect of drastically reducing gas blowby around the expansion area, a condition which, with the earlier models caused loss of power

when the engine was hot and made hot restarting difficult.

Since the O.S.-Graupner Wankel motor was first introduced, O.S. have developed a special glowplug for it and have also introduced a simple expansion chamber type silencer which clamps on to the exhaust stub pipe that is part of the aluminium cooling-ring. The silencer adds only an ounce to the weight of the engine and has an outlet i.d. of 5 mm. Despite an outlet area of less than 20 sq.mm. (which, as one would expect, quietens the engine considerably) this silencer causes only a very small power loss.

O.S. Wankel motor silencer. Simple expansion box is light, effective and causes little power loss.



Mills fans

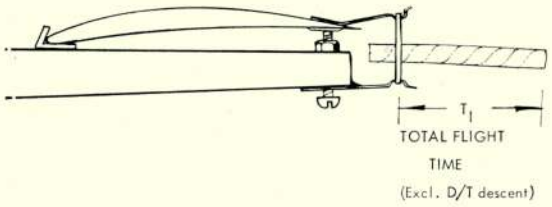
The January/February issue of the U.S. publication "The Engine Collectors' Journal" carried the following small advertisement:

"Doonside Mills – 250 replicas of the Mills 75 will be made. Cost each $14-$15. Send $5·00 deposit to Doonside Mills, Box 11, Doonside, New South Wales, Australia."

Advertisements inviting subscribers to this project also appeared in the **Aeromodeller** classified columns last year.

The dollar price quoted presumably means Australian dollars. We gather that the Doonside Mills project is the idea of Ivor Stowe.

Continued from page 245



To turn to a practical application, assume that the model's flying speed is 5 m/sec. and the wind speed either 2, 3 or 4 m/sec. If the total flight time were as long as a 5 cm fuse allows, then the fuse for the straight flight course is to be 2, 3 or 4 cm long respectively.

Remember that both fuses must burn at the 'downwind' end of the fuselage, and in similar relation to the wind. This is most important, as a fuse facing into wind burns twice as fast as one facing aft. Naturally some correction factors can be made concerning the increase in wind speed at increased altitudes, but in general the retrieving distance is much shorter than that achieved by mere guesswork. Programming the phases of flight in this way make magnet flying even more pleasant and thrilling as there are three deciding phases in such a flight, namely:

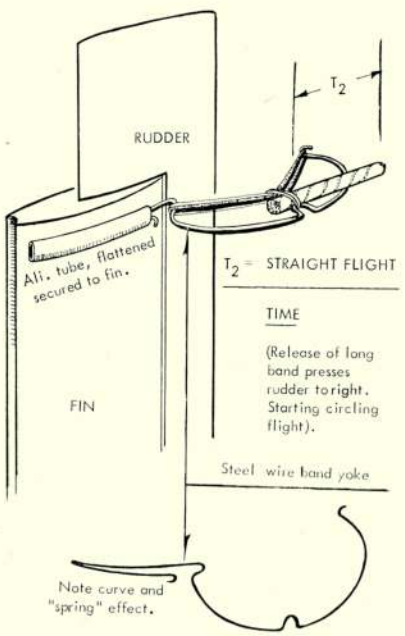
a) After launching one enjoys the usual thrills of free flight regarding trim - is the model 'tuned' for direction and wind speed? Are all flying surfaces correctly aligned and seated? During this stage of the flight, these factors can be evaluated.

b) The start of the circling flight is a very tense moment-circles must neither be too wide nor too tight. Incidentally, a forward c.g. makes tail plane incidence settings less critical.

c) The actual D/T descent. This is particularly exciting as if the model dethermalises at the correct time, the model can, with a little anticipation, be caught by the flyer!

The author and fellow magnet enthusiast Dipl. Ing. Ludwig have each spent a fortnight for the past three years at the Monte Tomba site (1738 metres above sea level). In the first two years a lot of walking was involved, but last summer the retrieving formula was applied - the results soon proving it to be correct. Sometimes the models would disappear in the distance into patches of cloud, reappearing when they started to circle out of the mist, eventually landing near the launching area on the alpine meadows.

As a footnote, it is worth recording that such a circling device as drawn, can transform a typical 'rough weather' design into a model suitable for calm conditions. The critical factor would be a reasonable rate of descent - an inefficient 'flying brick', however well trimmed, will not do!



Thomas-Morse S4C SCOUT

A 35" span, 1/9th scale replica of the early American biplane using .8 to 1 c.c. engines

by J. G. Watkins

The designer launches his model for another perfect flight at Old Warden, but judging by the length of grass, he's taking no chances!

THE FIRST AIRCRAFT designed specifically for fighter training, the Thomas Morse Scout has a particularly 'British' look to it – not surprisingly, as that company's chief designer, B. Douglas Thomas (although no relation) was an Englishman who had previously been employed by both Vickers and Sopwith.

Fortunately, this model does *not* possess all the flying characteristics of the original – many of its peculiarities being caused by the rotary engine – and is a very stable performer. In fact, the fine flying performance prevented us from finding the designer for quite some time when we witnessed its flights at the 1970 Old Warden rally – he was flying it non-stop and was only to be seen constantly trotting down wind retrieving his creation! So successful a performer is it that we are informed that with the exception of a competing flight at the Middle Wallop rally (isn't that always the way?) the model has give over three hours 'air time' without any 'failures'. The quickly detachable wings allow easy transportation, while also affording crash protection if required!

Further scale details may be gleaned from the Aeromodeller Plans Service's pack no. AJ.2887, price 20p. This comprises an article reprint and drawings to 1/72nd and 1/48th scales.

The fuselage is begun by cutting out all the formers, then bending the undercarriage and cabane struts to size. Sew and epoxy these to F1 and F2. Build two basic fuselage sides from $\frac{1}{4}$ in. x $\frac{1}{8}$ in. medium hard balsa, and $\frac{1}{8}$ in. balsa wing mount as shown. Glue formers F1, 2 and 3 in place, checking that they are square. When dry, join the fuselage sides at the rear, followed by the $\frac{1}{4}$ in. x $\frac{1}{8}$ in. cross pieces – making sure that the fuselage is not warped. Cement the bearers in place using a P.V.A. or epoxy adhesive, then glue the remaining formers in position -- leaving F6 to last. Rear fuselage stringers and top deck sheeting may now be added. Build the cowling ring from cross laminated $\frac{1}{8}$ in. hard sheet, and cover with $\frac{1}{8}$ in. medium hard sheet to F1. Add all undercarriage and cabane fairings then sand to a streamlined section.

The wing structure is very conventional. Cover the plan with thin polythene sheet, then pin the $\frac{1}{8}$ in. x $\frac{1}{4}$ in. T.E. for the lower wing in place. Pin the front spar in position, followed by the rear spar and leading edge – which will need packing with scrap balsa to bring to the correct height. Cut out ribs WB1-3 as well as riblets WB4 and 4a. Cut out the $\frac{1}{8}$ in. sheet trailing edge at the centre section, noting grain direction and glue in place. Add spar doublers at centre section before glueing all the ribs and riblets in position. Sheet in the centre section, add $\frac{1}{8}$ in. x $\frac{3}{8}$ in. tips and gussets, followed by wing strut mountings, then leave to dry thoroughly. This procedure is then repeated for the top wing, which also incorporates the ailerons.

Large radial cowl completely encloses the designers D. C. Merlin .75 c.c. diesel engine. Any beam mounted engine of .75 to 1 c.c. would be suitable for this model.

Three-quarter view of the 'Tommy' reveals the well staggered wings and gentle dihedral angle. Tailplane and fin are of ample area to provide stable flight.

Painted in its Navy colour scheme of pale Navy grey overall, with blue, white and red rudder stripes and wing insignia the Scout looks most attractive.

The tailplane is also built in the same way as the wing – again care should be taken to provide a warp-free structure. In the case of the fin, sand the ribs to a streamlined section after building, using the stern post TF2 and edges of fin as a guide.

Before covering, sand the entire structure carefully and give a coat of sanding sealer to all parts in contact with tissue.

Finally lightly sand with flour paper.

Add all dummy control wire attachment points to the fuselage from the tail, then reinforce behind stringers and uprights with hard strip balsa using pins with lines tied on for the wires. *These are added after colouring.*

Cover the entire model with the exception of the tailplane and fin with heavyweight Modelspan. Apply two coats of clear dope and one of sanding sealer to this. Cover tail and struts with lightweight tissue and finish as the rest.

Now is the time to make the wing struts – carefully measuring the exact distance between the wings when rigged. Sand all of the model lightly and dust down with a damp cloth.

Paint inside the cowl with two coats of Humbrol black enamel and inside the cockpit with matt khaki.

Mix equal parts of Humbrol Granite-grey with white paint and apply one coat overall, with two around the cowling.

Paint all the markings, add instrument panel, gun, wheels and all rigging wires – tying the wing wires to the holes in the dress snaps on the wing struts.

Drill engine bearers to suit your engine – the original used a D.C. Merlin with an 8 in. x 4 in. nylon prop. Screw a small MS freeflight tank to the firewall and connect fuel tubing for gravity feed. To avoid exterior control fittings, extend fuel needle to the bottom of the firewall with a short spring, then secure the control end with a simple 'U' bracket screwed to bottom of F1.

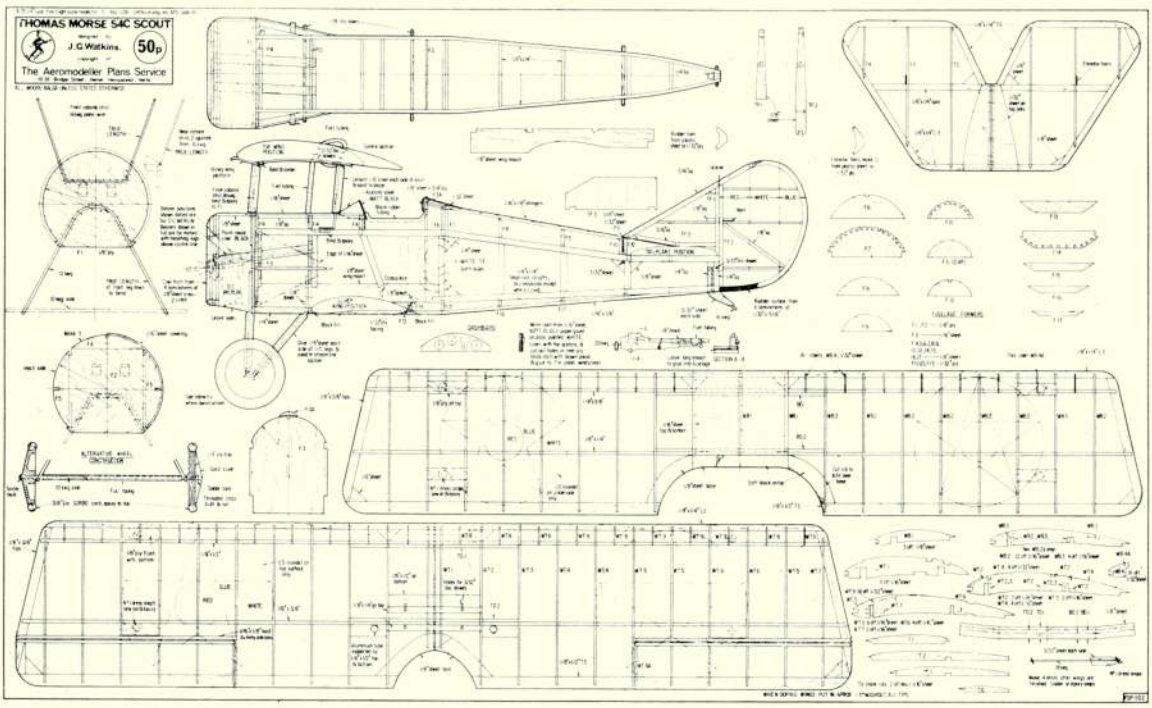
Likewise, lead-out fuel filler tube to the upper inside rim of the cowling ring, again securing with a 'U' bracket.

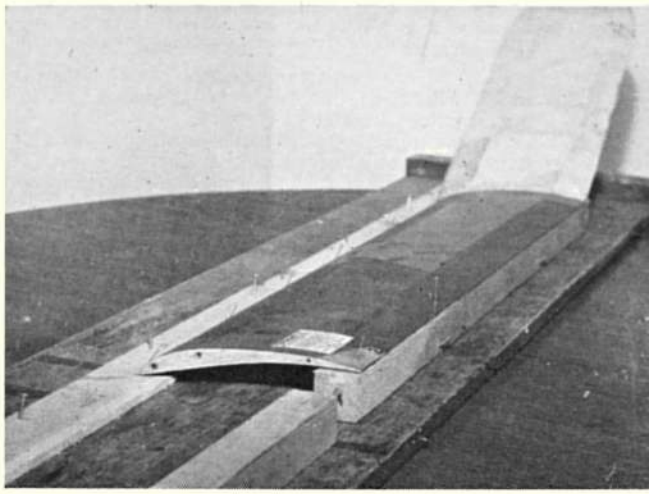
Flying

Test glide over the traditional long grass on a calm day. All that was needed on the original model was ¼ oz. lead in nose. Total weight was 18 oz. Gradually increase short power runs to reach top revs, avoiding right power turns like the plague. Even the full size pilots were instructed never to attempt a right hand turn during a climb out after take-off! Aim for a wide left hand shallow climb and with the dihedral as shown, absolutely no side slipping occurs. Glide should be slow and flat but slightly nose up.

When properly trimmed, the Scout will fly well in wind and recover easily from gusts, but if windy, use full power, to get her up.

FULL SIZE COPIES OF THE 1/8TH SCALE REPRODUCTION ARE AVAILABLE AS PLAN NO. FSP/1102. PRICE 50p (10/-) INCLUDING POSTAGE, FROM AEROMODELLER PLANS SERVICE, 13/35 BRIDGE STREET, HEMEL HEMPSTEAD, HERTS.



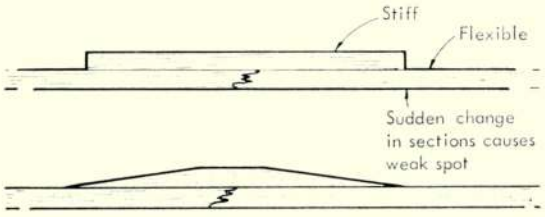


Jig used for dewarping John's appropriately named 'Stowaway II' A/2 glider wing after it had been left in the open for ten days following the St. Albans Gala last year. Sizes of block wood depend on the angle of the trailing edge.

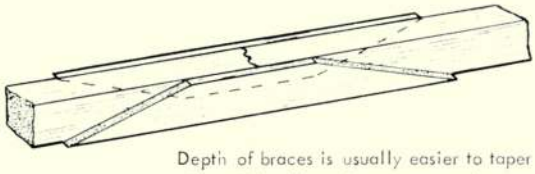
FREE FLIGHT COMMENT

by John O'Donnell

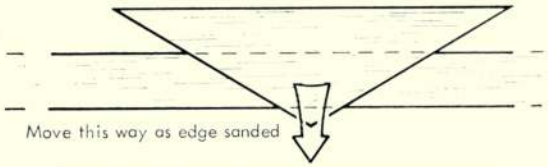
Concerning the bend'em and mend'em brigade



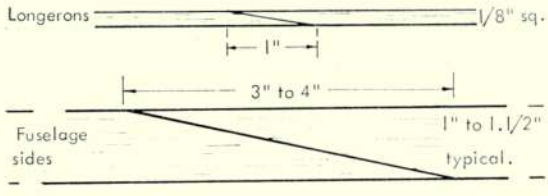
Taper brace to change sections and stiffness gradually.



Depth of braces is usually easier to taper than width. If two braces are used, one on each side, then ends are best tapered in different directions. Can also be different lengths.



Cut insert material from overwidth (or overthickness) sheet or strip. Trim ends to fit well. Glue, then trim to dotted line.



LAST MONTH'S *Comments* were devoted partly to the concepts implicit in the repairing of models, and partly to describing rough and ready methods of doing so on the flying field. This month I will endeavour to complete the picture by discussing the problem of doing a more permanent repair back in the workshop.

The object of a 'home' repair should be to return the model as nearly as possible to its original condition, both structurally and aerodynamically. If repairs are properly executed the model should be as strong as ever, and should not require extensive retrimming. I've seen and done extensive repairs to critically adjusted contest models without any discernable effect on trim. Whilst implying that the undamaged state of the model is known sufficiently well to be reproduced afterwards, and obviously requiring a certain amount of care, the advantages of such a repair are self-apparent.

Models, and the damage they suffer, vary too much one to another for it to be practical to produce a 'cookbook' detailing the way to tackle every eventuality. Nevertheless a few principles and guidelines should point the way for a majority of cases.

Firstly, I would maintain that the repair deserves *care* and *workmanship*, that is at least equal to that of the original construction. Failure to believe in this principle is the usual reason why so many models are 'never the same' after being broken and repaired. On the other hand, the initial standard of building needs to be such as to be worth a 'quality' repair job!

There are basically three ways of repairing broken balsa – or indeed the hardwoods sometimes employed for severely stressed members such as A/2 wing spars. These ways are: **(1)** Merely to stick the pieces together. **(2)** To stick the pieces and then add some form of reinforcement. **(3)** To replace some of the wood near the fracture by splicing in new pieces.

In some cases the simple 'glue-together' approach can be perfectly adequate. Splits along the grain are a straightforward example. Other suitable instances occur when hard stringy balsa breaks to produce a long jagged fracture. As the pre-coating recommended with balsa cement (to stop it soaking into the wood pores) would complicate subsequent joining up of the matching pieces, these joints really require adhesives such as P.V.A. or the less viscous

epoxies. I will leave further discussion of the choice of glues until later.

Much balsa breaks quite clearly across the grain *(snaps like a carrot* would describe some examples), and the softer grades often show compression or concertina marks on one side of a break. This type of failure needs reinforcing after being butt-joined back together. The principle of adding overlapping bracing is probably familiar to most modellers. In last month's treatment of field repairs it was emphasised that such braces need to be long enough to become load carrying, and that two thin braces, one on each side, are better than a single thick one. The same principles obviously apply to a more permanent repair, but further improvement can be made. As bracing *stiffens* the area over which it is applied, the repaired component flexs unevenly. This, plus the sudden change in section at the end of the bracing tend to produce failure at that point. This difficulty can be alleviated by tapering the braces near their ends. It should be noted that it is usually much easier to taper the *width* rather than the thickness. It might not be superfluous to add that bracing should be internal on repairs done at home.

There is often a very much better alternative approach however. This is to cut out the damaged section and to splice in new material. Doing this avoids the stress concentrations and resultant weak spots just mentioned. Moreover splicing is much lighter, and does not interfere with either other parts of the structure or with any subsequent repairs. On the last point, I might mention that certain components of some of my models have become 'jigsaws' of short lengths of material spliced together – with no detrimental effects I would add.

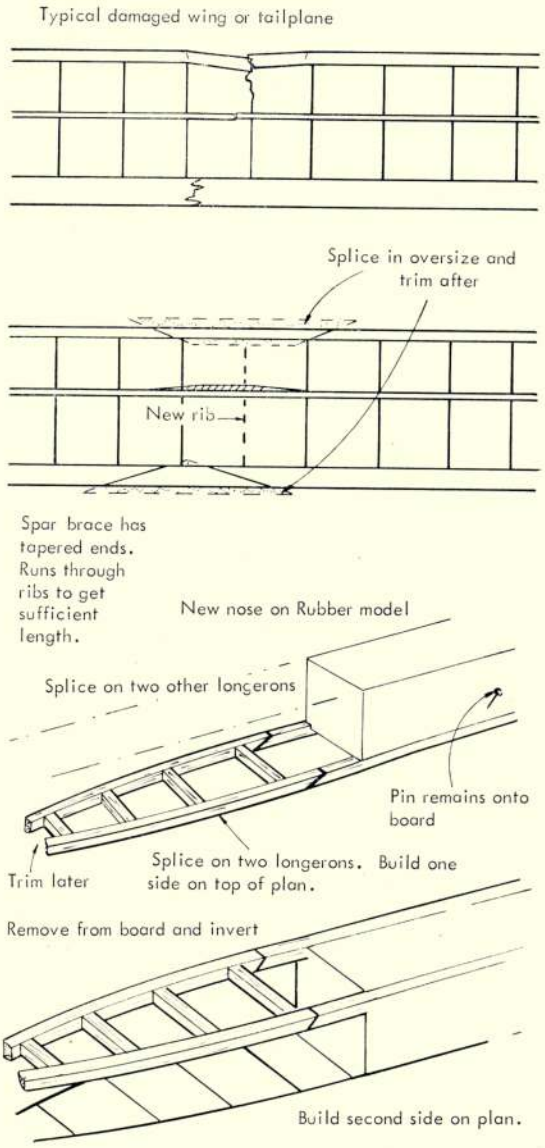
The technique does not seem over-popular however – even amongst fliers who are quite happy to splice together three foot lengths of balsa to produce long fuselages and the like. *Provided* that a splice is well made, *i.e.* the mating surfaces fit together without gaps, and that it is long enough, the strength is that of the constituent materials. The length of splice required clearly depends on the size of the strip or sheet involved. I have seen mention that a splice should have a length of eight times its width. On this basis $\frac{1}{4}$" square should have a splice 1" long. This is more than adequate and may be compared with the 3" to 4" splices that appear quite satisfactory on sheet side fuselages of about 1" to $1\frac{1}{2}$" depth. These figures are for balsa-cemented splices and could perhaps be reduced if epoxies were used instead.

The practical difficulties of producing a well fitting spliced insert can be considerably reduced by cutting it from wider and/or thicker material than it is replacing. This gives considerable leeway in sanding or shaving the matching edges without producing an undersized insert. With an oversize piece, reduction in length can be compensated by moving it 'sideways'. Excess material is, of course, trimmed off afterwards. The other essential consideration in spliced repairs is that the new wood should be carefully chosen to match the original. If there is any doubt, then the new should be *slightly* harder. For those economically minded I would add that this technique offers an opportunity to rid the scrapbox of the odd size offcuts that are so plentiful.

Major components in need of extensive repair should not be worked upon in 'mid-air'. Instead, some form of simple jigging should be devised so as to ensure that the final result is straight and true. For broken wings and tailplanes nothing more complicated than the usual building board need be involved. The damaged parts, with any items needing splicing already chamfered, should be pinned down in their correct positions relative to one another. Replacement pieces, spliced inserts and bracing can then be added with confidence of the outcome. Use of the original building plan is not usually necessary – but a marked straight line to line-up the bits is advised.

It will be realised that surfaces need to be relatively warp-free to be pinned down in this fashion. This is not always the case if the model is damaged through a flyaway, or the type of crash that causes much tissue to shatter or split through excessive twisting. Prior removal of wraps by steaming, or boiling water for extreme cases, is recommended. Successful renovations of one of my A/2s, following its exposure to the elements for 10 days in a Chobham Wood, was recently accomplished with the arrangement shown in the accompanying photograph. Jigging the wing at 'negative incidence' the board by the use of a length of $1\frac{1}{2}$" square hardwood permitted the whole trailing edge to be supported whilst unwanted camber and reflex was removed by soaking the whole wing in hot water and careful, protracted drying out!

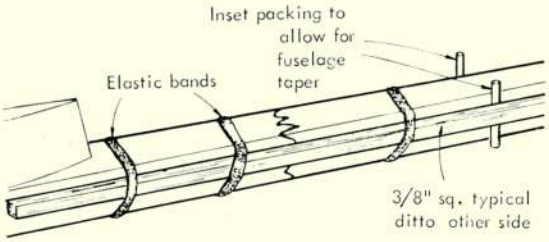
Rubber model fuselages that have been broken in two can be repaired 'on the board' as just described for flying surfaces. Pylons and fins can complicate this operation but one 'side' can usually be found clear of enough of obstructions to be pinned down. Fuselages that need a complete new nose need a slightly different treatment. New lengths of longeron should be spliced on to the



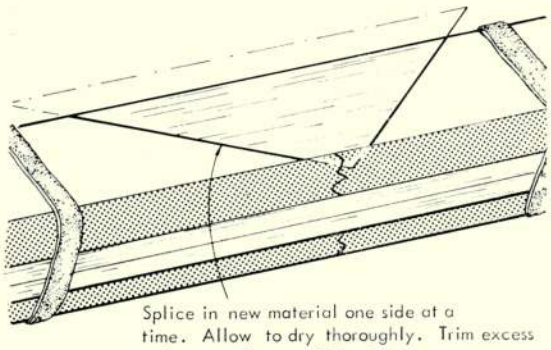
remains of the fuselage, the whole pinned down on top of the original plan and the two longerons in contact with the board used to rebuild *one* side of the new nose. When dry, the assembly is removed, turned upside down and the second side built in a similar fashion. After removal from the board the two sides of the new nose are joined with spacers in the usual way. With the advent of long thin fuselages this type of repair is needed far less frequently than in the days of $\frac{L^2}{100}$.

Fuselages now seem to collapse under the wing mount.

Snapped power model fuselages, or 'wooden' glider ones, are invariably of sheet side construction and a somewhat different technique has been found very successful. The broken pieces are stuck together with *any* convenient glue, and the fuselage kept on the 'straight and narrow' by means of a couple of substantial *and straight* lengths of timber secured to the sides by pins and elastic bands. When set, the real repair is commenced. A section of one or

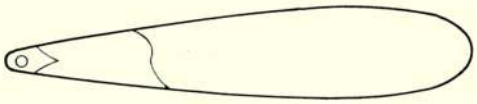


Broken power fuselage butt-joined. Lengths of straight large size strip lashed to sides to ensure straightness.

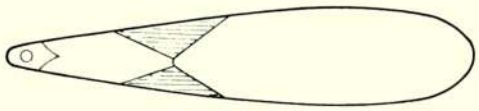


Splice in new material one side at a time. Allow to dry thoroughly. Trim excess and repeat for remaining sides.

Need to remove "straightness" to splice underneath. Refit while glue dries



Broken prop blade. Stick together.



Splice in "gussets" from L.E. and T.E. one at a time. Trim afterwards.

other of the undamaged 'sides' is removed from the region of the butt joined break and new material spliced in. When this is dry (*i.e.* the next day), the further sides are treated in sequence. I would mention that I find it worthwhile to set aside a couple of carefully chosen dead straight lengths of $\frac{3}{8}$" square hard balsa purely to serve as aids to this sort of repair.

Rubber model propellers are repaired in a similar way. After butt-jointing, large gusset-shaped pieces are spliced in from the L.E. and T.E. Despite all I have said, *this* component is lined up 'by eye' as it is difficult to devise a suitable jig.

No treatise on repairing would be complete without a section devoted to covering – or, maybe, recovering. With tissue being the almost universal material employed the subject is of very real importance. With silk or nylon rarely being employed and with the plastic iron-on films not yet being 'accepted' for free-flight, the covering is usually the first item to suffer damage.

Small tears in the tissue are commonplace and are often patched by applying cement to 'bridge the gap' between the edges and by the cement's contraction as it dries, draw them together and hence retighten the surrounding area. This is fine for a field repair – but I do not like the method otherwise.

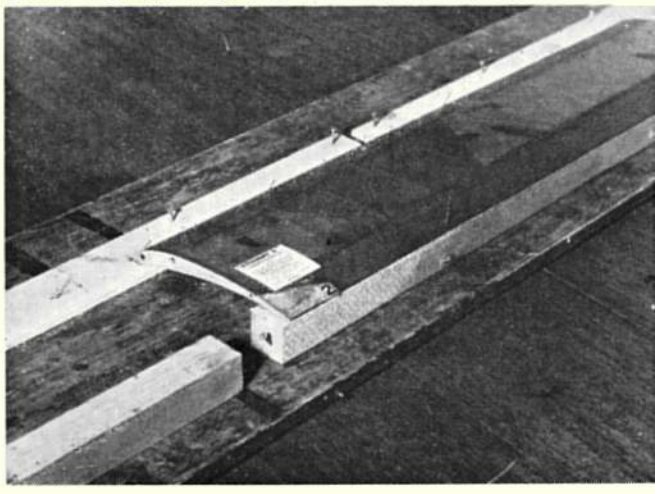
Apart from aesthetic consideration (it being easy to induce unsightly wrinkles, not to mention the tendency of cement to 'blush') there are other drawbacks. The cement coated edges often form a ridge that may affect the airflow, warps can be induced, further repairs in the vicinity are compounded, and the original split can re-open due to the disinclination of cement to adhere on certain finishes or engine fuel residues.

I would recommend that tissue damage be made good by applying tissue patches stuck on with dope, and water sprayed and doped as per the original finish. Small tears may or may not need their edges cleaning up or cutting away (with a sharp pointed fragment of razor blade) before doping on a small piece of tissue cut to match. More extensive damage requires the whole bay or bays to be cut out, back to the edges of the surrounding structure. It should be noted that this implies that the covering is *stuck* to the structure either in the covering process or by dope seepage in the finishing stage. Again, a piece of tissue cut to the appropriate size and shape is affixed with dope. Specifying dope is intentional, as it will bond to the covering being repaired in a way the paste and the like will not. Most modellers are far too generous with the overlap they allow in patches. It is usually sufficient just to overlap the thickness of the adjacent ribs, spars, etc. This means that the patch needs accurate cutting out, probably with prior pencil or ink marking out (by laying the tissue sheet over the area concerned and 'spotting' the corners of the piece to be cut).

There comes a point when, through extensive tissue or structural damage a component needs recovering completely. This operation is best avoided unless absolutely essential. Removal of tissue from the structure is not easy to *complete* in a neat or tidy fashion, and the tissue remnants often show through on the completed (*i.e.* re-covered) job. This rather spoils the 'new' appearance that is often the *real* aim of recovering. From this angle improvement is possible by recovering in a darker colour than the original!

At the price of producing a rather patchwork quilt effect I attempt to recover as little as possible. Provided that replacement tissue is the same as the original, it soon fades to a less obvious colour clash. When I have resorted to recovering, one or two surprising conclusions have arisen. The process of recovering adds appreciable weight to a model – and it is easier and not much heavier merely to *double* cover on top of the original. It is soon learnt that 'sanding off' tissue is practical on hard balsa – and impossible on soft! Softening the dope used as an adhesive would seem a good approach if a suitable method could be found. Ordinary thinners evaporates before accomplishing what is needed. I have heard rumours of a 'stripping solvent' being available and would welcome any information available. As a substitute I have tried a proprietary D.I.Y. paint stripper with sufficiently promising results to be worthy of further investigation. I must warn readers that such chemicals will also attack the cement with which the structure is constructed!

Close up of John's simple jig shows construction from scrap materials. The entire bottom surface of the trailing edge is supported by the block to remove unwanted camber and reflex. Although normal methods of warp removing produce a straight wing, they cannot remove this reflex.



Revised Schedule of Aerobatic Manoeuvres

Changes in the Aerobatic Schedule for Control-line models were ratified by the 1970 Reunion of the International Modelling Commission (C.I.A.M.) at their meeting in Paris.

These changes affect the descriptions of manoeuvre 2 (take off) 7 (inside square loops), 8 (outside square loops), 9 (inside triangular loops), 11 (square horizontal eights), 13 (Hour glass), 15 (four-leaf clover) and 16 (landing).

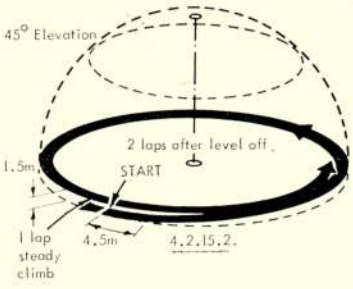
In addition, the illustrations for items 7, 8, 9, 11, 12, 13 and 15, have been revised so that they fully agree with the manoeuvre descriptions.

These changes in the aerobatic schedule will remain fixed for a four-year period until January 1975.

4.2.15 LIST OF AEROBATIC MANOEUVRES

4.2.15.1 Starting:
Take-off within one minute from the time the contestant begins to flick the propeller. Starting within one minute receives full points; starting after one minute receives no points.

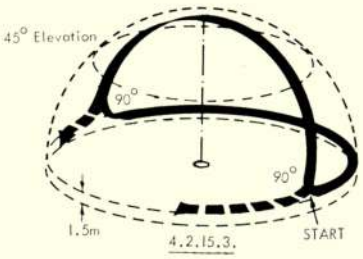
K = 1



4.2.15.2 Take-off:
A correct take-off consists of the model rolling smoothly along the ground for a distance of not less than 4.5 metres, but not greater than one quarter of a lap.
The model then rises smoothly into the air with a gradual climb and a smooth level off to normal flight level over the point at which the model commenced its ground roll. Model continues on for two smooth laps of normal level flight to point of original level off.

K = 2

Errors: Model bounces or becomes airborne too soon, or too late. Take-off, climb or level off are not gradual and smooth. Level off occurs too soon, or too late.
Level off and normal flight level are not within a height of 1.20m.–1.80m.



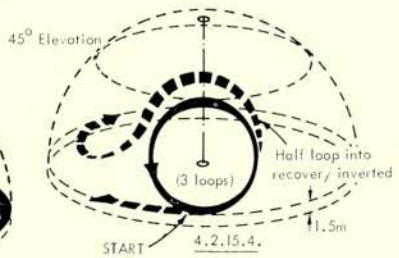
4.2.15.3 Reverse wing-overs (one required)

Correct reverse wing-overs are judged when model starts from normal level flight, makes a vertical climb and dive, passing directly over the flyer's head, cutting the ground circle in half, and recovers in an inverted position at normal flight level. The model continues for half a lap inverted, to the starting point, then makes a vertical climb and dive over the centre of the circle from inverted flight, recovers at normal flight level.

K = 8

Errors: First half: Model starts at other than normal flight level, wobbles when going into climb. Model does not cross direc.ly over flyer's head. Model does not cross circle in a straight line. Model wobbles or recovers at other than normal flight level in an inverted position. Model does not cut circle in same position and direction in second part of manoeuvre.

Second half: Scored same as first half, reversing the entry and recovery positions.



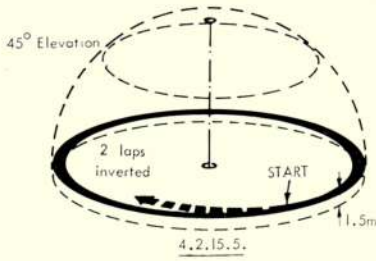
4.2.15.4 Consecutive Inside Loops (three required)

Correct loops are judged when the model starts from normal level flight and makes a series of three smooth, round loops, all in the same place with the bottoms of the loops at normal flight level and the tops of the loops with the line(s) at 45 degrees elevation. The model then continues for another half loop, recovering inverted and descending to normal flight level, flying two laps before being judged for inverted flight.

(1) K = 1 (2) K = 2 (3) K = 3
Errors: Loops are rough and irregular (i.e. egg-shaped, hexagonal, etc.). Bottoms of loops are not at 1.20m.–1.80m. height. Tops of loops vary more than 0.60m., plus or minus, of the 45 degrees elevation point. Second and third loops vary more than 0.60m. from the path of the first loop.

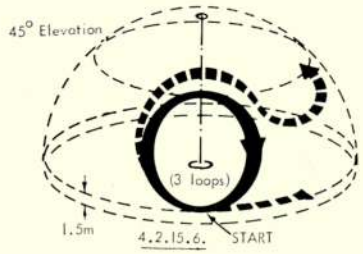
F.A.I. Control-line aerobatic schedule

(continued from previous page)



4.2.15.5.

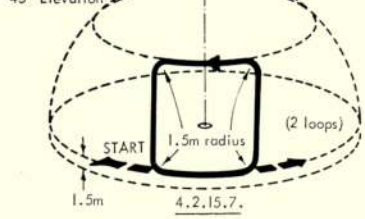
4.2.15.5 Inverted Flight (two laps)
Correct inverted flight is judged when the plane makes two smooth, stable laps at normal flight level.
K = 2
Errors: Height is not 1.20–1.80m. Height varies more than 0.60m.



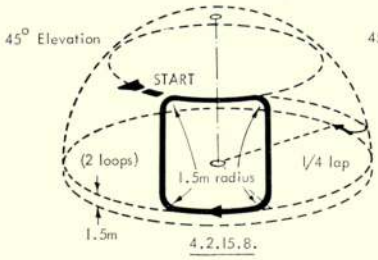
4.2.15.6.

4.2.15.6 Consecutive Outside Loops (three required)
Correct loops are judged when model starts from inverted position at normal flight level and makes a series of three smooth, round loops, all in the same place, with the bottoms of the loops at normal flight level and the tops of the loops with the line(s) at 45 degrees elevation. The model then continues for another half loop, recovering at normal flight level.
(1) K = 1 (2) K = 2 (3) K = 3
Errors: Loops are rough and irregular (i.e., egg-shaped, hexagonal, etc.). Bottoms are not at 1.20m.–1.80m. height. Tops of loops vary more than 0.60m., plus or minus, of the 45 degrees elevation point. Second and third loops vary more than 0.60m. from the path of the first loop.

4.2.15.7 Consecutive inside square (two required)
Consecutive inside square loops are judged correct when the model starts from normal flight level and flies a square course consisting of two loops, each with four inside turns of approximately 1.5 metres radius and straight equal sized segments, with bottom segments at normal flight level and top segments as inverted level flight at 45 degrees elevation. The two bottom corners are equal and so are the two top corners. Manoeuvre begins and ends with the model in level flight at the point of start of the first turn.
(1) K = 5 (2) K = 7
Errors: Model wobbles on turns. Lower altitude is not between 1.20m.–1.80m. Upper height is not within 0.60m. of the 45 degrees elevation point. Turns are not precise and exceed 2.10m. radius. Side of loops are not equal. Second loop is not in the same flight path as the first loop.

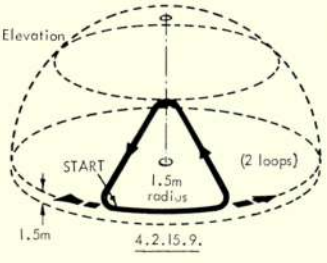


4.2.15.7.



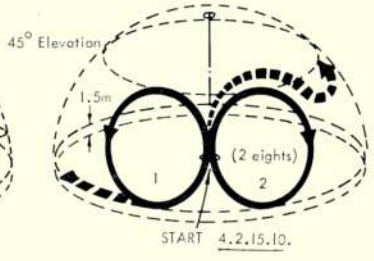
4.2.15.8.

4.2.15.8 Consecutive Outside Square Loops (two required)
Consecutive outside square loops are judged correct when the model starts from level flight at 45 degrees elevation and flies a square course (starting with a vertical dive) consisting of two loops, each with four outside turns of approximately 1.5 metres radius and straight equal sized segments with bottom segments at normal flight level and top segments as level flight at 45 degrees elevation. The two bottom corners are equal and so are the two top corners. Manoeuvre begins and ends with the model in level flight at the point of start of the first turn. Model recovers into normal level flight within a quarter of a lap.
(1) K = 5 (2) K = 7
Errors: Model wobbles on turns. Lower height is not within 1.20m.–1.80m. Upper height is not within 0.60m. of the 45 degrees elevation point. Turns are not precise and exceed 2.10m. radius. Sides of loops are not equal. Second loop is not in the same flight path as the first loop.



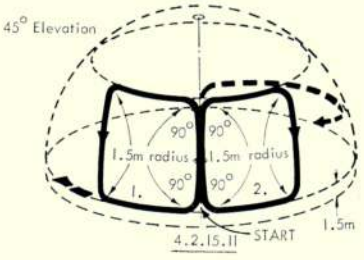
4.2.15.9.

4.2.15.9 Consecutive Inside Triangular Loops (two required)
Correct triangular loops are judged when the model starts from normal level flight and flies a triangular course, starting and ending with the base. The three sides are of equal length and the three corner angles of equal size. The top corner must be placed at 45 degrees elevation. The second triangular loop must be flown in the same flight path as the first one. All corners must be smooth, precise and of approximately 1.5 metres radius.
(1) K = 6 (2) K = 8
Errors: Model starts at a height other than between 1.20m.–1.80m. Turns are rough and wobbly or exceed 2.10m. radius. Peak of second turns is not within 0.60m. of the 45 degrees elevation point. Sides are wobbly and not equal in length. Second loop is not in the same flight path of the first loop.



4.2.15.10.

4.2.15.10 Horizontal Eights (two required)
Horizontal eights are to be entered at the intersection point of the circles and exit at the same point. The inside loop must be flown first. Correct eights are judged when the model makes two eights, each consisting of two round circles or loops of the same size, tangent to each other, and in a horizontal line. The model must enter the eight from normal flight level and be vertical at the intersection point of tangency of the circles. The eights must be symmetrical. At the top of each circle the model must be at the 45 degrees elevation point; the bottoms of circles must be at normal flight level.
(1) K = 3 (2) K = 4
Errors: Model is not vertical at entry. Model at top of circles is not within 0.60m. of 45 degrees elevation point. Bottoms of circles are not within 1.20m.–1.80m. height. Loops are not round and equal in size. Point of intersection varies. Second eight is not in the same position as the first.



4.2.15.11.

4.2.15.11 Square Horizontal Eights (two required)

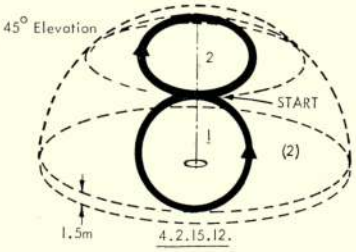
The eight is to be entered in the direction of the climbing sides of the loops, and after completion of two eights exit is made in the same direction. The inside loop must be flown first. Correct eights are judged when the model starts a vertical climb and makes a modified inside square loop followed by a modified outside square loop ending with a vertical climb at the same point.

The loops are modified so their climbing sides are vertical, and the loops are tangent to each other along these sides, and the turns starting and ending the climbs are 90 degrees. The top sides are slightly shorter than the remaining sides which are of equal length.

The manoeuvre is repeated to form two eights. Tops of loops must be at 45 degrees elevation, bottom of loops must be at normal level flight height, and all turns must be smooth, precise, and of approximately 1.5 metres radius.

(1) K = 8 (2) K = 10

Errors: Corners exceed 2.10 metres radius. Sides are not straight. Vertical sides and bottom sides are not equal in length. Loops are not equal in size. Top and bottom sides are not horizontal. Turns starting and ending the climbs are not 90 degrees. Tops of loops are not within 0.60 metres from 45 degrees elevation. Bottom of loops are not within 1.20-1.80 metres in height. The position of the climbing sides varies. Second eight is not in the same position as the first one.

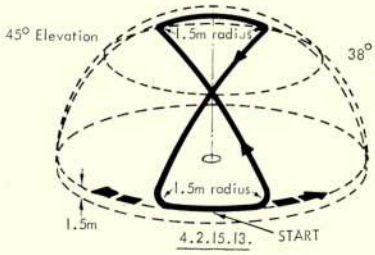


4.2.15.12.

4.2.15.12 Vertical Eights (two required)
Vertical eights are to be started at the point of 45 degrees elevation and finished at the same point in the inverted attitude. The inside loop must must be flown first. Correct eights are judged when the model makes two eights each consisting of two round circles or loops of the same size, tangent to each other, and in a vertical line. The model must be horizontal at the intersection point of tangency of the circles. The eights must be symmetrical, the top of the eights at a point 10° over flyer's head, and the bottom of the eights at normal level height.

(1) K = 4 (2) K = 6

Errors. Model is not horizontal at entry. Entry is not within 0.60m. of the 45 degrees elevation point. Tops of eights are not within 1.20 metres from the 90 degree point. Bottoms of eights are not at a height between 1.20m.–1.80m. Loops are not round and equal in size. Point of intersection varies. Second eight is not in the same position as the first.

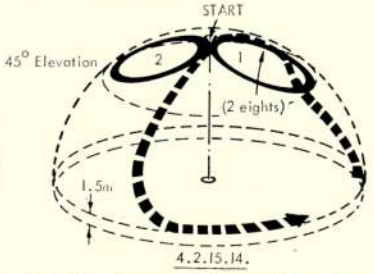


4.2.15.13.

4.2.15.13 Hourglass Figure (one required)
Correct hourglass figure is judged when the model starts from normal level flight and flies an hourglass course starting with an abrupt turn followed by an inverted climb, turns into a wing-over path across the circle centre for a distance equal to half the total cilmb, turns into an inverted dive, and recovers at normal flight level. The flight paths of the climb and the dive cross at 45 degrees elevation. The four rounded corners of the figure shall have a radius of approximately 1.5 metres, and the flight path forms two equilateral triangles of equal size turned peak to peak, and one in vertical line above the other.

K = 10

Errors: Manoeuvre starts at other than the normal level flight height of 1.20-1.80 metres. Turns are rough and wobbly or exceed 2.10 metres radius. Top of figure is not within 0.60 metres from the 90 degrees position over the pilot's head. Triangle segments are not of equal length. The manoeuvre is not symmetrical around the vertical line through the crossing point at 45 degrees elevation. Recovery is not at normal flight level 1.20-1.80 metres.

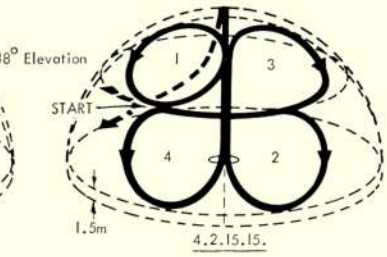


4.2.15.14.

4.2.15.14 Overhead Figure Eights (two required)
Overhead eights are to be entered at the intersection point of the circles, directly over the flyer's head, and exit from the same point. The inside loop must be flown first. Correct overhead eights are judged when the model makes two eights, each consisting of two round circles of the same size, with the intersection or point of tangency directly over the flyer's head. The model must enter the eights with a vertical climb through the centre of the circle, and must always point in this direction at the centre of the eights. The eights must be symmetrical and the model at the lowest point of each circle must be at a point of 45 degrees elevation.

(1) K = 4 (2) K = 6

Errors: Model is not vertically overhead at entry. Low point of circles is not within 0.60m. of the 45 degrees elevation point. Loops are not round and equal in size. Point of intersection varies. Second eight is not in the same position as the first.



4.2.15.15.

4.2.15.15 Four Leaf Clover (one required)

The manoeuvre is entered from level flight at approximately 38 degrees elevation, and consists of one full inside loop, level flight, three-fourths of an outside loop, vertical climb, three-fourths of an outside loop, level inverted flight, three-fourths of an inside loop, and a vertical climb.
The right loops are tangent to the left loops along a vertical line of symmetry through the centre of the clover leaf, and the bottom loops are tangent to the top loops. The loops are of equal size and they are connected by horizontal and vertical flight paths. The bottom points of the manoeuvre shall be at 1.5 metres height, and the top shall be tangent to the vertical plane through the circle centre.
When the last loop is performed, the manoeuvre is made complete by a vertical climb through the centre of the four-leaf clover and a recovery into normal flight level.

K = 8

Errors: Entry is not within 0.60m. of 38 degrees elevation point. Loops are rough or not of equal size. Paths connecting loops are not properly horizontal or vertical according to the manoeuvre sketch.
Bottoms of lower loops are not at a height between 1.20m.–1.80m. Tops of upper loops are not within 1.20 metres from the vertical plane through the circle centre.
Loops are not properly tangential to form a square pattern. Model recovers before it has flown vertically through the clover pattern.

4.2.16.16 Landing

A correct landing is judged when the model descends smoothly from normal flight level to land with no bounce or unusual roughness, and without any part of the model other than the landing gear having touched the ground. The model comes to a stop within one lap from the point of touch down. The point of touch down is one lap after the point at which the model begins its descent from level flight. Main wheel or three point landings are permissible.

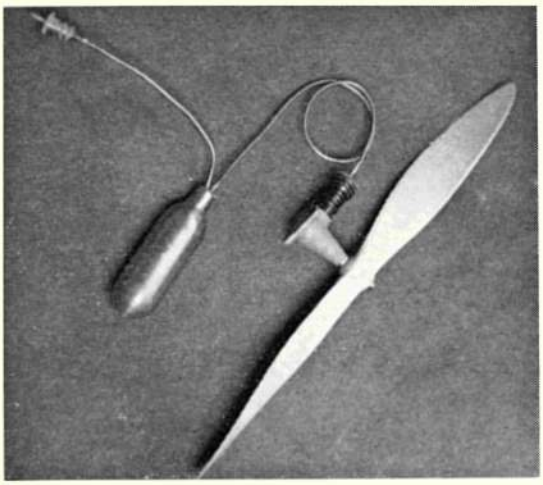
K = 5

Errors: An error is committed whenever the model bounces or when any part of the model other than the landing gear touches the ground. A crash, a flip over, a belly or upside down landing receive no marks.
Any unusual circumstances, outside the pilot's control, which may have caused one of the above mentioned errors will be taken into consideration by the judges.
Descent from level flight is not smooth, or is too short, or too long. Modes does not come to a stop within one lap.

NOTE – Illustrations are for anti-clockwise flight and are reversed for clockwise flying.

MR. BROWN'S NEW JUNIOR

Famous heritage for the latest 'gas' engine

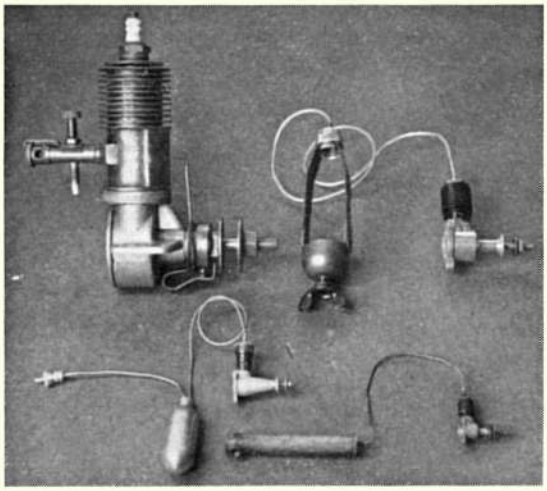


The new Brown Junior CO_2 engine with its 'fuel' supply shows the very compact installation possible – and note the size of that airscrew!

MR. BILL BROWN, who achieved widespread fame when he introduced the original Brown Junior spark ignition model engine back in the '30s, has again created a product which will be of interest to many modellers. We refer to the new CO_2 unit, which is being manufactured by *Brown Junior Motors*, of Pine Grove Mills, Pennsylvania.

CO_2 power plants are, of course, not a new idea. Advertisements for them appeared prior to World War One in England, France and Germany. In the United States, Bill Brown developed a series of CO_2 engines during the 1940s. The largest of them, which displaced .018 cubic inches, was produced in quantity by Herkimer Tool Company, and was known as an 'OK'. Two other varieties were sold under the 'Campus' name for several years, and are now highly regarded by model engine collectors, because of their diminutive size. The smallest one, the 'A-100' measured a mere inch in height, yet could power a lightweight model of about 20-inch span.

After a lapse of many years, Bill Brown has again turned his attention to CO_2 engines, with the introduction of a new variation, displacing .005 cubic inches. This unit is much more rugged than the earlier small examples, and features a simplified refuelling system, and a very light storage tank. This tank is charged from an ordinary 'soda water' cartridge, of the type used to put the 'fizz' in drinks. Thus the engine operates from pressure in the manner of compressed air engines. And, unlike internal combustion power plants, CO_2 engines actually run cold. Several fillings are possible from each cartridge, although the running duration is naturally reduced with each succeeding charge.



Part of the Russ-Craft model museum reveals the new engine's parentage. In the back row is the original Brown Junior spark ignition petrol engine with the 'O.K.' CO_2. In front is the new Brown Junior CO_2 and the even smaller Campus 'A-100'.

CO_2 engines are capable of producing useful torque at relatively low r.p.m., and this r.p.m. may be easily adjusted, by slightly rotating the entire cylinder which effectively advances or retards the valve timing. This is of particular advantage when testing new aircraft models, since the power may be reduced during those critical first test flights.

Advantages of CO_2 power include:

(a) **Cleanliness.** No fuel proofing is required, and no messy clean-up is needed after flying sessions.

(b) **Silence.** CO_2 engines are quieter than most regular 1/2A engines equipped with mufflers.

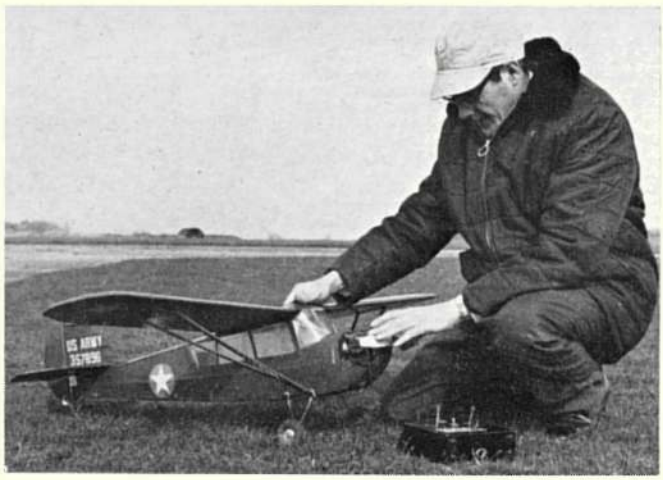
(c) **Simplicity.** No batteries are required.

(d) **Dependability.** One-flick starting is virtually assured.

The author mounted a Brown Junior CO_2 in a tiny (13 in. span) *Peanut Scale* Train Monoplane, which was placed first in the free flight power division of a Rise of Water scale contest sponsored by the NAR Flightmasters of California and which was reported in the December 1970 *Aeromodeller*. This particular model had failed to qualify during an earlier contest, when powered with rubber – thus the change to CO_2 produced an almost 'magic' difference in the aircraft's performance.

Although Brown Junior Motors have not yet advertised the new engines, word-of-mouth reports among enthusiastic users have caused the demand to outstrip the present production capabilities.

CLUB NEWS



Eric Fearnley prepares his *Aeronca Grasshopper* for yet another flight. This is the original model from which plans were published in 1957. Apart from recovering and a little 'beefing up', it is the same airframe – and has carried R/C equipment ranging from home made single channel valve-gear through reeds to the current proportional outfit. Also, some seven different power plants have been installed over the years!

THE POSTAL STRIKE lasted longer than any of us expected, and it has resulted in a very thin influx of reports and newsletters. Short shrift, then, for this month, but I trust you will not have lost the habit of dropping your monthly offering in the postbox, and that we will be back to our normal amplitude next month.

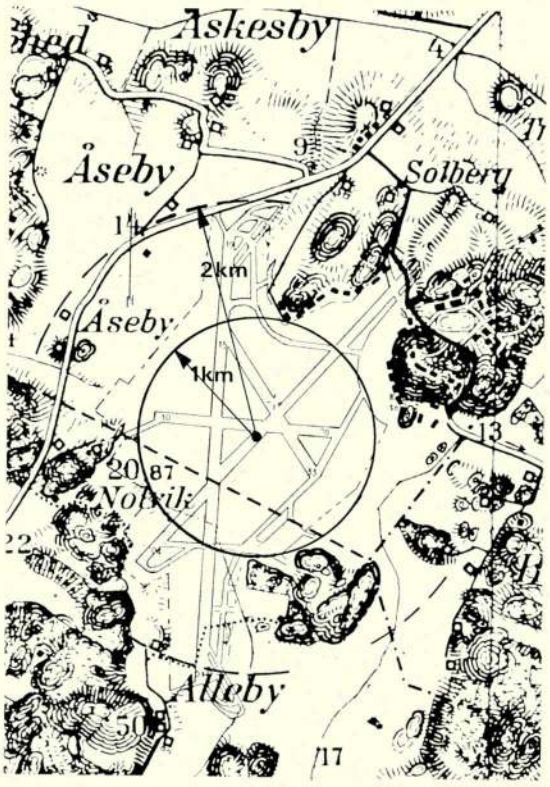
First to hand is the February issue of *The Thermal* from the **St. Albans M.A.C.** Included is the 1970 Club Championship list, containing not a few illustrious names. Fairly enough the top man, Bob Bailey, is an all rounder. He flew altogether in 24 contests and achieved 4 firsts, one second and one third. Well known for his prowess on the free flight field he has found time to extend his activities to other spheres, and some of the points listed under O & S (Odds and Sausages) is for a win in a thermal soaring event. Runner up is the inimitable George Fuller. He entered as many as sixteen Power comps during last season, taking four firsts, one second and four thirds. Enough to make him club champion in almost any other club. George Hannah comes next, again with a fine, all rounder score. All in all there were 26 members who entered contests in 1970; a splendid club effort by any standard. Not too far down the list we come to the name of Martin Shepherd, a young man who is looming larger and larger on the model scene. Of late he has been mastering the delicate art of indoor flying, and contributes a very informative article on the subject. Club flying takes place in the Abbey School Gymnasium but Martin and others have their eyes on the S.M.A.E. events at Cardington. Still on the indoor theme, we were intrigued by references in earlier *Thermal's* to 'Fool's Flying Night'. Elucidation now given. Flying machines to be constructed from a piece of balsa 4in. x 3in. x 1/16th. Finished model to have a pin mounted in the nose with 'The Target for Tonight' a balloon. Event went with a bang – at least one.

It would appear that the **Valkyries Model Club,** which operates in the Aylesbury area, is mainly concerned with Radio flying, although I do notice a Chuck Glider event on their contest agenda. Their newsletter, *Concorde* is nicely produced if somewhat sparse in content. It does, however, set out completely the rules applicable to a Novice/Intermediate event. A novice, by radio definition, or rather novice machine, is one fitted with rudder, elevator and motor control only, which puts me right in the sub-novice category! Even with aileron control added you only come into the Intermediate class.

Watford Wayfarers M.A.C. describes its membership as fairly stable at 25 souls, and with most of these striking heavenwards, model-wise that is, the club looks forward to a highly active 1971 season. Again, flying seems to be most Radio. Club officials are hopeful of introducing a number of 'fun' contests in order to enliven the usual fly-for-fun meetings.

The Editor of a new aeromodelling magazine, *The Model Aeroplane Gazette,* is that well known aeromodeller, Ron Firth. He declares his interest by stating that he has a bias towards free flight, but is catholic in his outlook, and hopes to attract subscribers from the many spheres of our hobby. The first issue includes a list of all affiliated clubs in the Northern Area, together with a S.M.A.E. contest calendar. In addition there is a list of International events and some useful addresses. Just the hard gen, then, for the first issue, but we can hope that future issues may emulate the renowned *N.A. News*.

Mid-March may have some chilling thrusts of cold air darting betwixt the blossoming thermals but is capable of producing the finest of flying weather; calm enough to tempt the most valued model from its box, and cool enough to keep the wings from curling. Such a day coincided very fortuitously with the season's curtain-raiser on cheerful Chobham Common: the **Crookham Gala.** In the absence of news-sheets due to the postal strike, I was interested to learn at first hand just how the club world was faring. What I saw at this rally was most heartening. Whatever your



Map of the airfield at Gothenburg to be used for the World Champs June 30th to July 6th as published in the Swedish newsletter 'Modell Flygnytt' shows the clear area 2 km dia. in centre and runways extending through rough territory up to 4 km dia. from centre.

views of free flight may be, no one can deny the enthusiasm of its adherents, and this was well exemplified here with contestants coming from the North West (notably John O'Donnell and Russell Peets), Bristol, Southampton and all points South and East. And this is where the club aspect comes in, and why membership of a keen club adds much to the enjoyment of the model flying sport, for contest flying, although individual-based, relies much on team effort, and whilst you have the odd country member or lone hand doing his stuff, it is usually the club group that features prominently on a basis of mutual help.

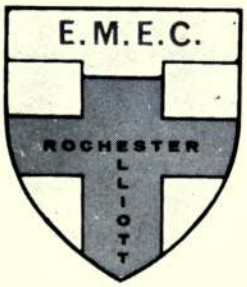
An example of this close co-operation between members could be seen at work in the successful **Norwich M.A.C.** The Club has the advantage of an extremely large flying ground upon which to refine their aeronautical arts, Bridgeham Heath, near Thetford. Although the area is too remote from habitation for them to be shot at by the public, they do come under fire from a nearby gunnery range. Ten little comp members standing in a row . . .

Evident of cross-fertilisation between clubs was evident in the eye-catching yellow and blue open rubber model being flown to good effect by Tony Grantham of the **East Grinstead Club.** The model is based on that of Fred Boxall, veteran Brighton flyer. This line of model is unusual in that it uses a fixed propeller, which is quite a rarity in these days of the standardised folder. The model is capable of over five minutes in still air, and Tony is hopeful that he can improve it even further. Unluckily, the model came to grief in the fly-off when it suffered a phenomenal rubber burst in mid-flight – not hopelessly damaged though. Tony tells us that he was flying a *Lively Lady* A/2 a few weeks before, and, following a d/t failure it stayed aloft for one hour before drifting out of sight. Half-an-hour later it had drifted back into sight again, and there it lingered for a considerable time before disappearing once more. The model was eventually picked up by a lady motorist just a quarter of a mile away from the launching point.

Another quite stupendous flight was achieved by James McNeill of the **Crookham Club.** His glider (I think it was a glider) flew from Chobham to Lewis in Surrey, 45 miles distant. If these are the work of winter thermals, goodness knows what the summer will bring.

Russell Peets, whom we mentioned earlier, now flies under the flag of the **Falcons M.A.C.** This club is a split-off from the **Congleton M.A.C.,** with whom his name was associated for many years. For sheer oomph, his large diamond-fuselaged model had it all the way on a very long prop run, something like two minutes.

Simple motif in red, yellow and silver hails from the *Elliot Model Engineering Club* – a small but active control-line orientated club, often seen on the contest field, and hosts of several smaller meetings.



Since other forms of flying are frowned upon by the wardens of Richmond Park, the **Richmond M.A.C.** is now virtually an all free flight club. Nigel Clark, the Comp. Sec. was pleased at the enthusiasm shown by the eight competing members, but was somewhat critical of members being lured away from the open spaces by the call of the great indoors. He was referring not to television, but to indoor flying.

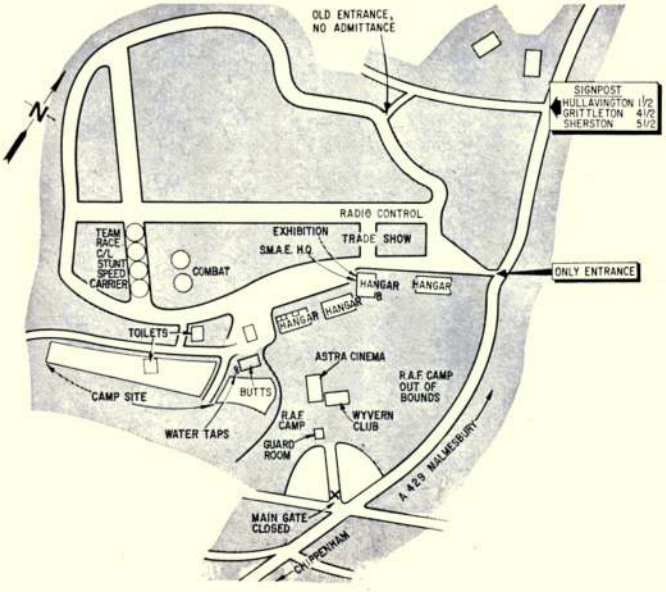
Leaving Chobham with memories of a splendid day's flying, we skip a few thousand miles to the home of the Star Skippers of New York. The accent here is very much on youth, but oddly enough, you would not think there was such a thing as a control line or radio model, for the news bulletin is a hundred per cent free flight.

The **Wolves M.A.C.,** newsletter reveals that the club awards a Models and Hobby Trophy for the top points scored in a series of club free flight contests held at monthly intervals throughout the season and another such trophy for a series of similar contests held for control line. In addition there is the Perry Trophy for the winner of the C/L Scale contest and the Hobson Trophy for the Stunt contest. Other contest items are somewhat intriguing. For instance, the r.t.p. Scale Concours judging is 'eyeball from six feet'. Then there is a puzzling reference to pre-1918 Electric Powered Scale r.t.p.

The NATIONALS at RAF Hullavington

WHAT, WHERE, WHEN

Annual championships of the Society of Model Aeronautical Engineers



Sunday, May 30th

Open Rubber	M.A. Trophy
Open Power	Sir John Shelley Cup
F.A.I. Glider	(7 Flights)
Tail-less (R/G/P/)	Lady Shelley Cup
Junior (R/G/P)	Frog Junior
C/L Aerobatics	Gold Trophy
C/L Scale	Knokke No. 2 Trophy
Handicap Speed	Model Aircraft No. 1 Cup
½A Team Race	R.A.F.M.A.A. Trophy
Combat	Whitney Straight Trophy
Goodyear T/R	
Coupe D'Hiver	
Junior Kit Contest	Hamley Cup

Monday, May 31st

F.A.I. Rubber	(7 Flights)
F.A.I. Power	(7 Flights)
Open Glider	Thurston Cup
½A Power	
F.A.I. Team Race	Davies A Trophy
'B' Team Race	Davies B Trophy
Women's Cup (R/G/P/)	
Combat (continuing from 1st day)	
Speed (continuing from 1st day)	
F/F Scale	Super Scale Trophy
Vintage	To S.M.A.E. Rules

A/1 Glider, R/C Multi, R/C Scale, R/C Pylon
Junior C/L Stunt Contest

Plenty of building going on in the club. Models ranging from Radio to small kit models, and taking in such delectable items as a brace of Coupe D' Diver and a Wakefield.

Emblazoned large across the newsletter of the **South Norfolk Radio M.A.C.,** is the legend 'Flying is Fun'. After watching a tense and nail biting model contest, or reading here of the fearful moments experienced by the club Chairman, E. S. Kirk, in acquiring his radio wings, I am not sure that flying is such unalloyed fun. But fun or not, there is always plenty of excitement to be found at the club field, situated at Yaxley. This lies on the road between Norwich and 'Ipswitch'. The latter being a delightful and warranted piece of misspelling in the newsletter.

Contrary to most reports emerging from Northern Ireland, that of the **Belfast M.F.C.,** is a most encouraging one. The club would seem to be in quite a healthy state, both fly-wise and financial, although there is some concern about the enrolment of juniors. Only with an up and coming generation of new flyers can the club hope to continue to flourish. More news of Indoor flying here. The club held two events in January, both it would seem, for chuck gliders, but no doubt the flimsies will soon make an appearance. Talk, too, of a standard model for club Combat displays. A modified *Dominator* chosen, and a plan of same included complete with toughening up variations. At least fifteen members have promised to build one, which sounds a bit too good to be true. Members also requested to submit ideas and sketches for a new club insignia. Criticism of the present one is that its 'Superman' style is somewhat dated.

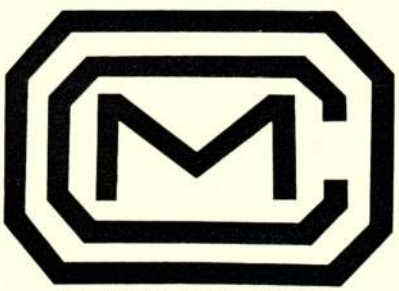
'What happened to Jetex?' asks the current edition of *The Circuit*, Newsletter of the **Elliott Model Eng. Club.** As far as I remember the firm producing the units either gave up the venture or went out of business. There was also difficulty in acquiring fuel pellets, which I believe also went up quite astronomically in price. Having flown Jetex with some small degree of success back in the Fifties, the particular snag that comes to mind is motor leakage. I used to dress up the cylinder end by grinding in on graphite grease. This helped to make the motor usable but did not prevent further leakages. Good fun, though, although I am a bit dubious about the rocket propulsion system described elsewhere in the newsletter. I always imagined such pyrotechnics to be illegal. But nice to see the full size plan of Howard Boys's old Rocket ship. Coming to the editorial I think the remarks about the attitude of the model press to club magazines and newsletters are rather too harsh. For one thing the tongue in cheek comments in *Topical Twists* are purely personal views and not to be taken either seriously or as model press doctrine. The proof of the high value this journal puts upon the club newsletter is the amount of space it devotes to their contents, which is the very thing the editorial appears to accuse us of not doing. Quite a spate of letters here from other clubs on the subject of increased S.M.A.E., fees resulting from high radio insurance claims. Some sensible views expressed, but the knotty problem of fairly relating membership classification to insurance risks involved remains just as insoluble.

Pleased to hear from Californian **San Valeers** that the Sepulveda Basin area still abounds with model wild life. Pollution and urban spread have so far failed to drive out the flyers, although they always appear to be under threat of extinction. Back to the subject of Rockets, these are allowed in the U.S.A., although the term more often applies to Jetex.

And that's about all we have this month, folks. I'll be looking out for a bumper crop of reports and newsletters next month.

THE CLUBMAN

Self-explanatory club design was sent to us by a reader stationed in Germany. Unusually, the badge is reproduced with a self-adhesive backing, and is not of the waterslide transfer variety.



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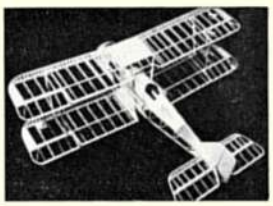

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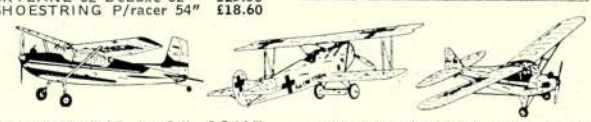

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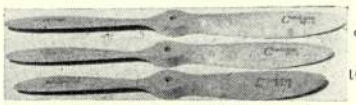

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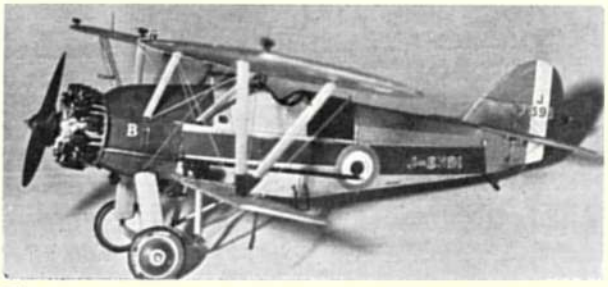

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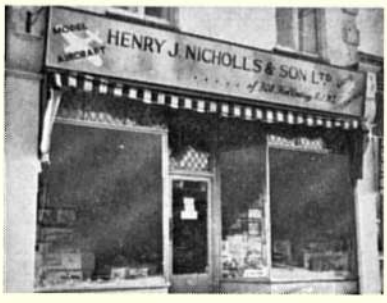

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