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Aero modeller



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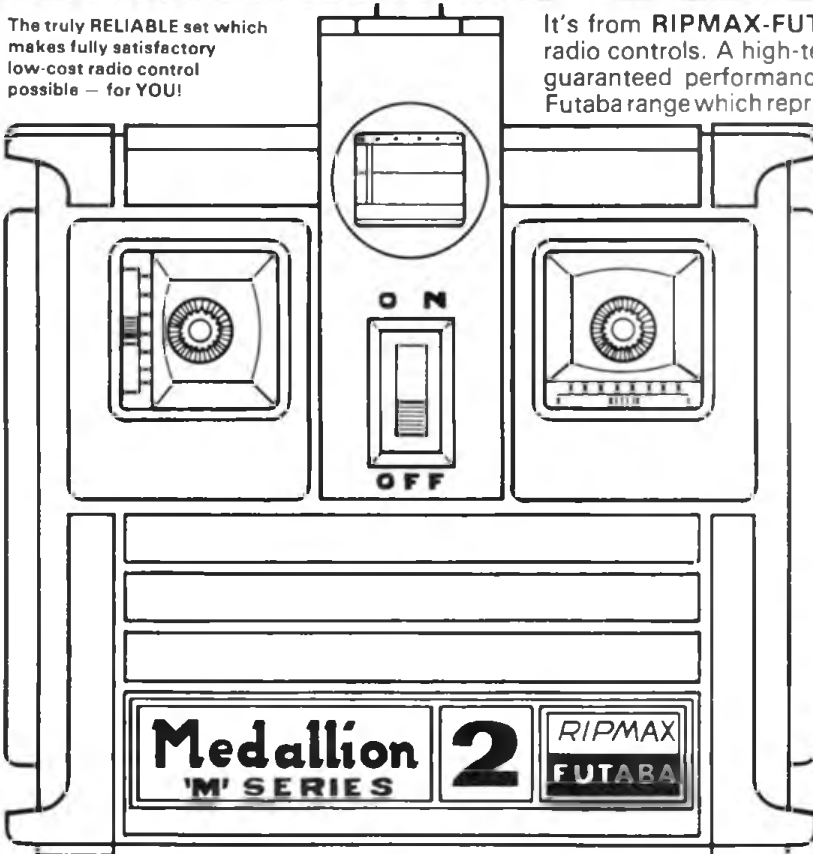
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Aero modeller

MARCH 1983

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MODEL DIVISION MAGAZINE

Advertisement Director **M. GRAY**
 Managing Director **RON MOULTON**

Comment

I HAVE often made a comment on the need for new and exciting aeromodelling competitions, to encourage new blood into the hobby. Well 1983 certainly has a few new items of interest to offer the beginner, and established modeller. If you read this month's Hangar Doors you will see that there are two new indoor competitions with a total of £150 in prizes. This superb effort sponsored by one individual has our whole-hearted support and we wish every success to the competition.

Another idea which will be put into practice on February 20 at North Luffernan is the Experimental Centralised Open

Rubber, Glider and Power competition (see What's Happening). This meeting will include a new power class. Basically the idea is to eliminate all the complex mechanisms employed in the modern F1C power model such as in-flight adjustable trim, etc., and fly basic models fitted only with an engine timer and dethermaliser. This is again a great idea as it will allow many more to participate with a chance of winning. There are several designs in the MAP range suitable, such as 'Climax' (Pe1973) which is designed for 1.5-2.5cc engines, easy to build and capable of a very good performance.

We must not forget of course, our own 'Stoneleigh' Classic competition — see page 127 in this issue. With £500 of prizes

to be won, it must be worthwhile any young modeller's time in having a go.

With the ever increasing popularity of electric power, how long will it be before a free flight duration competition will be organised? There are many suitable motors on the market and ample quick charge batteries available of all sizes. There are many possibilities within our hobby to explore new ideas, but of course it does take a considerable amount of a few individuals' time, to launch any one of them. To survive in this electronic age, unless new ideas are explored and most of all supported by fellow modellers, we will not find it easy to introduce new people to the hobby, and may end up in a few years' time with few people to fly with or against.

Editor

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On the Cover

One of the highlights of last year's All Scale Day held at Old Warden was David Hope-Cross (New Zealand) flying his one eighth scale DH Fox Moth. David sent us the cover photographs of model and full-size aircraft, as well as an article and plan for the model. (See page 110 of this issue).

Next Month

Visitors to this year's Model Engineer Exhibition would have seen the prototypes of the Stoneleigh Classics designed by John Stroud. There will be a full-size plan insert for these two control line models. There are tremendous prizes to be won so don't miss this issue! Another full-size plan will be for two versions of the Hawker Fury (Peanut Scale) designed by veteran French modeller Emmanuel Filion, plus many other items of interest.



p.122



p.107

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Aeromodeller Magazine (ISSN 0001 9232) is published monthly by Model & Allied Publications Ltd, P.O. Box 35, Wolsey House, Wolsey Road, Hemel Hempstead HP2 4SS, England. Tel: Hemel Hempstead (0442) 41271. Second class postage paid in the U.S. at New York, NY. USA Mailing Agent: Eastern News Distributors Inc., 111 Eighth Avenue, New York, NY 10011. Distribution to North American hobby and craft stores, museums and bookshops by Bill Dean Books Ltd, 186 41 Powell's Cove Blvd, Post Office Box 69, Whitestone, NY 11357, USA. Tel: 212 767 6632. Distribution to news stand sales by Eastern News Distribution Inc., 111 Eighth Avenue, New York, NY 10011, U.S.A. Tel: 212 255 5620.

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Change of address, US Postmaster: Send address changes to Model & Allied Publications Ltd, P.O. Box 35, Wolsey House, Wolsey Road, Hemel Hempstead, Hertfordshire HP2 4SS, United Kingdom.

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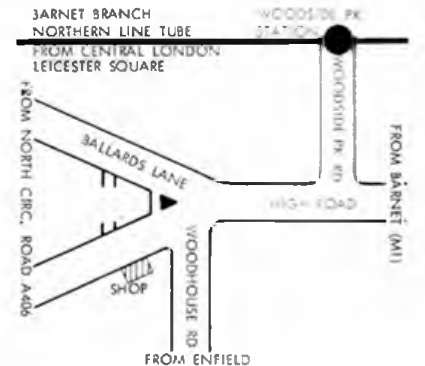


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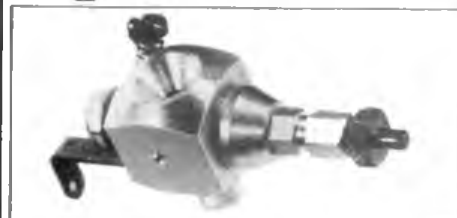
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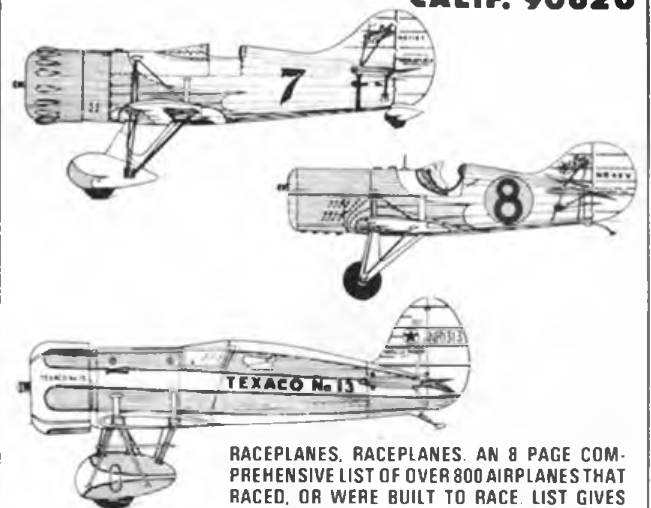
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RACEPLANES

BY **R.S. HIRSCH** 0439 DALE ST.
BUENA PARK
CALIF. 90620



RACEPLANES, RACEPLANES. AN 8 PAGE COMPREHENSIVE LIST OF OVER 800 AIRPLANES THAT RACED, OR WERE BUILT TO RACE. LIST GIVES NAME, I.D., REGISTRATION, RACE NUMBERS, ENGINE, AND ACTIVITY DATES, PLUS SOME SKETCHES AND PROFILES. SEND \$1.00 FOR YOUR COPY. ALL DRAWINGS ARE 1/48 SCALE AND 300 PLUS ARE COMPLETED. ALSO, THERE ARE PLACEMENTS OF 4 G.B.s IN COLOUR.

Hangar Doors



Paul MacCready's 'Gossamer Albatross' man-powered aircraft, which flew across the English Channel in June 1979 to win the Henry Kramer prize of £100,000. Now on view at the London Science Museum

A READER WRITES . . .

"Model shops regard me as odd because I am not flying R/C models and do not use iron on film to cover my free flight models. I feel like Rip Van Winkle when talking to the shop manager."

This succinct observation is alas internationally typical, but could the Vintage movement be bringing about a change of attitude and awareness in the trade of the need to maintain a service for the loyal hardcore of genuine model makers?

FRENCH PROMOTION

Imagine the main halls of any international airport decorated with pendant kite, filled with glass cases containing valuable aeronautical memorabilia and with Vintage, homebuilt, microlight aircraft, and gliders displayed for close examination. All this *plus* a special day on which aeromodellers could demonstrate indoor flying of all types, was the scene at Orly Airport, Paris, during a grand Expo titled *Le Reve d'Icare*

We found this promotion so outstanding, a special feature will appear next month.

VIVATUARY

No one was more pleased than ourselves to welcome the return of Bob Copland to full time modelling activity on his retirement after 44 years of solid service to Hawkers and British Aerospace at the famous Kingston aircraft factory. Bob retired as Chief Design Engineer for that esteemed establishment and has left his trademark on several internationally renowned aircraft. We were able to discuss his retire-

ment intentions at the SMAE's Fellow's Reunion but kept the project confidential. However, since it has now been revealed in 'British Aerospace News' we don't see why the whole modelling fraternity should not look forward to Bob's radio controlled genuine VTOL Hawker Harrier. There'll be many other models besides because Bob is a well established member of SAM and has been extremely active with replicas of his 1938 '9 Wakefields. We are sure that everybody will join us in wishing him a long and happy retirement

INDOOR CONTESTS CARDINGTON

Two new competitions for EZB class indoor models have been planned for 1983. Laurie Barr has generously donated £250 in prize money to encourage Indoor Flying.

The first is for the expert EZB flier with a first prize of £50. This will be held at Cardington, on August 28, 1983. Rules will be to 1.2 grams minimum weight.

The second competition takes place at Cardington on October 9 with a first prize of £100, and is for newcomers. Briefly the rules are: the model must be built to the plan that will be published in May Aeromodeller, built to a minimum weight of 1.5 grams and tissue rubber as supplied by the organisers should be used. A complete kit of parts will also be made available.

The Indoor financial situation is looking healthier now than it has done for several years. As a result, the shed entry fee for using Cardington will be between £1 and £2 per head per day. Watch this space for more details.

SCALE DOCUMENTATION

Michael Smith of Kent is a keen free flight scale enthusiast and is most keen to encourage others to take up this area of the hobby. He has set up an index file on individual aircraft and is offering the use of this service to other modellers. The project is still at an early stage so it may not yet be possible for Michael to solve your individual need. If you have a scale documentation problem, send an SAE plus 50p to cover costs, to Michael Smith, at 15 Lower Range Road, Denton, Gravesend, Kent. Also it would be a good idea to send Michael any spare material you may have on scale aircraft as it will surely be of use to someone sometime.

SPECIALIST BOOKS

Albion Scott Ltd. have opened a new branch of their specialist international model book business at Oppenheim Book-sellers situated at 9-11 Exhibition Road, London SW7. Well worth a visit for the difficult to find scale references and also conveniently situated to visit all the major museums.

SOUTH COAST GALA

The Southern Area of the SMAE have planned to hold the old South Coast Gala again at Beaulieu on June 18 and 19.

There will be free flight and radio control contests (see What's Happening for more details). Camping facilities adjacent to the flying site are available and site amenities include a bar, toilets and washrooms.

This should be a super weekend in super surroundings. If you are interested in going, drop Gary Madelin a line to let him know. His address is: 51 Vesey Close, Farnborough, Hampshire GU14 8UT.

† JOHN HANNAY

† Wirral Radio Control Flying Society lost a long serving and loyal friend with the passing of John Hannay on December 28, 1982. John was well known throughout British aeromodelling, being prominently placed in many contests in the 1950's. He was a member of the British team for the World A 2 Championships, he went to Denmark in 1954, and Czechoslovakia in 1957, when he was placed eighth.

Aeromodelling was his lifetime hobby and many will remember his 'Topscore' glider which was published in Aeromodeller January 1958.

Although John was known best for his A 2 models, he was also among the first to join the R C fraternity, and as always he enjoyed the flying, although he did not seem to get the same grip on R C as he did on gliding.

Top honours tended to elude him but he loved being a leader and at one time in the 1960's was a contender for an SMAE committee post in order to correct what in his eyes were irregularities in the rules.

One of his ideals was the resurgence of the Merseyside Council of Model Aero Clubs in the 1970's, which started life with a large club membership but due to various difficulties eventually dwindled down to two clubs, this being one of his biggest disappointments.

Another of John's interests was the involvement of youngsters in the hobby, and he went to great lengths to achieve this by organising evening classes in Boys' Clubs and helping handicapped children from the Ellery Park School in Wallasey to actively participate in flying radio controlled planes with surprising and gratifying results.

John judged R C Scale competitions for several years at the Woodford and Woodvale Rallies. He was PRO during the memorable World Champs at Woodvale in 1978, designed the posters and the unique logo which appeared on T-shirts, commemorative plaques, badges, etc for that meeting.

Chairman of the Wallasey MAC, and later the Wirral RCFS, of which he was the founder, he had only recently accepted Hon. Life Membership for his services. Our sympathy goes to Margaret and his two daughters, who devotedly cared for him

through a long illness. Those who knew him personally will remember him as a meticulous modeller and a great friend.

† J. B. ALLMAN

Justin Allman died on November 26, 1982. A South African by birth, he came to Britain immediately after World War I and settled near Warwick.

His interest in model aviation had begun at an early age and it rapidly developed, resulting in the construction of a number of fine models during the 1920s; one of his best known models was a 'Sky Rover,' built to the design of A. T. Willis. This model was covered in red silk and won a number of contests in its day.

Justin Allman was a very active member

of the Leamington and Warwick Model Aircraft Club and was one of the first in Britain to appreciate the advantages of balsa wood in the construction of model aircraft, using this material as early as 1931.

He was a meticulous and ingenious model builder and produced a number of very finely designed and efficient models, and became well-known for the gearboxes he fitted to his models. These were built to accommodate twin skeins of rubber with a 4.5:1 step-up ratio to the propeller shaft. His efforts were well rewarded in 1934 when he won the Wakefield Trophy and also the National Cup. He was a member of the 1936 Wakefield Team.

Although Justin's main interest was in rubber-driven contest models, he did build

one petrol-driven model which was of most elegant design and named 'Psyche.'

Justin Allman returned to South Africa with his family in 1947. He continued to build model aircraft but did not enter any further contests. His other interest was in his cabin cruiser which he had built himself and in which he spent many happy days afloat. During his later years, he concentrated mainly on the teaching of model aviation to the youth of his country.

Justin Allman will be remembered for his skill and accuracy in the design and construction of model aircraft, his readiness at all times to assist others, and his quiet but effective humour. In the passing of Justin Allman, model aviation has lost an old and valued friend.

Alwyn Greenhalgh

SMAE 1983 COMPETITION PROGRAMME

February

20 — F/F, Experimental Fly In, *Tech Comm*

March

13 — F/F, 1st area centralised, F1A K + MAA Plugge, O/R, O/P Frog Senior Trophy, *Area Comp Sec*

27 — F/F, 2nd Area Centralised, F1C Halfax Trophy Plugge, O/G, O/R Gamage Cup, *Area Comp Sec*

27 — R/C, FA1 Pylon, *P Burnage*

27 — R/C, FA1 Aerobatics, *Fulbeck G Franklin*

27 — T/S, F3B League, *M Proctor, B Church Rice, Holtby, York 0904 53227*

April

3, 4 — F/F, 3rd F1A/B/C Centralised Sun F1A, F1B, F1C (5 rounds), Mon O/R, O/G, O/P D *Hipperson*

10 — C/L, FAI T/R, 1/2A, T/R, G/Y F2B, Novice Aerobatics, Speed Combat, Barkston Heath, *Bob Horwood*

17 — Spring Gala F/F, Odiham Area

24 — R/C, FAI Pylon, *Peter Burnage*

24 — R/C, FAI Aerobatics, *G Franklin*

30 — F/F, Centralised, F1A/B/C, 1st part Euro Trials, *Tech Comm*

May

1 — Spring Scale Event for C/L Class 2, Venue: Old Croydon Airport, Contact: Vic Willson Tel Reading 471964

1 — F/F, Conclusion of Euro Trials, *Tech Comm, D Hipperson*

1 — Indoor *Tech Comm*

1 — T/S, F3B League, *I Handley, 20 Garrick Close, Brant Road, Lincoln 37198*

1 — C/L, FAI, T/R, G/Y, F2B, Novice Aerobatics, *Bob Horwood, North Weald*

8 — F/F, 3rd Area Centralised, F1B Weston Cup Plugge, O/G, O/P White Trophy, *Area Comp, Sec*

15 — Indoor, Novice/Expert Pairs *L Barr*

14, 15 — F/F, Bristol & West Golden Jubilee Rally, *George Lynn FSMAE*

17 — Odiham Spring Gala, F/F Scale Power & Rubber

22 — R/C, FAI Pylon, *Peter Burnage*, 22nd Scale

28, 30 — F/F Nationals Mini FAI, Open, Barkston Heath, *Tech Comm*

June

5 — T/S, F3B League, Eaton Bray *N Neve*

'Eynhallow,' *The Purlieu, Upper Colwell, Malvern 06845 661160*

5 — Indoor Novice/Expert Pairs *L Barr*

12 — C/L, FAI T/R, 1/2A, T/R, F2B, FAI Combat Speed, Three Sisters, *Bob Horwood*

12 — F/F, 4th area Centralised Team Glider (Model Engineer Cup Plugge), F1C Astral, CdH, *Area Comp Sec*

26 — R/C, FAI Pylon, *Peter Burnage*

26 — R/C, FAI Aerobatics, *G Franklin, Fulbeck*

26 — Indoor Novice/Expert Pairs, *L Barr*

July

3 — F/F, Centralised Mini, A/1, 1/2A, CdH, HLG, CO₂, *D Hipperson*

10 — Indoor Novice Expert Pairs, *L Barr*

17 — R/C, FAI Pylon, *Peter Burnage*

17 — R/C, FAI Aerobatics, *G Franklin*

17 — First F1D Team Trials *L Barr*

24 — Summer Scale Meeting C/L *Scale Class 2 - Scale Racing*, Venue: RAF Abingdon (Provisional), Contact: Vic Willson Tel Reading 471964

August

7 — C/L, FAI T/R, G/Y, 1/2A, T/R, F2B-FAI Combat Novice Aerobatic Speed, *Bob Horwood*

7 — R/C, FAI Pylon, Fullbeck *Peter Burnage*

7 — Indoor Open Film Contest *L Barr*

27, 28, 29 — T/S Nationals, Barkston Heath, Cranwell, *Tech Comm*

29, 30 — F/F Centralised FAI, Centralised Open, *D Hipperson*

28, 29 — Indoor Nationals *L Barr*

September

4 — F/F, 5th Area Centralised Team Power Keil Trophy Plugge, F1B, Gutteridge, A1, *Area Comp, Sec*

11 — Northern Gala

18 — Indoor Second F1D Team Trials *L Barr*

18 — R/C, FAI Pylon, *Peter Burnage*

18 — R/C, FAI Aerobatics, *G Franklin*

25 — E/F, Electro Flight Fly In, Biggleswade, *G W Dallimer, 36 Farthing Drive, Letchworth, Herts*

25 — C/L, Team Trials, F2A, F2B, F2C, F2D, Three Sisters *B Horwood*

25 — F/F, 6th Area Centralised, Team Rubber (Farrow Shield Trophy), F1A (SMAE Cup), *1/2A, Area Comp, Sec*

October

2 — Southern Gala, *Southern Area*

9 — R/C, FAI, Aerobatics, *Fulbeck G Franklin*

16 — T/S, F3B League, Church Fenton, *N Proctor*

30 — F/F, Centralised Mini, A1, 1/2A, CdH, HLG, CO₂, *D Hipperson*

Contest Calendar Information

CONTACTS

G Franklin, FSMAE, 101 Jarrom Street, Leicester, Tel 0533 548313

P Burnage, 21 Goodhall Crescent, Clophill, Beds R Horwood, 21 Burghley Road, St Andrews, Bristol B56 5BL, Tel 0272 48769

L Barr, FSMAE, 4 Hastings Close, Bray, Berks Tel 0628 25595

G Lynn, FSMAE, 2 Salisbury Avenue, Cheltenham, Glos Tel 0242 37232

D Hipperson, 35 Antony Road, Boreham Wood, Herts Tel 01 207 0129

G Dallimer, 36 Farthing Drive, Letchworth, Herts

N Neve, Eynhallow, The Purlieu, Upper Colwell, Malvern Tel 06845 661160

M Proctor, 8 Church Rise, Holtby, York Tel 0904 53227

I Handley, 20 Garrick Close, Brant Road, Lincoln Tel Linc. 37198

CONTEST ENTRY FEES 1983

Free Flight Senior £1, Junior 40p, Season Ticket £8 50

Control Line Senior £3, Junior £1 50, Season Ticket £8

Thermal Soaring Senior £1 50, Junior £1, Season Ticket £6

Indoor Senior £1, Junior 50p, Season Ticket £10

Radio Control Senior £3 50, Junior £1 75, Season Ticket £18

Scale Senior & Junior — R/C £2, F/F & C/L £1, No Season Ticket

NOTE:

Associate Members pay DOUBLE FEES

Non-Members pay FIVE TIMES THE FEES

Unmuffled Flying Permits* — Control Line and Free Flight — £1

FAI Licence* — £1

*Unmuffled Flying Permits and FAI Licences are inclusive in the price of a SEASON TICKET



February 20

EXPERIMENTAL CENTRALISED OPEN RUBBER.

GLIDER AND POWER + NEW CLASS OPEN POWER. Contact SAE to Tony Cordes, 27 Haddon Road, Hazel Grove, Stockport, Cheshire. Provisional venue: North Lussenham.

February 27

GRANTHAM GRAND PRIX OPEN RUBBER, OPEN GLIDER, OPEN POWER COMBINED FAI, five flights Starts 10am. Prizes guaranteed Venue: Barkston Heath. Contact: P Ball Tel 0332 665361

March 6

INDOOR EVENT — EZB, HLG AND SCALE

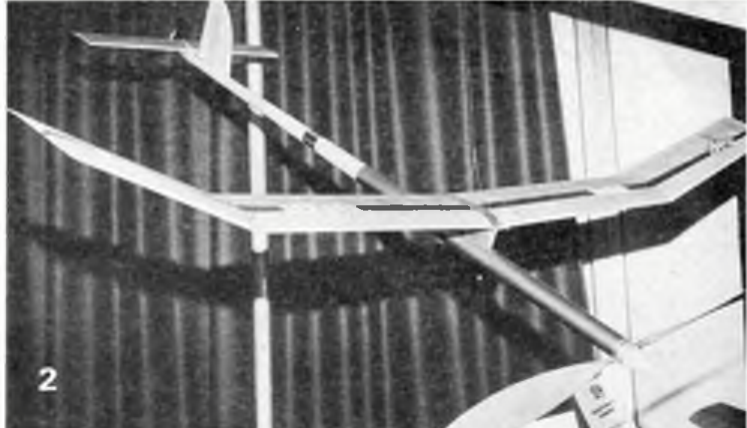
Venue: Colne Valley Leisure Centre, Slaithwaite, Nr Huddersfield 1.00-7.00pm Contact Bernard Hunt Tel 0484 862353

March 13

FIRST AREA CENTRALISED KMAA CUP F1A Glider (Plugge Points) OPEN RUBBER, FROG SENIOR TROPHY OPEN POWER. Contact Area Competition Secretary

March 27

SECOND AREA CENTRALISED HALFAX TROPHY — F1C POWER (PLUGGE POINTS), OPEN GLIDER, GAMAGE CUP — OPEN RUBBER. Contact Area Competition Secretary



WEMBLEY CONFERENCE CENTRE

52nd Model Engineer Exhibition

Saturday 1st Jan - Sunday 9th Jan 1983

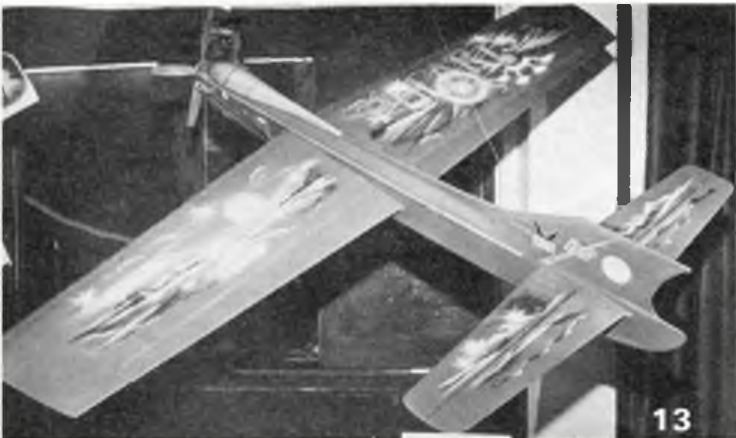


1 Winner of the "Bristol Challenge Cup," Mick Staples' Bristol Scout D. 2 "Aeromodeller Cup" winner was G. F. LeVey with this superb Wakelield. 3 Yet another winner was this beautiful Luton Minor scale R/C model by David Roberts. He won the "RCMRE Cup." 4 A relaxed Reg Parham demonstrating one of his many indoor models at his lecture. 5 This

Sopwith Tabloid built by N. A. Peppiatt is powered by a Brown Twin CO motor. 6 Speedcraft, a little known pre-war design by engine designer Harry Orwick, built by Brian Ferrett. 7 Don Knight's HV540 vintage model is powered by a K Vulture 5cc diesel. 8 A 1/16th scale C/L Supermarine Spitfire with a Cox .09 up front. Scratchbuilt by Robert Sharp. 9 Fillon's Wakelield

design of 1937 built by Sid Sutherland. Emmanuel Filon is still with us - look out for next month's issue. 10 Ken Faux, top contest power flyer, explains the technicalities of this very demanding class in his lecture on the subject. 11 F3B multi-task glider by top competitor in this class, Sean Bannister. 12 1/24th scale C/L Armstrong Whitworth Whitley by Russell Thomas.





13



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THIS year's Exhibition was opened in fine style by artist David Shepherd, well-known for his wild life paintings of elephants. David also has an intense interest in steam railways and in fact is the chairman and founder of the East Somerset Railway, which made him an ideal choice to open this 52nd Model Engineer Exhibition.

As always the standard of modelling to be seen in all the varied subjects on display was superb. One of the highlights for aeronautical enthusiasts must have been the experience of hearing and seeing Barrie Hares' 1/5th scale Merlin XX engine run. This Mk of Merlin was used in the Hurricane II and was fitted with a three bladed variable pitch propeller.

Barrie's 1/5th scale engine was mounted on a scale Hurricane bearer complete with three bladed variable pitch prop and was also fitted with a full working instrument panel. The engine started first pull every time we saw it run, but unfortunately running time was limited due to cooling problems. We would like to congratulate Barrie on winning the Duke of Edinburgh Challenge Trophy which he well deserved.

The standard of construction of all the flying models on display was very high. In Class AA (non-scale flying models of all types), G. F. Le Vey's own design Wakefield was outstanding and won him the *Aeromodeller Cup* as well as a silver medal. The construction of the folding two-bladed propeller and the propeller shaft bearing nose block were of particular merit.

The RCM&E Cup was won by David Roberts with his superbly constructed 1/4 scale Luton Minor. A great deal of work had gone into the detail components, including a very authentic looking dummy VW engine, which, combined with an excellent finish also won David a Gold Medal. Another R/C model of exceptional quality was a Sopwith 'Schneider' of 1919 vintage built by Brian Peckham. The decorative engine turning finish on the aluminium cowl was something to behold. At the other end of the scale, Mike Staples' Bristol Scout D built to 3/4in-1ft. scale and powered by a Telco CO₂ motor was not to be overlooked. This model won the *Bristol Challenge Cup* and was very highly commended. Another small model of exceptional quality was

John Blagg's 1/24th scale *Jeannin Taube*, also powered by a Telco CO₂ motor. John has flown this model consistently during 1982 and it is still in pristine condition, which is no mean feat when you consider the unusual and delicate design.

Although the cups and medals are won by the highly detailed and finished models, there are always many exhibits that are very ambitious and worthy of a close look. One such model was a B-25 Mitchell built by Charles Newman, to a scale of 1/22nd and powered by two rubber motors driving three-bladed propellers. Another model of note, was a control line Armstrong Whitworth Whitley by Russell Thomas. This 1/24th scale model weighs 6 1/2 lb. is powered by two PAW 19s, and is completely covered in metal with fibre glass moulded engine pods.

Round the Pole flying took place in the auditorium on the last two days of the exhibition and thanks to Bristol and West ATC group and the Stalham High School there was plenty of activity. Wing Commander John Manderville who was in charge of the ATC squadron, flew no less than six of his own models. Perhaps the most impressive



15



16

13. Marco Beschizza's colourful airbrush finished "Time Traveller" stunt model. 14. John Blagg's Jeannin Taube with Telco CO₂ motor fitted. 15. Bristol F2B fighter Mk1 RTP model by G. Tuff. 16. Sid Sutherland built this Mego Soarer Eagle from the original

Mego kit plans of 1939. It is powered by Super Cyclone spark motor. 17. Derek Farman readying one of the many RTP models he displayed with his group from Stalham High School. 18. Martin Tuck checking out one of his latest creations, an RTP Avro Tri-plane



17



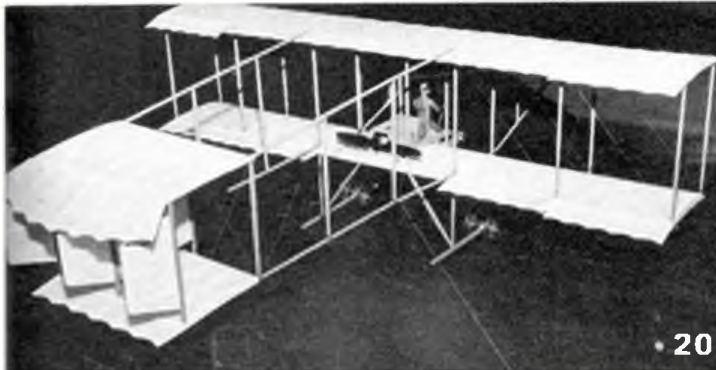
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of which was a B17. The model used two motors in the inboard nacelle with the two outer props freewheeling.

Stalham High School, headed by Derek Farman, also put on a good show.

We were also pleased to see Martin Tuck once again who flew his very successful BA146 (published in *Aeromodeller* July 1981) and also had two new models, an Avro Triplane and a Box Kite. We will be publishing plans of these models in a future issue of *Aeromodeller*. Martin intends to build models of all the aircraft that flew in the film "Those Magnificent Men in Their Flying Machines". Unfortunately he did have a few problems and damaged both machines due to a strong draft at the end of the stage but both aircraft were soon repaired, and although a bit touchy on trim, look most impressive in the air.

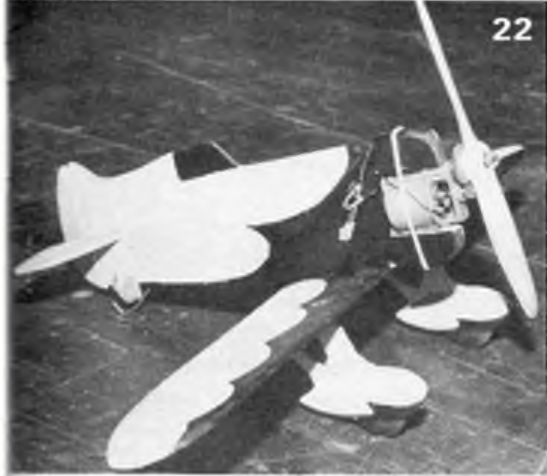
There was a packed programme of films and lectures throughout the week which were well attended. Reg Parnham's lecture on "A History of Indoor Flying Models" which included demonstration flights was as always much appreciated, as was John Stroud's lecture "An Introduction to Aeromodelling" where he gave generous prizes to answers from the audience.



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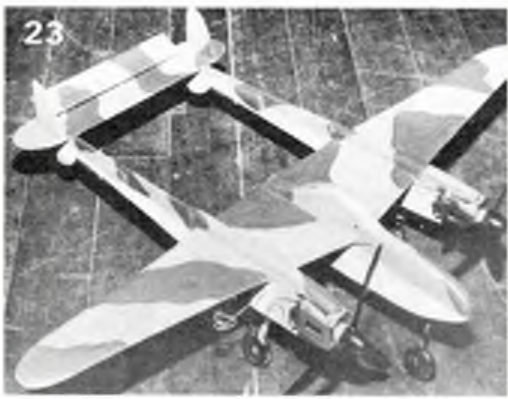


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20 21 Two fine RTP models by Martin Tuck - the Box Kite and the Avro Triplane. 22 The editor's son David Rattray built this GeeBee RTP model from a full size plan published in Aeromodeller. 23 Thomas Bunce's P38 Lockheed Lightning RTP model fitted with two L2 motors. 24 Peter Shires, a regular visitor to the ME, brought along these three fine RTP models. Left to right, Cosmic Wind, Mosquito and a Miles Sparrow Hawk. 25 DH Mosquito RTP model by F O Brian Chapman. 26 F O Brian Chapman designed this speed RTP flyer entitled "Little Pink Pig". 27 Bob Williams builds his RTP models from throw away objects which include cardboard, i.e. toilet rolls, etc! 28 F O Chapman's RTP Tri Motor flies well on only one motor. 29 DH4 RTP model built by Wing Commander John Mandeville from a Guillow kit. 30 Cadet Sgt. Chapman of the Bristol ATC built this superb B25 Mitchell.



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Continued on page 138



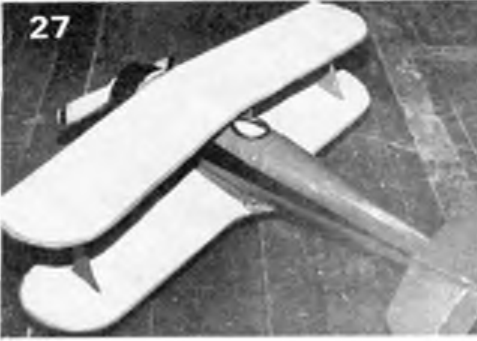
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DH FOX MOTH

David Hope-Cross from New Zealand, describes the recovery of Fox Moth ZK-AEK from New Zealand's Southern Alps, where it crash-landed in 1943 and also the construction of his free flight/RC 1/8th scale model of the same aircraft.

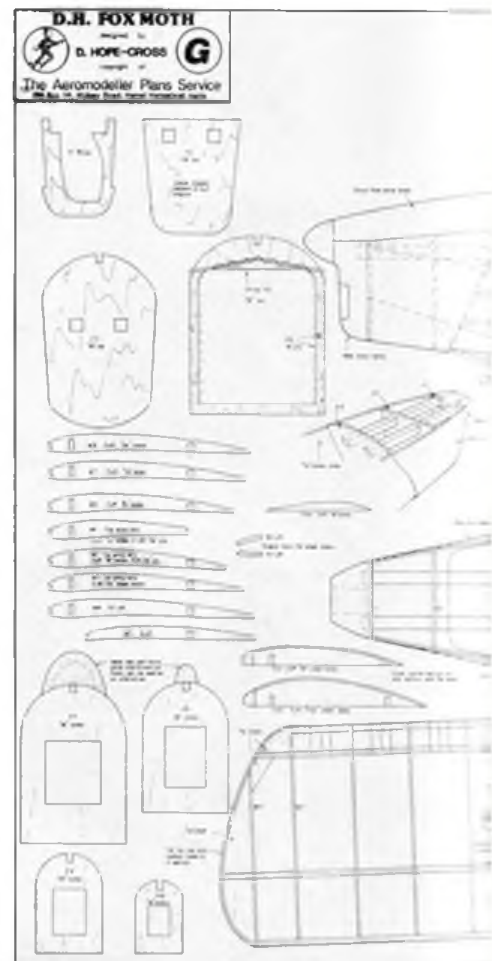
THE DE HAVILLAND FOX MOTH was designed by A. E. Hagg during the 1930's and used in the establishment of short domestic and feeder airlines in many parts of the world. The production cost was kept down by using standard Tiger Moth mainplanes, tail unit undercarriage and engine mounting. The result was an economical machine capable of carrying four passengers and the pilot on only 120hp.

About 98 Fox Moths were built of which about one third had had sliding hoods over the pilot's cockpit. These were occasionally referred to as the Speed Model although there was no change of designation.

An interesting feature was the communication between pilot and passengers via a small window in the instrument panel. The Fox Moth earned its reputation on pioneer routes in Scotland, in the south of England, Australia, New Zealand, New Guinea, Brazil and Japan. In 1946 further demand in Canada led to De Havilland Canada resuming production using surplus Tiger Moth components. This machine had a bubble canopy, an enlarged port door and was known as the DH 83C. Apart from Canada these machines found their way to Southern Rhodesia, Pakistan, India and



The plan reproduced here to one sixth scale is available from the Aeromodeller Plans Service, PO Box 35, Wolsley House, Wolsley Road, Hemel Hempstead, Herts. HP2 4SS, as Plan No. 1455, price £3.60 plus 45p post and packing.



Heading shot shows the model in flight. Note passenger door has opened! Photo by David Hope-Cross. Left, nine of the 16-man recovery team struggle to remove the fuselage across the rough terrain of the New Zealand Southern Alps, where ZK-AEK crashed in 1943 due to a massive downdraft. Above, still in one piece after all its man-handling down the mountain side. Photos by NZ Westland National Park Board.

Aeromodeller



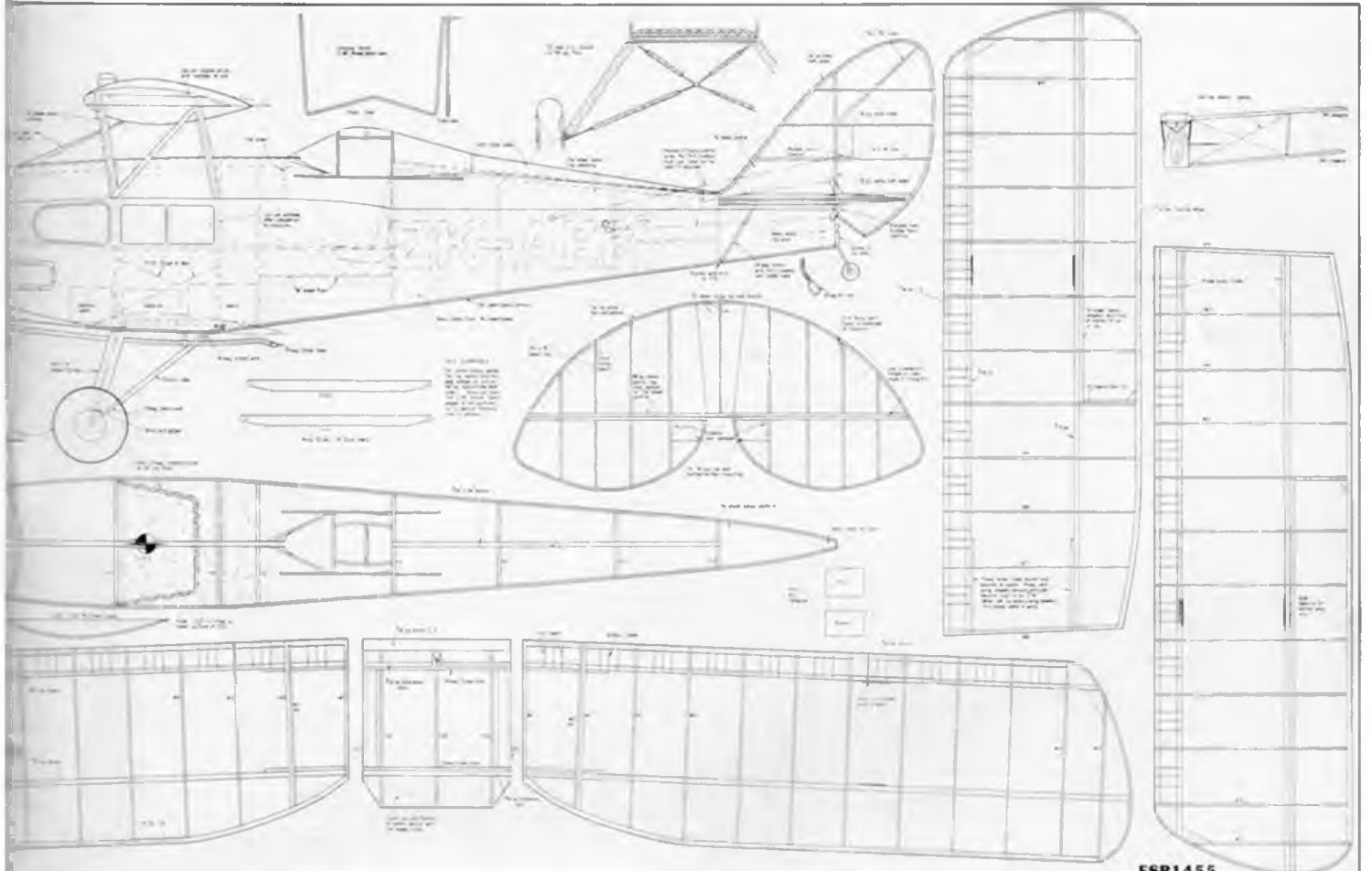
This photograph illustrates the immense problems that had to be overcome in the retrieval exercise. Right, this photograph was taken in October 1943 when the recovery team arrived on the scene

New Zealand. In 1981 a further short run of Fox Moth replicas was established in Auckland New Zealand.


Many of the Fox Moth had interesting careers such as G-ACDD that was acquired by HRH The Prince of Wales in 1933. It was painted in the colours of the Household Brigade — Red, Blue and with chromium fittings. Spats were also fitted. In 1935 it went to Air Travel NZ Ltd, a pioneer airline operating on the West Coast of New

Zealand. Its colour scheme was changed only slightly to orange (the company house colour) on the top of the fuselage, black wedge each side with a narrow white band underneath and red lower fuselage. Flying surfaces were silver. During the course of more than 8000 hours flying in the area, including many mercy missions, the machine and its pilots together with other Fox Moths earned a reputation that even today is still talked about by the local people.

In 1943 this machine — now registered ZK-AEK and known as the Royal Fox was caught in the downdraft of the New Zealand Southern Alps. The pilot succeeded in crash landing the aircraft on a glacier and the occupants escaped with only minor injuries. The resulting recovery took three weeks and was carried out by sledge, on the backs of 16 men, by raft and finally by truck. This epic rescue of a much loved aircraft is shown in the accompanying illustrations.



FSP1455



Tough folk these New Zealanders, most folk would have given up the job with problems like this to overcome.

This famous aircraft was later absorbed into the New Zealand National Airways Corporation, the forerunner of Air New Zealand and after service with the airline passed through several private owners before going overseas to Fiji.

The model

It is rather surprising that the De Havilland Fox Moth has been overlooked by aeromodellers, as it presents the classic DH lines with many built-in features that guarantee stability and lots of room for the radio control installation.

A little research with the local Aviation Historical Society will provide colour scheme details and for those modellers who had access to the Shuttleworth Collection there was the beautifully restored Fox Moth G-ACEJ in black with gold trim, alas now cremated.

The model described here has been developed through two prototypes and both have performed well in competition as well as flying wise. The second model has won the New Zealand National Championships and Provincial Championships. Its longest flight as a free flight model was over 40 minutes in a succession of thermals. It was finally recovered some seven miles away from the take-off area.

Construction is fairly simple, although there is a lot of it. Full detail is shown on the plan but the following information may help to whet your appetite.

Fuselage

Two basic sides are cut from sheet and assembled with the rear formers in place. Cabin windows are marked as are the doors. These items are cut out later. Cabane struts are bent and added to formers F4 and F5 which are then fitted to the fuselage taking care to keep everything square. The engine bearers are assembled with formers F1, F2 and F3 and the completed unit is added to the front of the fuselage. Note the gap between engine bearers shown on F1, F2 and F3 may not suit your engine, adjust as necessary. The undercarriage is then formed and fitted to

the main floor. The floor is mounted between formers F4 and F6. Add the nose-block, fuselage backbone and the internal detail at this point. The passengers' cabin contains two bench seats facing each other. The pilot's office contains the usual DH type seat, instrument panel with a hole in it (for passenger communication) and spade type control column. Add the turtle decking, streamline fairing if required, floor etc.

Wings

These are straightforward. On the original 14SWG wire pegs fitted into brass tubes in the fuselage and fuel tank. The wire pegs must be firmly fitted to the hardwood wing spars before wing assembly commences.

The trailing edge requires some care if an accurate scale trailing edge is to be made. This was done with $\frac{1}{8}$ ply on the original. After the ribs add the riblets. Two between each rib on top and one below.

Tail surfaces

These are all sheet with sheet ribs and crimped $\frac{1}{16}$ square edges. After assembly they are sanded to the correct section.



Top left: The Royal Fox ZK-AEK (ex G-ACDD) without the usual lettering on the side cowl. At the time of the photograph the colours were silver flying surfaces, fuselage - orange upper, black centre, red below and white lettering. Above cockpit detail, note call sign written above window to passenger compartment. Left: oil cooler cowl and air vents on top cowl. Centre cockpit showing spade grip to control stick.



Covering

The tail surfaces and fuselage are covered with heavyweight tissue and given two or three coats of 50/50 clear dope before application of colour. The wings can also be covered with heavyweight tissue or lightweight nylon and given the same treatment.

Trimming

Balance at the point shown after adding radio gear if desired. Check all incidence angles ensuring that all wings are properly aligned when the model is viewed from the rear. As a free flight model the original flew left-left under power and on the glide. As a radio model with rudder, elevator and throttle it makes the ideal small scale model and is a must for any modeller who appreciates De Havilland aircraft.

Colour schemes

ZK-AEK was originally G-ACDD and belonged to HRH Prince of Wales in 1933. It was painted in the colours of the Household Brigade - red and blue chromium fittings and silver flying surfaces. Spats were also fitted.

In 1935 it was sold to Air Travel NZ Ltd., a pioneer airline operating other Fox Moths, Dragonflies etc. in New Zealand. Its colours in October 1935 were Silver flying surfaces, fuselage orange upper surfaces, black strip fore and aft of windows, following the natural upper contour of the fuselage and finishing midway down fuselage, red lower fuselage. A white cheat line from nose to tail post separated the red and black. Silver lower cowling below white cheat line. Red lettering "Royal Mail" and Airtravel NZ Ltd. White fuselage registration.

In 1940 ZK-AEK was caught in the lee of the southern alps and crashlanded on a glacier. At that time the fuselage was painted in the House colours of Airtravel orange fuselage with green registration, wing registration was black.

March 1983



Above: Air Travel NZ Ltd. logo is painted in red on a silver background. Right: completed structure of the model, note bulge in cabin door.





by
Alex Imrie

52nd Model Engineer Exhibition

Despite the small number of vintage models on show, the following types deserve to be mentioned.

Les Hoy entered his Big Stuff, a 68in. span rubber model designed by Colonel Bowden in 1941 as a stop-gap when the flying of power models had been discontinued due to the war. We published a photograph of this model in last month's column, and of course, had the opportunity of examining the model at the Shefford show. Readers might like to note that the tail unit and wings of this pleasing machine are almost identical to those used on Colonel Bowden's popular Contest power model, which emerged some four years after Big Stuff.

Don Knight submitted his HV 450, a fine design by that prolific French designer Henri Varache, which caused quite a stir at Eaton Bray during the first International Week in 1946 when the Continental modellers came across in strength to show us that, despite the occupation of over four years duration, they were still very much a force to be reckoned with. Henri Varache's original model was powered by an Airplane 5cc fixed head diesel, which was incorrectly reported at the time as a Micron of similar capacity. This model's near vertical (70 degrees) cockscrew climb compared well with the pylon models at the Eaton Bray meeting. Don uses a Kemp 5cc Vulture diesel in his version, which is tastefully decorated in green and silver.

Sid Sutherland, one time top modeller in the old West Essex Club showed his Megow's Soaring Eagle, which was the first example of this model that the writer has seen, and was also examined with interest at the Shefford show. When this model first appeared in 1939 it was designed for the Class C engine of 1.5th hp and spanned 6 feet. Later a 54in. span version was available for Class B engines and a 47in. version produced for the then baby engines of Class A. Sid has modelled the Class C machine, finished in blue and yellow, and uses a Super Cyclone spark ignition engine.

The Speedcraft Low Wing entered by Brian Ferrett was a 63in. wingspan design by Henry Orwick, a low wing specialist from Los Angeles, who also manufactured his own engines. Replicas of Orwick designs are rarely seen, and we look forward to seeing Brian's red and black Elfin diesel powered version in the air.

Some fine vintage models were also to be seen in non-competitive guise on the SAM 35 Stand, foremost amongst these being a 'clutch' of Wakefields which included an original Ron Warring 1950 model and two replicas of Ted Evan's designs, a Rocket built by Jack Humphrey, and a Vanstead by Brian Yearley. Also on show was Don Knight's rubber-driven hydro, a three float seaplane designed by Larry Low of New York that was described in the 1937 Zaic Yearbook. A nice red and yellow AC 2 was



Above Rupert Kemp lets his model go in the Junior Achilles competition at Old Warden. He finished second with a total of 128 seconds for his three flights.

Below Mark Francis with his Keilcraft Eaglet at the 1982 Nationals, and Jackie Francis, also at the 1982 Nationals.



Left Angus Tennant with his Mills 1.3 Mkl powered Berkeley Brigadier at Old Warden Vintage Day last year. Model is covered with silk on tissue!





Left the late John Haggart with his Kanga Kub powered by rotary valve Ohlsson ignition engine. This model is still flying, now being owned by Noel Barker. Above Pat Tranfield rescued and re-drew a very tattered original plan to make his boyhood friend favourite Frog Jupiter once again. Below can anyone identify this radio model seen at last year's Vintage Day - it looks the part but is it?

also to be seen. This is a direct development of the Air Cadet by C. A. Rippon and was described in the third edition of 'The Model Aeroplane Manual'

To Compete or Exhibit?

The number of competition entries of vintage models in the non-scale flying model class was disappointing this year, especially after the recent fine showing of vintage models at Shefford. The reason for lack of support by vintage modellers, clearly warrants investigation.

At Shefford, the mass entry was a spontaneous indication of the enthusiasm that abounds within the 600-odd membership of SAM 35, yet, the majority of these enthusiasts fight shy of entering such as august display as is presented at Wembley.

Flying model aeroplanes that win places at the ME Exhibitions are usually possessed of wondrous finishes, obtained by modern techniques using present day materials. Even the most perfectly built vintage model, because of the very nature of its functional structure, would be at a serious disadvantage when faced with this sort of competition, and it would appear that this unfair 'edge' removes the bulk of the vintage would-be competitors at one fell swoop.

A re-classification of the competition areas is needed, if the increasing popularity

of the vintage model is to be catered for, and a separate Vintage Class could be further sub-divided into Power, Rubber, Vintage Style, R C Assisted etc. where points could be awarded for authenticity and accurate period finishes. Just how the Vintage Class of exhibition model should be handled will depend on many things, but if steps are not taken to encourage its display, the Aircraft Section of the ME Exhibition will be the poorer for the almost total lack of examples of the vintage modellers' art.

Vintage Engines

There are signs that the Dark Ages of exorbitant prices for this ancient machinery are passing. Recently I have heard of ignition engines from the 1940's being sold for much more acceptable prices than hitherto. Examples are Super Cyclone, Rocket 46, Ohlsson 60, Atwood Super Champ and McCoy 60 all complete and excellent going at prices below £50 each. Possibly this trend has grown from the prices being asked in the Model Engine Collectors' Association Swap-sheet, which has for a long time now been offering engines from the USA at well below asking prices in UK.

Another reason why old engine prices seem to have dropped and engines become more plentiful might be because of the lesser demands of R C vintage modellers for them. This enthusiast usually finds that



Right John Blagg lets his Gutteridge Trophy winner go at Old Warden. he also made a Peanut version 'big one since written-off'



Left Rubber driven Dryad reborn in the January issue under Vintage Revival seen at Old Warden with its unknown builder

Right: Cliff Billington with his Korda Wakefield. This popular 44in span model was kitted in this country by Skylada and sold for 17/6d (87p) in 1947. Below: no doubt about the identity of this glider that the SAM 35 'sparkplug' is holding. Designed for fast construction and low cost, this 6ft span model was described in the book 'Model Glider Design 1944'.



the old ignition engine is not powerful enough for his needs, is difficult to install with a reliable working throttle, and the installation of a suitable silencer almost impossible, especially on engines with sub-induction, since the power loss due to back pressure might be unacceptable. I would urge modellers about to modify an old spark engine for R/C use to seek advice before wielding the old hacksaw. More suitable engines for their purpose might be readily available, and if they trade the old engine to some vintage free-flight fan they will be doing the movement a good turn.

Another way to obtain old engines at reasonable cost is to trade items with other modellers, in this way old kits or magazines can be bartered for engines that have previously been financially out of reach. It is obviously to our advantage to keep the price of such things down as much as possible, and if we are content with 'even' trades or merely getting our money back in such deals we will be doing a service to all vintage modellers (including ourselves eventually). If we persist with the attitude of 'making a killing', prices will soar and the biter will eventually get bit!

Vintage Finish

SAM 35 SPEAKS can always be relied upon to produce some thought provoking comments, and in the December issue 'Cement Squeezer' says on the colour/decoration/finish as per the original model, that "... carried to extremes this could be to the detriment of the hobby". He goes on to say that many magazine illustrations were

probably only artists impressions anyway.

At the risk of repeating myself, I find that a vintage model decorated like an original machine is far more pleasing than when it is completed with an obvious 'present day scheme', regardless of how imaginative or perfectly applied that scheme might be. My frequent mention of this subject has sometimes unfortunately been interpreted as relating only to the *prototype* model, while this is true when a specific original model is being reproduced, it would have been more correct to have used the words 'period finish'.

Magazine and kit designs were built in their hundreds at the time, and obviously builders finished these to their own liking, not many contemporary modellers bothered to reproduce the colour scheme, which was often given in detail, either on the plan or in the building instructions. However, advertisements, kit box labels and contemporary photographs of original models showing their decoration, somehow identifies these particular models for us. Recent examples that have appeared in Vintage Corner that were commented upon in the respective photograph captions were: Junior 60, Red Zephyr and Miss Tiny. A very good example of a straight prototype reproduction is Mike Beach's control-line Voetsak, it really looks like Ron Moulton's original machine, and this model would certainly have had much less impact had Mike not carefully reproduced the original paint scheme. Readers should note

that these are entirely personal views, and I most certainly do not decry vintage models finished in what might be termed imaginative present day schemes. In any case how could one say with 100% certainty that a particular decorative scheme was *not* used at the time anyway?

While on the subject of finishes, it is worth mentioning that there is an increasing number of modellers covering vintage models with nylon. I use it myself, which I agree is not authentic for pre-1945 models, but it passes for silk, and is pretty tough stuff for those downwind landings in hawthorn bushes. Some years ago scale modellers began to use Japanese silk on top of paper to give the texture appearance so important on models of aeroplanes covered with fabric. This process has now been reversed, and vintage modellers (amongst others) are using paper over nylon, which gives great strength and a fine finish without having to put on too much dope to fill the thirsty nylon pores.

'Cement Squeezer' is also not happy about the appearance of various models in different sizes ... at least this is one thing that we agree upon! I would suggest to readers of like mind that they first do their homework before taking a 'dislike' to a certain model in a particular size, since many popular models were available at the time in different sizes to cater for the modeller with only one size of engine. One could argue that if it was done then why can't we do it now? My interpretation of a vintage model design in a size not used at the time would be label it as 'Vintage Style' ... I can hear the howls of protest already!



Left: Richard Schumacher's 60in span Pixy, built from plans in Zaic 1934 Yearbook - builder: holder not known. Above: we don't see many Spooks nowadays popular model in its day by Modelcraft. Six feet span version shown was also available as a 48in span model.

BOOK REVIEW Another (big) Zaic

Frank Zaic Yearbooks, especially the pre-war issues, should be on every vintage modeller's bookshelf, they are a real mine of information and contain hundreds of plans with full measurements for building all types of models. Frank's latest book is called 'Model Airplanes and The American Boy 1927 - 1934', this is a complete collection of model aeroplane articles, hints, news and plans published in *The American Boy* magazine for the period stated. This magazine was rather like our *Boys Own Paper*, and following Lindbergh's historic flight from New York to Paris in 1927,

which sparked off an explosion in air-mindedness, it ran a high percentage of aviation articles.

The American Boy organised the Airplane Model League of America (AMLA) and this initiative had a major and lasting influence on model aviation. In America before 1927, it is possible that model builders numbered less than a few thousand, while only a few years later their numbers were measured in hundreds of thousands.

It took Frank sixteen years of patient research helped by many enthusiasts to assemble this collection, which includes contemporary advertisements, a facsimile of the Peru Model Airplane Shop's 1930

price list and the rare bonus of a series on model building articles by William B Stout from the 1916 issues of *The American Boy*.

Page size is 8½in by 11in, and the 160 pages contain plans and instructions for building outdoor and indoor single and twin-pushers and tractors, fuselage models, Baby ROG's, flying scale models, gliders, autogiro, ornithopter, hydroplane, and a detailed article of Joe Ehrhardt's 1930 Wakefield Trophy winner - what a feast. Like all the other Frank Zaic compilations serious vintage modellers just cannot afford to be without this fine book. The price is US\$9.50 post paid, order direct from Frank Zaic, Box 135, Northridge, California 91328 USA.

Left the Jasco Flamingo, a September 1937 design by Roger Hammer of New York Aeronauts, published in the Jasco 1938 catalogue. This example seemed to spend most of 1981 Old Warden Vintage Day in the sky, propelled by its Wildcat diesel in place of the original's Brown Junior. Right Arnold Horwich's Falcon in the pits. Powered by OS60 four-stroke - note the cycle pump clipped to the flight box, a necessary item to keep those 6in. diameter model shop airwheels at the right pressure!



FÉDÉRATION AÉRONAUTIQUE INTERNATIONALE 1982 CIAM PLENARY MEETING (PARIS)



Report by Dave Day

This year's CIAM plenary meeting on 3rd December was notable for the speed with which most items were despatched. In fact the election of officers produced a situation where there were only two positions from a total of 18 which actually required a ballot!

Some overall trends were noticeable, for example an attempt to reduce engine size for F/F power, C/L speed, C/L Team Race and C/L Combat to 1.5cc. This was defeated for various reasons, but it is certain to be raised again.

Another trend became visible when the President, Sandy Pimenoff, severely admonished the C/L sub-committee Chairman, 'Doc' Jackson, for not having taken steps to reduce the performance levels of team racing, as instructed. This was followed by the comment that if the C/L sub-committee did not take the appropriate steps by the next plenary meeting, then the steps would be taken for them.

Control-Line

All proposals effective from 1/1/84 unless otherwise stated.

A French proposal that an Assistant Team Manager be allowed for World Cham-

pionship events was also adopted by the Free-Flight sub-committee and approved. The Assistant will have the same duties as the Team Manager but cannot deal with the jury or organisers in the event of a dispute.

In **Stunt** the scoring system was changed so that qualification for the fly-off will be on the basis of the best single flight. The fly-off will now consist of 3 flights, which in W/C will be flown on the third contest day. It is now specified that the motor must be started by hand.

Team Race tank capacity is now reduced to 5cc.

For **Combat**, a safety wire at least 0.5mm dia. must be attached between the bellcrank and the engine. Lines must be checked for length and diameter and pull tested before each heat. Pull test to be 150 Newtons. Effective 1-1-83.

A more dramatic modification means that each contestant will only be permitted two models, two engines, two handles and two pairs of lines in each combat period, and the two sets of equipment cannot be interchanged during the Combat period.

Only one engine per contestant may be running at any time during the bout. Both engines may be run during the warm-up period.

When both competitors streamer strings have been cut, the circle marshall must

now signal both pilots to fly level and anti-clockwise and to cease combat.

The whole scoring system is now revised as follows:

- The contest shall be run as a knockout tournament.
- The contestant who obtains the highest score in points shall be the winner in each bout.
- A competitor shall be eliminated from the competition when he has lost two bouts.
- Each round shall be randomly drawn from the competitors remaining in the competition.
- In the event of an unmatched competitor remaining in any round, that competitor shall be matched with the first competitor drawn in the next round (if he is not first eliminated) in each successive round until such time as there is again an unmatched competitor remaining in a round. At that time these two competitors shall be matched to complete that round.
- The number of wins minus the number of losses, 'wins-losses', shall be used to determine placing with the highest score placing highest.
- In the event of a tie for second or third place (both cannot happen) fly them off using the above procedures except allowing only one loss during the fly-off.
- In the event of a two way tie for third

remaining after a fly-off for second, match them with the winner to take third.

i) In the event of a tie score in any bout, that bout shall be re-flown. A bout is considered a tie if the score difference is 5 points or less.

j) Previous opponents and competitors of the same nationality shall be drawn apart if possible with previous opponents to take precedence if necessary.

k) Each competitor shall be ranked according to his number of wins minus number of losses, not counting fly-off bouts, with the fly-off bouts being used to establish second and third place as necessary.

l) The competitors' wins-losses scores, not counting fly-offs, shall be added for the three participants of each nation.

m) Nations shall be classified with the highest scores obtained in above considered highest in position.

In **Control Line Scale** a maximum of drop options are permitted for flight scoring.

Free Flight report by Martin Dilly

The agenda of December's CIAM meeting included some quite drastic proposals aimed at reducing the distance covered by world championship free-flight models, and at ensuring that timing problems were reduced. That many of the proposals came from the Soviet Union and China, where one would have thought that small flying fields were not one of the problems faced by model flyers, was surprising. However, the Soviet team suffered badly at Zulpich with forests and other visibility-reducing hazards, and doubtless felt that the potential of their recently-developed bunters and ultra-fast-climbing Wakefields makes it important to try to keep them in sight of the timekeepers when they do finally land.

The Soviet package proposed ten two minute maximums instead of the present seven three's, but altered the model specifications to make this harder than it now is. For F.1 A gliders they proposed a 25 metre line, half the present length, for Wakefields 20 grams of rubber, again, half the present quantity, and in an airframe 20 grams heavier than is now required, and for F.1 C. power models a one third increase in power loading, coupled with a five second motor run. This would have given a 35 ounce aircraft instead of the present 27 ounces, with a 2.5cc motor.

China, rather more moderately, had suggested a 40 metre towline, 30 grams of rubber and simply a five second motor run with the same models as we now use, and flown to a three minute maximum.

During the free-flight technical meeting in Paris there was much discussion on these ideas and on the need to limit F.1 C performance. To the latter end, Finland had suggested limiting motor capacity to 1.5cc. Although not on the agenda, one idea that looked a possibility was a U.S. one to limit air intake diameter to 3mm. Tests had shown that this would drop a Rossi, 15 from 26,000 rpm to about 18,400, which represents a 50% thrust decrease.

However, when it came to the voting, all these proposals were either defeated or withdrawn. The CIAM's free-flight technical committee, chaired again for 1983 by

Britain's Ian Kaynes, will be considering the whole question of performances in the F1 categories, and will be concentrating specially on a different specification for the power class that does not detract from participation in F.1.C.

In future, reports to the CIAM plenary meetings will be made by the juries at Continental Championships, in addition to world championships as at present. Doubtless as a result of the F.1.C. fly-off at Zulpich this was a generally popular move. In the Sporting Code, Section 4, the term 'World Championships' will be replaced by 'World and Continental Championships', since the same rules and organisational requirements apply.

A Belgian proposal for the replacement of the FAI's Beginner's F.1.D. indoor model specification (did you know about this?) by a class that is effectively EZB was referred to the F/F technical committee, since some anomalies existed with metric and Imperial equivalents, as well as precise definitions.

Both Denmark and the USSR wanted the three model limit for outdoor FAI contests to be abolished; it was felt by many that this would cause problems for teams travelling great distances to contests and could favour nations where model flyers had unlimited time and support for building fleets of aircraft, and the proposal was defeated. However, from 1984, competitors in F.1.A., F.1.B., F.1.C. and Coupe d'Elver (F.1.G.) will be allowed to have four models processed but may use only three during the contest rounds; timekeepers will check that this is so by reference to the model stickers. For the fly-off the fourth model may be used if desired.

The French had a proposal aimed at avoiding the risk of a flyer at an open international, when maybe six people are allotted one launch position and pair of timekeepers, from taking more than his sixth of the available round time in which to fly. They suggested that during the first half of a round a flyer can take as long as he likes, but during the second half the starting time will be allotted by a draw, and that three minutes will be allowed to launch or release the model. There was a feeling that this would bring too much of a luck element into the results, and the problem is to be considered by the 1983 technical committee.

A Danish proposal to allow the second and third placers at a World Championship to take part in the next one, as well as the winner, as at present, was defeated. The earlier technical meeting had felt this to be a good idea, suggesting that the top three flyers should share a pole.

FAI processing stickers will be modified to carry a blank space instead of the letters A, B and C as at present, so competitors may write a number in the space to uniquely identify each of his models. At present anyone flying in several FAI events may soon find he has several models quite legitimately identified as, for instance, 'Model A'. The new method will considerably ease processing.

For the active free-flighters in Paris for the CIAM meeting, perhaps the big trauma occurred when a Finnish proposal to ban electronic thermal detectors was passed by the plenary session, when all national delegates may vote. Since nations like Greece, Ireland and South Korea had voted

for this, an appeal was made for a re-consideration, and for people with no free-flight experience to abstain; sanity was restored as a result, although eleven nations appeared to be in favour of a ban, which would be extremely hard to enforce, and, as many thought, would detract from a large part of F/F competition.

Comic relief was provided by a curious Australian proposal to reduce the towline pull test from 2 kg to 500 grams; the reason given was that "the 2kg line is considered too severe on the nature of aeromodel, the size of the aeromodel and the weight of the aeromodel." Some delegates thought that perhaps pull tests in the Antipodes were conducted with the line attached to the glider and someone holding its wingtips, and the proposal was rejected. So was a Chinese one that seemed to be aimed at plastic towlines that elongate excessively with high loads.

A change affecting both control-line and free-flight Championships will be effective immediately: an assistant team manager may be registered with the organisers.

During 1982 the F/F technical committee had decided that legislation against waving under models is impractical, and that rules on the number of helpers in the starting area should be strictly enforced. It is neither desirable nor practical to apply noise mufflers to F.1.C. aircraft, in view of the remote locations used for F/F contests, the very short motor runs used, the difficulty of timing the run of a muffled model and the enhanced performance that would result from tuned pipes.

Apart from details of the 1983 World F/F Championships at Goulburn, New South Wales, there were offers to run the 1984 F.1.D. Championships at Nagoya, Japan in a 35 metre site, and the 1986 F.1.D. venue is tentatively Rome. Although there were no delegates present, it is understood that Yugoslavia is planning to make an offer for the the 1985 World F/F Championships on the huge 6 x 12 mile Livno site and that Rumania is interested in offering a site 'in the near future'.

In addition to the details given in the January 1983 Aeromodeller, additional information on the '83 Champs was provided. The big field at Goulburn is 3 x 4 kms of flat grazing land, with a radius of 15 kms available for recovery. It is 7 kms from the accommodation, which will be in a conference centre that looks pretty luxurious from the brochure. Likely day temperatures will be 19-20°C, with 0-10 km/hr surface winds. 14 nations at present plan to compete, including China, but at the CIAM meeting there were none of the South American nations represented, who are also likely to take part. The jury will be Sandy Pimenoff (Finland), Ian Kaynes (UK) and Gordon Burford (Australia). A planbook of models flown during the Championships is planned and there will be symposia on F/F topics. The weekend before the Championships there will be an Open International for the World Championship classes, plus A/1 glider, on the same site, while the weekend afterwards another Open International will be run at Bordertown, South Australia. The dates for the 7th Sierra Cup at Sacramento, California on October 15-16 already has some of the more itchy-footed free-flighters thinking of a 1983 trans-world F/F tour.

THE HARRIER is the world's first fixed wing jet powered V.T.O.L. combat aircraft. It demonstrated its unique qualities by winning the 1969 Transatlantic Air Race with the fastest East-West time, taking off only a mile from the Empire State Building in the heart of New York.

Carrying a weapons load of 6,000 pounds, the Harrier has a maximum speed of one and a quarter times the speed of sound and can operate right behind the front line in any battle zone.

The Harrier is powered by a Rolls-Royce (Bristol) Pegasus engine of 19,000lbs. thrust, and it is this engine which gives the aircraft the power for both vertical and horizontal flight through four swivelling nozzles, two on each side, by deflecting the jet thrust from straight down to straight back. The Pegasus is being constantly improved, enabling the Harrier to progressively increase its war load.

Our model Harrier is a spectacular performer as a hand launch glider but if operated with a catapult as described in the that the slots are lined up accurately. This

must be done with care, otherwise the wing and tail will not be aligned correctly.

Next cut out the two wing panels. Sand these to the approximate airfoil section shown in the side view ensuring you have a lefthand and a righthand panel, then cement the panels with a butt joint on the centre line, pinning flat to the building board and cementing well. Place some tracing paper between the wings and board to prevent them being glued to the board.

Follow the same procedure for the tailplane and set this one side to dry. In the meantime sand the fuselage to shape rounding all the edges as shown in the section through the fuselage. At this stage the slots can be cut for the fin and underfin. Make sure that these slots are dead central in the centre line. Lamination epoxy the catapult hook in place then finally draw in the panel lines and cockpit canopy etc with a ball-point pen. The wings, tailplane and fin can have the control surfaces and panel lines added also. Now the model is ready for final assembly.

Slide the wings through the fuselage

supported on a finger each side of the fuselage, at the arrow shown in the side view.

The next step is to start test gliding the Harrier. Preferably this should be carried out over grass to avoid damage. Launch the model from shoulder height, giving it a fast push. The glide should be fast and flat, if a dive results reduce the amount of weight in the nose or carefully bend up the rear edge of the tailplane slightly. Should the model stall, add a little more weight.

The model must not turn but glide straight ahead, turns can be corrected by bending the rear of the fin in the opposite direction to the turn. When the Harrier is launched by catapult a turning tendency can be disastrous.

When all glides are satisfactory the model can be hand launched straight up with an overarm action.

Alternatively, make up a catapult by trying a three yard length of $\frac{3}{16}$ in. flat rubber to a stout stake. To the other end of the rubber attach 5 or 6 feet of thin fishing line, at the end of the line, tie a metal



HAWKER SIDDELEY HARRIER

*Designed By
P.A. Shepherd*

A fast flying all sheet chuck or catapult launch glider.

flying instructions it's almost supersonic! A lot of space is needed for this method of flying and you'll need to be a good runner.

CONSTRUCTION

Only a minimum amount of equipment will be needed to build the Harrier. Gather together a few pins, a sharp modelling knife, some sandpaper of assorted grit sizes, a tube of balsa cement or white glue and a board on which to cut out the various items.

The plans are presented full-size so trace the shapes and transfer them to the balsa sheets. We recommend cutting out all of the components first, then you can sit back and enjoy assembling the model. Make certain that the grain of the wood runs in the same direction as shown on the drawing. Three identical fuselage shapes are needed, two $\frac{1}{8}$ in. thick, and one $\frac{1}{4}$ in. thick with the areas shown in dashed lines cut out. Carefully cut out the slots for wings and tailplane, then cement the $\frac{1}{8}$ in. outer laminations to the $\frac{1}{4}$ in. thick core, ensuring

slots and, when you are quite satisfied that the wings look level and square, cement them in place. The tailplane is fitted in the same way leaving only the fin and underfin to be attached. As these are made from ply, it is advisable to use a white glue rather than balsa cement to secure these items. It is most important that the fins are truly vertical. The small diagram shows how to line up the assembly correctly. The outrigger wheel fairings can now be shaped and cemented to the wings. The wheels are slices of dowel painted black and glued to the fairings.

To finish off your model, apply decals in the positions shown.

FLYING

This model flies fast so it is doubly important to make sure that there are no warps at all in the wings or tail-unit.

Balance your model by inserting modelling clay in the cavity under the nose. When the centre of gravity is correct, the model should balance level, when

ring about 1 in. in diameter. A key ring will do nicely.

Hook the ring in place, walk back until the rubber strip is tensioned and let go. The result is amazing! Be warned, though, the model must be trimmed just right or you'll finish up with a wreck. We recommend that you get plenty of hand launch experience before using the catapult.

The model Harrier is impressive in flight and lots of fun.

Shopping list

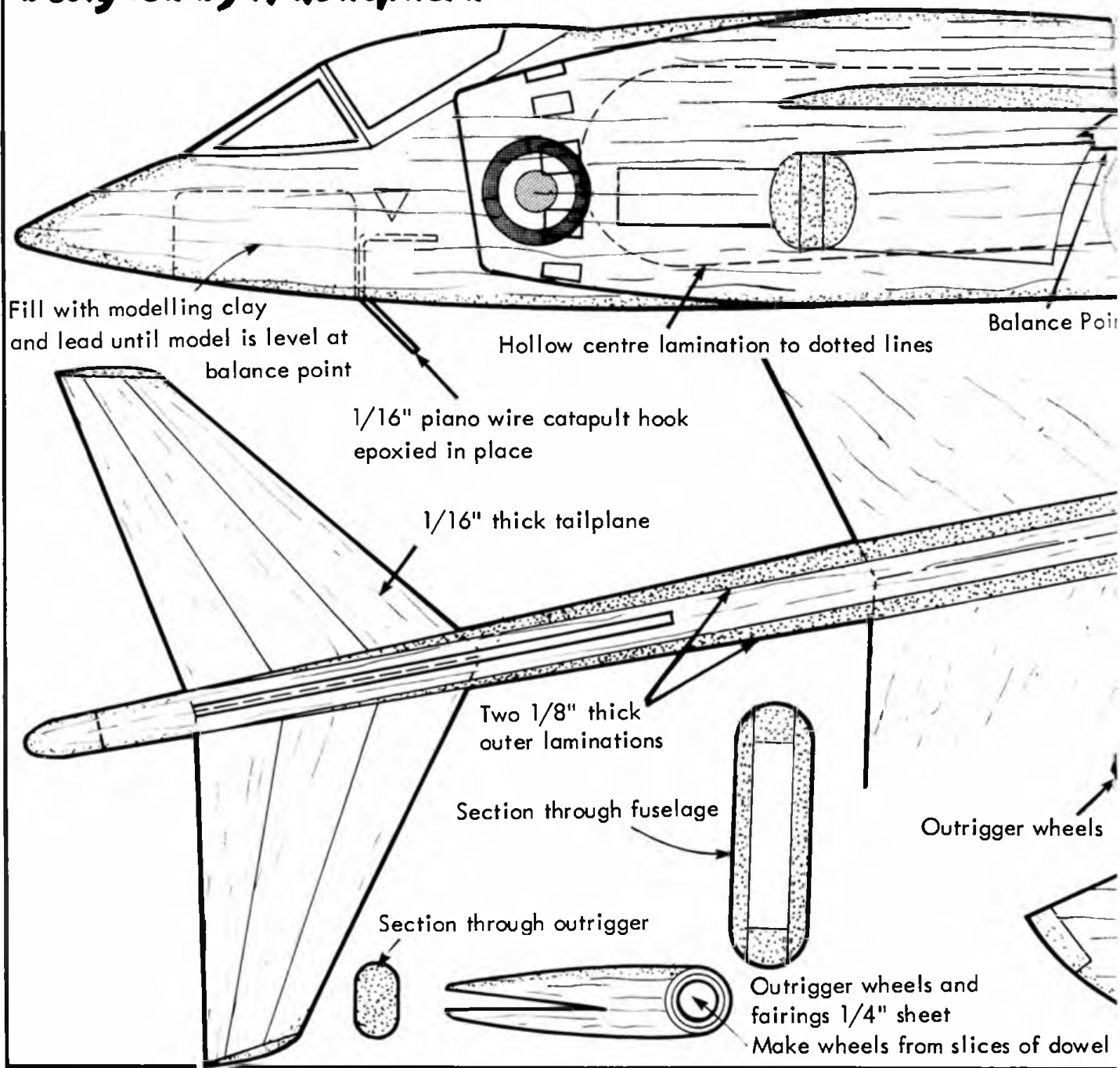
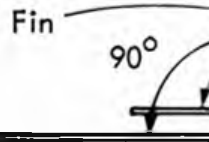
28" x 2" x $\frac{1}{8}$ " medium balsa sheet
14" x 4" x $\frac{1}{8}$ " medium balsa sheet
6" x 2" x $\frac{1}{8}$ " medium balsa sheet
14" x 2" x $\frac{1}{4}$ " hard balsa sheet
3" x 4" of 1mm ply
2" of $\frac{1}{16}$ " music wire
1 tube of balsa cement

Tools required

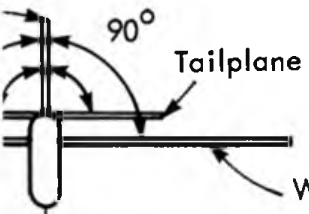
Modelling knife
Straight pins
Ball point pen
Small pair of pliers
12" steel ruler
Flat building board 24" x 6" x $\frac{1}{2}$ "

HAWKER SIDDELEY HARRIER

Designed By P.A. Shepherd



Before flying look at the model from nose or tail and check that wings, tailplane and fin are square to each other



Sand wing to this section

1mm ply fin

Slot centre lamination 1/16" deep fin and underfin

Round off edges of tailplane

1mm ply underfin

Slots right through fuselage for wing and tailplane

nt

DECORATE WITH BALL POINT PEN

WINGS AND TAILPLANE ARE BUILT FLAT, WITHOUT DIHEDRAL

Centre lamination 1/4" thick medium hard balsa

Wing 1/8" thick medium sheet balsa

Decal markings

Joint wing panels on this line



Aeromodeller PHOTO PRIZE FEATURE



Fliar Phil tells you how to enter our Photo Feature and win a Cosina SLR Camera.



All entries should be good quality black and white or colour prints. Your name and address should be on the back of the print. As many details as possible should be given about the model and its construction. Send all entries to: Aeromodeller Photo Prize Feature, PO Box 35, Wolsley House, Wolsley Road, Hemel Hempstead, Herts., HP2 4SS. Photos will be returned after publication.



In a quandary as to who should supervise *Aeromodeller's* great photo-contest, your respected Editor recalled that a number of years ago in the centre pages of *Aeromodeller*, an 'aerobod' rejoicing in the name of Fliar Phil, contributed a photo-page featuring readers' models, which enjoyed considerable popularity. So, (at great expense) Fliar Phil has been recalled from the past to conduct *Aeromodeller's* photo-contest. The Fliar Phil cartoons, by the way, are not intended to show you *how* to produce your prize winning photo — only *how not to!*

Photo 1. The first entry to get our photo-contest 'airborne' is this fine 'in action' photograph of a short Stirling, powered by four Telco CO^o motors, and radio controlled, by Don Sankey of Leyton London. Don should know all there is to know about a Stirling — he piloted one in WWII.

Photo 2. Coming in for a three-point landing is 'Mamselle', by R Palmer of Bedfordshire. His photograph captures that





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Schnuerle up front. In the air, Fliar Phil feels it must present a sight not easily forgotten. It is a Mong Sport biplane, and is called "Love American style". A great example of the control-line builders art. The real aircraft is owned by a Dentist, Mr. Bob Clark, of California. Peter Miller sent us this photograph. He comes from Suffolk, and just *has* to be this month's winner. Congratulations Peter!

Photo 6. In the Keil Kraft series of flying scale rubber powered models, the Ercoupe was always an intriguing model to 'have a go at', and none. Fliar Phil is certain, has been more realistically portrayed than this excellently built version by K. Malcolm of Lancashire.

Photo 7. No-one can dispute the fact that the D.H. Mosquito was a beautiful (and deadly) aeroplane. In this photograph of the famous 'Mozzie', R. Yeowell of Wiltshire (C/L by the way) epitomises the speed and grace of this truly great aeroplane.

Well, that's the lot for this month. Let's have a lot more photos for our next contest. Remember *someone* has got to win — and that someone could be YOU!

Ray Malmström

certain 'vintage magic' of the ever popular free flight power job.

Photo 3. 'The Viper' — a deadly name for what. Fliar Phil thinks, must be a pretty deadly stunt/combat job. A nice photograph sent by Mr. Perkins, who hails from the Isle of Wight. No doubt he is good at controlling its sting!

Photo 4. It is 'confession time' now — and Fliar Phil admits that he has a weakness for those 'golden oldies' and they do not come more 'golden' than Harry Handleby's 'Sparky'. It was a highly successful early R/C model. This example is by R. Nicholson of Essex, power is an Enya 09 and vintage R/C equipment is the RCM&E Simpletone Tx/Rx, via an Elmic Compact, and a Fred Rising 4 part escapement, giving rudder, elevator and engine control.

Photo 5. A model — or the real thing? Fliar Phil, who has seen photographs of more fine models than he can possibly remember, could hardly tell the difference from this superb photograph. Built from full-size construction Plans, it has a Fox 45



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Engine Test

by Peter Chinn

ENYA 40-4C Four stroke

SPECIFICATION

Type: Single-cylinder, glowplug ignition, four-stroke, with push-rod-operated overhead valves. Twin ball bearing crankshaft. Twin camshafts supported in bronze bushed bearings.

Bore: 22.3mm (0.8780in.)

Stroke: 17.0mm (0.6693in.)

Swept volume: 6.640cc (0.4052cu.in.)

Stroke/bore ratio: 0.762:1

Measured compression ratio: 7.0:1 (6.4:1 with decompression gasket)

Measured valve timing:

Inlet opens: 25° BTDC

Inlet closes: 85° ABDC

Exhaust opens: 57° BBDC

Exhaust closes: 43° ATDC

Recommended tappet clearance: 0.05-0.10mm (0.002-0.004in.)

Checked weight: 369 grammes (13.0 oz)

GENERAL STRUCTURAL DATA

Main casting: Pressure diecast aluminium alloy, comprising crankcase and full-length finned cylinder casing and fitted with two 4mm i.d. bronze bushes supporting forward ends of camshafts.

Crankshaft: One-piece, hardened and ground, with 10mm o.d. main journal, bored 6mm to reduce weight, 7mm o.d. front journal and 5.5mm solid crankpin on T-type crankweb. Shaft end reduced to 6mm dia. and threaded M6 x 1.0 for prop nut. Machined aluminium alloy prop driver keyed to two flats on shaft.

Front housing: Pressure diecast aluminium alloy containing one 7 x 19mm 6-ball NSK steel-caged shielded bearing at front and one 10 x 22mm 9-ball NSK steel-caged bearing at rear. Housing attached to crankcase with four M3 x 0.5 Allen cap screws.

Heading Enya 40-4C features exposed valve springs and rocker arms. Some four-stroke enthusiasts prefer to be able to see valve gear working.

Enya 40-4C has same external dimensions as previous 35-4C model and is only 1.3 oz heavier. Its 13.3 per cent larger swept volume offers improved performance, particularly on larger sized props.

Cylinder and piston assembly: Drop-in steel cylinder liner, located in main casting by flange at top and having 1.2mm wall thickness. Flat crowned machined aluminium alloy piston with single compression-ring. Fully floating 5mm o.d. tubular gudgeon-pin with brass pads. Forged aluminium alloy connecting-rod, 29mm between centres, with bronze bushed bearings at both ends. Reciprocating weights: piston and ring 7.0g; gudgeon-pin 2.2g; conrod 4.1g.

Timing case: Pressure diecast aluminium alloy, fitted with two 4mm i.d. bronze bushes supporting rear ends of camshafts. Timing case and rear cover plate attached to crankcase with four 25mm M2.5 x 0.45 Allen cap screws.

Camshafts and timing gears: Hardened steel timing pinion and shaft, with integral 26mm dia. crankpin-drive pickup disc, supported in 8 x 16mm 9-ball steel-caged bearing in crankcase wall at front and in 5 x 10mm 7-ball steel caged bearing in timing case at rear. Separate inlet and exhaust camshafts, side by side, each with 36-tooth 15mm dia. timing gear. Round flank cams giving 1.87mm lift.

Cylinder head: Pressure diecast aluminium alloy with integral rocker shaft posts and one-piece cup type valve guides and seats. Parallel side-by-side valves, inclined at 10 deg. in transverse wedge shaped combustion chamber with flat squish areas front and rear. Glowplug located forward of valves and inclined at 30 deg. Head secured to cylinder with five M3 x 0.5 Allen cap screws. No gasket fitted. Optional 0.3mm soft aluminium gasket supplied for reducing compression-ratio.

Valves and valve gear: Valves 26mm long with 8mm dia. heads and 2.5mm dia. stems. Valve springs retained by familiar 'full size' method: tapered collar, made in two halves, fits into groove in valve stem and is locked in place by pressure of valve spring cap. Cast steel rocker-arms with screw and locknut adjustment for setting tappet clearances. Rockers mounted on 4mm dia. hardened steel rocker shaft pressed into support posts on head and retained by E-clips. Rockers aligned with valve stems by light coil spring on rocker shaft. Push-rods, 45mm long x 2.5mm diameter, of aluminium alloy with hardened steel domed ends, operated by 5mm dia. x 14mm long hardened steel cam followers running directly in timing case material.

Carburettor: Barrel-throttle type with fixed automatic mixture control supplemented by airbleed for adjusting idling mixture. Pressure diecast aluminium alloy body. Ground steel throttle barrel. Conventional needle-valve assembly with flexible control stem. Choke diameter 4.5mm. Effective choke area of 12 sq.mm. Carburettor mounted at an angle, intake downwards, by means of single screw, to vertical lug on timing case.

Inlet and exhaust pipes: Chromium plated 6mm i.d. copper tube. At lower end, inlet pipe plugs into carburettor with O-ring seal. At top end pipe has 9mm o.d. collar which is inserted into cylinder head and secured with 3mm set screw. Exhaust pipe attached to head in same manner.

TEST CONDITIONS

Running time prior to test: Approx 4 hours.

Fuels used: (i) 75 per cent methanol, 20 per cent castor-oil, 5 per cent nitromethane (running-in); (ii) 72 per cent methanol, 18 per cent castor-oil, 10 per cent nitromethane (tests).

Glowplugs used: Enya No. 3 platinum-rhodium element, 1.5 volt.

Silencer used: None.

Air temperature: 10°C.

Barometric pressure: 767mm (30.2in.) Hg

Relative humidity: 57 per cent

TEST RESULTS

Power output, gross: 0.47 bhp at 11,500 rpm.

Torque, gross: 48 oz.in. at 8,000 rpm.

Equivalent b.m.e.p.: 93 lb./sq.in.

Specific output, gross: 71 bhp/litre

Power/weight ratio, gross: 0.58 bhp/lb.

Manufacturer: Enya Metal Products Co. Ltd., Nerimaku, Tokyo 176, Japan.

U.K. Distribution: Ripmax Ltd., Ripmax Corner, Green Street, Enfield EN3 7SJ.

U.K. Service: John D. Haytree, The Haven, Rixey Park, Chudleigh, Newton Abbot, Devon TQ14 0AN.

The October 1982 issue saw the first four-stroke engine to be featured in the *Aeromodeller* Engine Test series, in the shape of the 6.5cc O.S. FS-40. We chose this engine, as an introduction to four-strokes, because it had become the most popular four-stroke on the U.K. market (and probably in world markets in general) by offering the modeller the fascination of a four-stroke at a somewhat lower price than had hitherto applied to an engine of comparable quality.

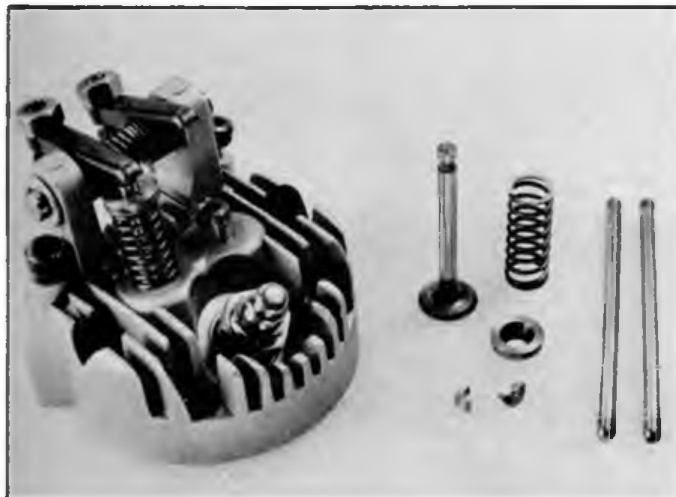
One of the results of this has been a lowering of the U.K. prices of rival products, among them the similarly sized Enya 40-4C that we have chosen for this, our second four-stroke report. Like the O.S., the Enya is a pushrod OHV unit and overall levels of performance of the two motors are not dissimilar, but the Enya is totally different in design and construction and, alongside the O.S., makes for a most interesting study of the way in which these two Japanese manufacturers have approached the same basic problems.

Outwardly, the most obvious differences are to be found in the valve mechanism. Whereas the valves, springs, rockers and pushrods are all enclosed on the O.S., these remain exposed on the Enya — something that is not unwelcome to many four-stroke enthusiasts who like the idea of being able to see the valve gear at work — even if 'at work' means seeing only a blur.

The lack of a rocket box on top of the cylinder head gives the Enya more of a squat 'short-stroke' appearance — which, in fact, is not entirely illusory; the 40-4C, essentially a bored version of Enya's first four-stroke, the 35-4C, has a stroke of 17mm, giving a very low stroke/bore ratio of only 0.762:1. Combustion chamber shapes are different; that of the O.S. is discoidal with vertical valves and inclined glowplug behind them, whereas the Enya has a transverse wedge pattern with inclined valves and the glowplug at the front.

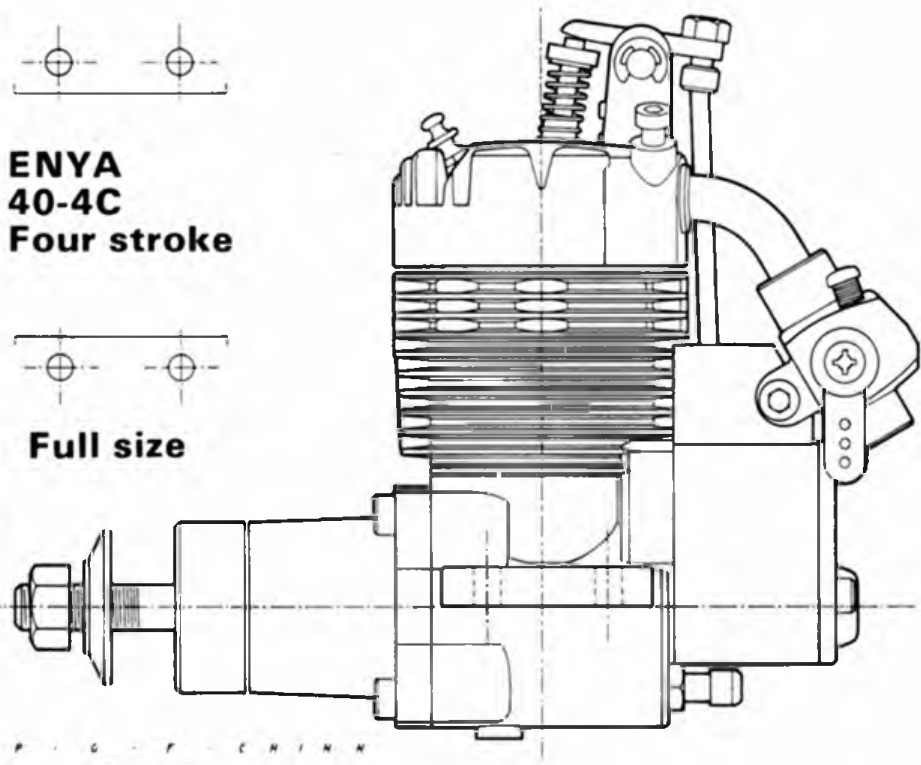
It will be seen that the Enya's pushrods

Cylinder-head showing Enya's business-like valve gear with one valve and spring assembly removed. On right are its bi-metallic pushrods



ENYA 40-4C Four stroke

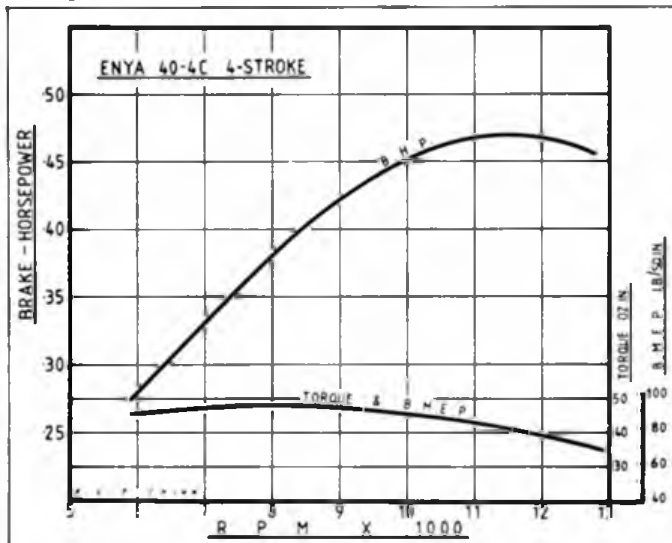
Full size



are behind the cylinder rather than in front of it. In the O.S., the pushrods are operated by a single cross camshaft, driven directly from the crankshaft by helical gearing and supported at each end by ball journal bearings housed in the main casting. The Enya's pushrods, on the other hand, are operated by twin, side by side camshafts, carried in bronze bushes and spur gear driven from a separate twin ball bearing supported timing shaft at the rear of the engine, driven by the crankpin, the whole being enclosed in a separate timing case attached to the back of the crankcase.

Despite these many design differences,

the two engines do not differ very much in overall performance. The Enya was a trifle down on the O.S. when pulling a big prop, but went on to develop a slightly higher peak bhp. An ounce heavier and fractionally larger in cylinder capacity, the Enya's power/weight ratio was marginally less than that of the O.S. but its specific output was slightly higher. Atmospheric conditions were a little in the Enya's favour. However, it should be noted that all these statistics apply only to single test samples of each engine and differences might very well be either reversed, or amplified, in a recheck of other examples.



PERFORMANCE

The Enya 40-4C is supplied in the U.K. without a glowplug. The manufacturer recommends the Enya No. 3 platinum-rhodium filament 1.5 volt plug as being the best for this engine and we therefore used these (imported from Japan) for our tests. However, it should be pointed out that the No. 3 is a standard (hot rated) plug — not a special 4-stroke type — and there would appear to be no reason why the 40-4C should not perform satisfactorily on a similarly rated plug of another make more readily available in the U.K. Some experiment with different plugs may, in this case, be necessary.

A useful instruction leaflet is supplied with the Enya 40-4C, together with a small spanner and screwdriver for adjusting tappet clearances and a pair of Allen keys for the assembly screws. The instruction leaflet recommends the use of a fuel containing 18-20 per cent castor-oil and 5-15 per cent nitromethane. We followed these recommendations, using 18 per cent castor-oil and 10 per cent nitromethane for the test fuel, although it is probable that a lower oil content would have been permissible. Higher percentages of nitromethane did not significantly increase power.

Starting the engine, following the procedure outlined in the instruction leaflet, is no problem. The procedure can be simplified if an electric starter is used. The drill that was adopted with the test motor was as follows: 1) open throttle and choke intake while rotating prop sufficiently to raise fuel to carb; 2) flick prop through one more suction stroke (no choke) to draw fuel into cylinder; 3) pull prop through compression to make quite sure cylinder is not overprimed; 4) close throttle to just above idle setting, energise plug and apply starter. This normally gave a start within two or three seconds. Hot restarts usually called for no more than momentary application of the plug lead and starter — i.e. no choking.

As the performance curves show, our test model 40-4C reached its maximum torque at just over 8,000 rpm. Torque declined quite evenly as load was reduced,

as a result of which peak power output was realised at between 11,000 and 12,000 rpm, a figure of 0.47 bhp being determined at 11,500.

Typical prop revs recorded with the 40-4C included 6,800 rpm on a 13×4 Punctilio beech, 7,500 on a 12×6 Top Flite maple, 7,900 on a 12×5 Top Flite maple, 9,000 on a 12×4 Zinger maple, 9,500 on an 11×6 Power Prop maple, 9,600 on an 11×5 Punctilio beech, 9,750 on a 10×7 Zinger maple, 10,250 on a 10×6 Power Prop maple and 10,900 rpm on a 10×5 Zinger maple. The throttle worked well, with reliable transition between fast and slow and with idling down to 2,200-2,400 rpm (depending on prop size) which, incidentally is better than the manufacturer's claims.

It may be observed that the 40-4C accumulated a somewhat longer period of running, prior to testing, than is customary in these reports. This was due to a slight problem that arose at the beginning, when it was found that the 40-4C could not be persuaded to run without intermittent misfiring. All the usual checks were made, the engine was tried with and without its decompression gasket and various fuel mixtures and glowplugs were also tried. The engine was also given a further series of checks under different climatic conditions, a week or two later, but the problem persisted. As a result of all this, the normal running-in period was more than doubled.

At the time, the 40-4C had only just gone into production. A single test sample had been submitted and the only course open was to postpone further testing until a replacement unit could be obtained. However, the opportunity was taken to dismantle the motor to enable its components to be examined and photographed. In fact, all the parts were in perfect condition and, in due course, the 40-4C was re-assembled. At this point, it was decided to try the engine just once more. Whereupon

it behaved perfectly.

It is not exactly a rare occurrence to encounter a problem when testing an engine but, almost invariably, the cause is detected without difficulty and the fault is usually put right at the same time. The cause of this particular quirk has yet to be positively established, but it seems that, somewhere between the engine's being dismantled and reassembled again, the cause of the trouble was removed.

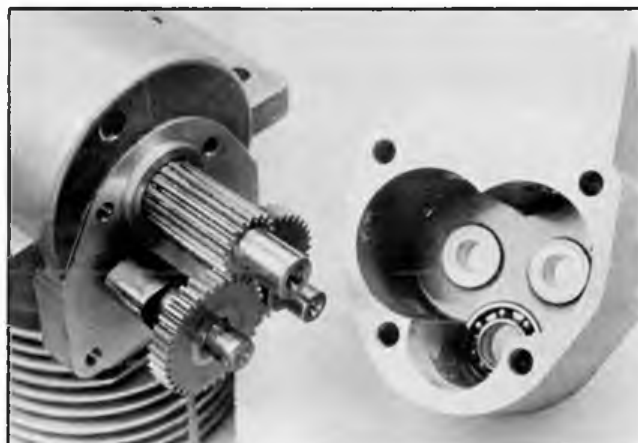
The one problem that had occurred with the 40-4C's predecessor, the 35-4C, namely, a tendency to detonate (a phenomenon which, as reported by other users, can result in the prop being kicked off, appears to have been eliminated in the 40-4C. The 40-4C's compression ratio (measured at 7.0:1) is substantially lower than that of the 35-4C (8.5:1 measured) and this seems to have cured the problem.

Detonation, knocking or pinking can occur when an engine is running at full throttle under load and the fuel/air mixture is made too weak — as when trying to squeeze a few extra revs from the motor. We found that it was just possible to cause the 40-4C to 'pink' if the needle-valve was leaned out too far when the engine was hot, but this ceased immediately if the needle-valve was reopened again instantly. Compression ratio is one of the other factors involved in the cause of detonation and it was found that, by adding the decompression gasket supplied with the engine, detonation could be entirely eliminated: the engine then simply cut out when the mixture was leaned out too far.

Under all normal conditions, the head gasket will not be necessary, but it is there to use if the owner should encounter a problem of this nature. Remember that, if the gasket is fitted, it will be necessary to readjust the tappet clearances.

Like all Enya motors, this is a well built engine and, with normal care and attention, it should give its owner long and trouble-free service.

Below left, basically a larger bore version of the Enya 35-4C, the 40-4C also differs from its smaller brother in having a ringed piston running in a steel cylinder liner instead of a ringless piston in a chromed aluminium liner. Right, a unique feature of all Enya four-strokes (35-4C, 40-4C, 60-4C and 90-4C) is their rear twin-camshaft layout.



STONELEIGH CLASSIC

A CONTROL LINE COMPETITION FOR BEGINNERS

John Stroud describes the rules for a competition to be held at the Model Craft and Country Show on May 28-30.

THOSE who attended the Model Engineer Exhibition this year may have noticed two control line trainers of the classic tradition on show. They have been designed by John Stroud ready for publication in our next issue of *Aeromodeller*. The idea is to run two contests at the Stoneleigh event on May 29 and 30, 1983. Entrants below the age of 17 are invited to construct a 'Stoneleigh Classic' of either size for .8-1.5cc or 1.5-2.5cc motors and turn up to demonstrate their model. Marks will be awarded for construction, engine handling and non-aerobatic flying. The prizes are fabulous and the result of very generous support by the Trade. We have already been promised some R/C outfits, lots of engines, kits, fuel and a host of useful modelling materials. It all adds up to about £250 of prizes EACH DAY. We look forward to being trampled in the rush — it's not often that Trade Sponsors donate a total of £500 worth of prizes.

The aims of the contest are two-fold. Firstly, we wish to encourage the competitors to enjoy themselves by building and flying their model and at the same time

to stand a chance of winning some very worthwhile prizes. Secondly, we wish to demonstrate to the crowds a great hobby within most people's reach which they can consider taking up. Competitors can do themselves and the hobby some real service.

Clubs, shops and experienced modellers are therefore asked to encourage anyone



they know who might be interested in competing to give it a go. The plan will be published in the April '83 issue (available mid March) which will give more than eight weeks for preparation. Here is the list of materials so that the keen ones can be ready to start construction as soon as possible.

Materials list

| | Classic 45 | Classic 60 | | |
|-------------------|--|--------------------------|-------------------|---|
| 6mm medium balsa | 36in x 3in | 36in x 4in | Horn | thickness lightweight for leadouts One plastic horn and fixing screws |
| 3mm medium balsa | 36in x 4in | 36in x 4in | Link | One control link to fit spoke thread |
| 12mm medium balsa | 14in x 1 1/4in | 17in x 2in | Bellcrank | 2in bellcrank |
| 3mm ply | Offcut roughly | 8in x 3in | Solar film finish | As required to obtain colour scheme plus small tin of fuel proofer |
| 1/4in ply | Offcut roughly | 3in x 3in | Paint finish | Clear dope, thinners coloured dope, fuel proofer and tissue |
| Nuts and bolts | 4 nuts and bolts to fit engine and one to secure bellcrank | | Glue | One tube of PVA glue |
| Bearer wood | 2 off 9mm x 9mm x 95mm | 2 off 12mm x 9mm x 130mm | Acetate sheet | Offcut 2in x 2in approx |
| Spinner | 1 1/2in | 1 1/2in | U C clamps | Set of 4 clamps and fixing screws |
| Wire | 36in 12swg | | Fuel tank | Size to suit engine. Can be made as shown on the plan from template, or bought complete from a model shop |
| Wheels | 1 1/2in | 2in | | |
| Laystrate | To make lines as required Use heavyweight or double | | | |

ELECTROPLATING FOR SCALE MODELS

by Bill Dennis

SOME time ago I came across an article in an American magazine called "World War One Aeroplanes." Briefly, this described a method for making 'impossible shapes,' like hollow exhaust stacks, by the electro-deposition (plating) of copper onto a wax mould, using graphite in the wax as a conductor.

I did not have much success with the method as described, but a slight variation gave good results. Firstly, a model of the item is made, and for hollow or re-entrant shapes, a wax is used — I use beeswax. This is melted and poured into suitable moulds. For the exhaust I poured the wax into rubber tubing which had been slit down one side to enable me to remove the rods of solid wax. These are bent to shape under the hot tap and can be joined using a

hot object to melt the parts together, and more wax to fill gaps. The model is finished using a sharp blade to remove excess.

The wax model forms the cathode (negative) in the plating process, and is connected to a power supply by wires. I used thick enamelled copper wire, and simply pushed the cleared ends into the model. A little powdered graphite — say 20 per cent — in the wax helps give a good connection. For a large object, several connections must be used as there is a voltage drop away from the input which can give thin or unplated areas.

The next step is to make the surface of the model conductive by giving it a coat of graphite in aqueous solution, obtainable from engineering suppliers. I understand DIY jewellery suppliers have silver paint for a similar purpose. The graphite must also of course, be painted over the wire connections to give electrical continuity (Fig. 1).

The circuitry is simple (Fig. 2). The anode (positive) is a piece of copper, larger than the cathode, and the two are placed in

the plating solution about 2in. apart. The solution is as follows: 200g copper sulphate, 30g sulphuric acid (care!) and one litre of water.

For those with no experience of handling acids, the acid is added carefully to the water, *not* vice versa.

The solution must be well stirred during plating to give an even deposit. The power supply is set to give 1 amp or less for a small object, at low voltage. Plating occurs quite quickly and should be a salmon pink colour — dull red means you are going too fast. If any part is not plating, put some graphite onto it.

When the plating is thick enough, the model is filed and sanded smooth, and the wax melted out in boiling water (Fig. 3).

If anyone is reading this who is also an expert in electro-plating, I am sure they will be horrified by my simplistic description. I know little about the subject but I got good results by trial and error. The results are worth the effort and the possible applications enormous.

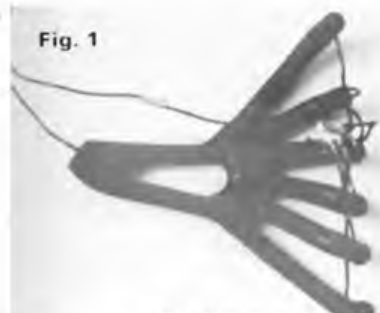


Fig. 1

The wax model of the exhaust stack connected up and painted with graphite solution. Below: schematic diagram of plating process.

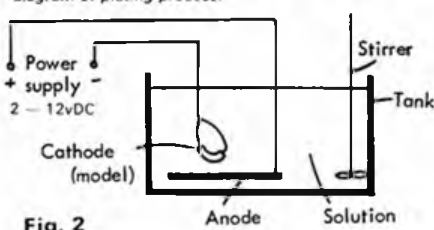
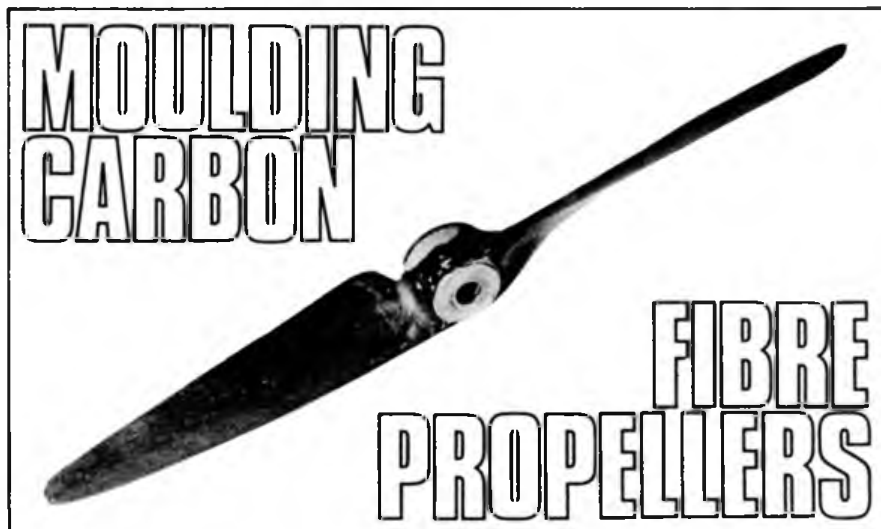


Fig. 2



Fig. 3

After plating and partial filing. The wax has been melted out here but is best left in until the filing is complete.



Last month Jim McCann described the basic techniques of producing moulds, he concludes this month with alternative methods.

Double diameter centre rods

Several Team Racing exponents use sleeved prop nuts to facilitate quick prop changes, the replacement prop being pre-fitted with the nut. This can lead to two sets of circumstances, the pattern prop having standard shaft sized hole when a sleeved nut is to be used, and vice versa. In both cases the mould will be made using the standard shaft size only, so that once made, the mould will have the facility of turning out a prop with whatever size hole is required. All that is required is a sleeve, turned from steel, a sliding fit over the centre rod, the outside diameter that of the larger hole required and exactly the prop thickness in depth. If the pattern has the larger hole, use the sleeve to centralise the prop when mould-making, but if the pattern has shaft size hole, the sleeve is only used during the prop lay-up stage. This is the system used when I made the Larsson series of T/R props.

Moulding the propeller

In the '72 article the recommendation was to use PVA release agent exclusively, and while this works well enough, it was found that in the long term the surface of the mould was gradually eroded and lost the fine smooth surface which was such a feature of the process. A 'belt and braces' system was evolved, and several of the moulds so treated have produced in excess of 500 props each, without repair. The newly made mould is allowed to age for several days, and then given six coats of Mirror Glaze Mold (sic) release wax, applied at minimum intervals of six hours. The surfaces will now have a hard wax coating with high gloss, and over this one coat of PVA release agent is applied. When dry, the lay-up process can be started.

Subsequent re-treatment is one coat of mirror glaze, polished, and PVA mirror glaze and resins are usually available from your local friendly glass fibre moulder, but when buying small quantities the supply of a suitable container is appreciated.

Materials required for this operation are:

Carbon fibre in 'tows' of 10,000 filaments, lightly bonded with an unhardened epoxy resin to facilitate handling. This resin does not interfere with the curing of a polyester resin.

Glass fibre. The most convenient form is glass rovings. These are filaments lightly bonded with a polyester soluble resin to form small bundles like a fine untwisted thread. The material I use is Deeglas Rovings, Type A 29 60 strand.

Polyester Resins. These are usually readily available, and Bondaglass resin has given good results. The props which were tested were made using my usual resin, Crystic PA Type 404.

Epoxy Resins. Araldite MY753 with hardener HY 956 as supplied by Ciba-Giegy (UK) Ltd., is ideal. Viscosity is just about right for this application, and has a good pot life. It is however, about three or four times more expensive than polyesters.

Pigments. Carbon fibre is black, as would be expected, and there is no point in adding pigments to a carbon fibre moulding, unless the percentage of CF is low, when black pigment can be used to give a uniform appearance. Mouldings using glass fibre only can be pigmented in any one of several colours.

Now for the actual moulding. Throughout the following description, the text refers basically to producing a typical 7in. diameter free-flight type propeller, and the budding prop-moulder will find that some variations are necessary according to the propeller he wishes to mould.

For example, a typical speed prop would need considerably less carbon fibre to cover the blade width than one destined for use on an R/C 60 powered model, as will the total amount of material used. It is essential that all the carbon and glass-fibre is cut to length before the resin is even mixed, as some resin is almost bound to adhere to the fingers — and then you will be in trouble! For each of the upper moulds, cut two lengths of carbon fibre $\frac{1}{2}$ in. longer than the mould, two approximately $\frac{1}{4}$ in. shorter.

The lower mould requires four lengths $\frac{1}{2}$ in. more than the prop, one the length of the prop and then 3.4 more progressively

$\frac{1}{2}$ in. shorter. Now cut several more lengths varying between 1in. less than the prop down to 1in. long, altogether using about 4m of carbon fibre. Glass fibre is now readied — one length 1in. short of each tip with successive strands progressively $\frac{1}{2}$ in. shorter.

Next prepare the resin. It is preferable to mix the resin in a shallow container to retard exothermic heat build-up and prolong pot life. After mixing, allow to stand for 10-15 minutes to permit the air bubbles to clear, then apply a thin coat to the prop area of the mould. Take one of the upper moulds and lay the longer lengths along the leading and trailing edges from the centre to beyond the tip, spreading the fibres out to $\frac{3}{16}$ in. - $\frac{1}{4}$ in. wide and crossing them at the tip to provide a measure of lateral binding. This will leave a space between the leading and trailing edges — fill this with the two shorter lengths (more for a wider blade of course), spreading the carbon fibres in order to cover and adding resin as you go in order to impregnate. Do not apply resin with a brush, as frightful tangles will result. Instead, I use a piece of $\frac{1}{4}$ in. x $\frac{1}{16}$ in. spruce cut to a chisel edge and sanded smooth. This is ideal for spreading the fibres and squeezing out air bubbles. Now for the lower mould. Apply the four long lengths in the following order: LE/TE/LE/TE crossing the fibres at the tips once more. The space between is then filled with shorter lengths. A good layer of carbon is laid up (approximately $\frac{1}{16}$ in. thick) being careful to get complete coverage around the centre pin, the 1in. lengths are useful here. Glass fibre can now be applied — starting with the longest piece.

Keep the glass-fibre away from the LE and TE. The glass fibre is laid on alternative sides of the centre rod. When all of this material is applied, continue laying-in carbon fibre with the lay up following the original thickness pattern. As the laying up proceeds, keep adding resin in just sufficient quantities to impregnate thoroughly, taking care to avoid air bubbles.

The mould should by now be filled, and if in doubt slightly over-fill to ensure absence of unfilled spaces and trapped air — in a hand-pressed moulding an acceptable proportion of resin to fibre is 60:40. It is preferable to have resin-rich areas rather than risk imperfect impregnation which would result in an enormous fall in both strength and rigidity.

Apply a final thin coat of resin to both upper and lower parts, and place the tops in position, leaving a $\frac{1}{8}$ in. gap between the two tops. Squeeze gently to expel surplus resin, then still pressing, slide the tops centrally in position up against the centre rod — then press together as hard as possible. Surplus resin will continue to ooze out and can be wiped away.

Using G clamps carefully but firmly clamp the mould closed, avoiding excess pressure, as this only stressed the mould. To spread the load on the tops, interpose thick steel washers or base off-cuts between the plastic padding surface and the clamp. Now place the mould in a warm place, or give it a quick bake in an oven not exceeding 100°C for ten minutes or until the resin has set. Allow the mould to cool naturally to ambient, remove the clamps and pull out the centre rod. If the centre rod has been used with a sleeve, resin may

Metal mould for a modded Cox 6 · 3 free flight propeller, produced by the metal spray process as described in the text

produce the symptoms of seize-up, so leave the centre rod alone and remove the tops. Any resin can now be removed and the sleeved rod can be removed, followed by the prop.

The mould is parted by inserting a knife blade between the base plate and the outer ends of the top moulds. The tops should pop off easily but if reluctant to come off, ensure that there is no surplus resin binding the tops to the base plates at the sides. Usually the tops come off leaving the moulding on the base. To free the prop, gently raise both of the tips away from the mould until released, then free the centre by sliding a pointed knife between the prop and the base, being careful not to touch the plastic padding contours. Trim off the flash with a fine fretsaw, about $\frac{1}{16}$ in. from the prop outline, finishing off with wet or dry. Thinning and balancing is best done with wet or dry paper, used wet, starting with 240 grade, then 400, finishing with 600. Finally, a coat of clear polyurethane will give a high gloss and seal the surface against the possible, but unlikely adverse effects of oil and fuel. The mould can be cleaned by soaking in warm water. The release agent is water soluble and washes off easily.

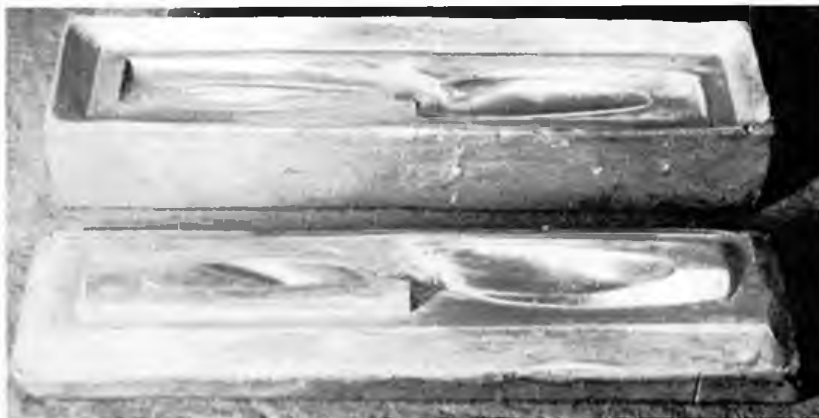
In the interests of safety all props, regardless of their material, should be critically inspected before each flight for possible damage and cracks. I am informed that a local modeller had hospital treatment for a severe eye injury caused by a shed blade. As was anticipated, the prop was of nylon — not on a racing 40 or even on a 15, but on a TD.0.010! Any motor can fling a prop blade, if the prop is in a damaged or fatigued state, so please give your props more than a cursory glance, and if in doubt scrap it and fit a new one (of carbon fibre?).

Material sources

Since 1972, Morganite Modmor Ltd. are no longer manufacturing carbon fibre, but supplies are available through some of the better model shops who cater for the true modeller. As mentioned, the remaining requirements can be obtained from a sympathetic commercial moulder, and the Yellow Pages will provide a local source. Plastic padding is available from most hardware and motorists' shops.

Post 1972 developments

Another fibre became available in the form of Kevlar, having properties falling somewhat between those of glass and carbon fibres, and much used in the aircraft industry and Formula One Grand Prix Car Constructors. Only one prop was made from Kevlar, and a whole catalogue of snags arose. First immediate problem was in cutting the stuff to length — almost impossible! Eventually sufficient was prepared to make a prop, and the actual moulding proved quite straightforward. Then came the second and major problem, removing the flash and balancing. Kevlar has the amazing property of resisting cut-



ting by abrasives such as wet or dry while allowing the resin binder to be rubbed down. The result is the appearance of a fine coating of fibres on the surface, and as rubbing down proceeds the effect is rather like that of a carpet growing its own pile! Interesting but not really suitable for our needs. Kevlar was discarded for model prop use, and the conventional fibres used exclusively.

Metal moulds

Metal moulds were thought to be attractive alternatives to those made from plastic padding enabling faster production and more resistant to abuse. A local company (now no longer trading) specialising in precision castings in stainless steel was approached and the problem discussed, the idea being to reproduce my plastic padding moulds in stainless steel. While the casting system produced good moulds for such items as rubber heels for shoes etc., the system was not precise enough for props, so this approach produced negative results. This is mentioned to deter others from following this non-productive avenue.

Shortly after this, I was introduced to a Birmingham manufacturer of metal spraying equipment. A telephone call arranged a visit, and the process was demonstrated by exactly reproducing a mould from plastic padding that I had made. The Birmingham company was in business to promote their equipment, and to buy outright was too expensive for the relatively limited use that was anticipated. However, there are numerous metal sprayers who could do the work using this equipment. The process is very interesting, and the results superb. A special alloy of antimony, tin and cadmium is melted in a special spray gun, and the alloy is sprayed on a PVA coated pattern, and exactly reproduces the item with the finest detail faithfully copied. The interesting thing about this alloy is that it is virtually cold when it contacts the pattern, so there is no over-heating or charring, in fact it is possible to use a bar of chocolate as a pattern without melting it. The alloy is sprayed to a thickness of about 2mm, and this metal shell reinforced with a backing of an epoxy compound. The metal surfaces can be highly polished using Duraglit or similar, and the mould requires only one coat or PVA release agent to produce clean release and super props, only requiring trimming and balancing. Yellow Pages may be a good guide to metal sprayers, but be

prepared to find the process rather expensive, probably in the region of £50 per mould. If this sounds uneconomic, then plastic padding process will do all that is expected of it and is the way I produced my 10,000 props.

Additional tips

The serious production of props makes the purchase of an accurate pitch gauge essential, for it is imperative that the pattern is pre-checked and the first prop from a mould is measured and the readings compared, taking measurements from both blades, of course! If it is found necessary to re-cast one blade to correct an inaccuracy, it is not necessary to remove the whole of the lower profile from the base, simply file down the profile as outlined by the blade until there is a 2 or 3mm clearance, and re-cast using thin layers of plastic padding spread on the filed surface and the back of the blade, ensuring absence of voids. The plastic padding which is squeezed out is trimmed off and the mould cleaned up with fine wet or dry. It will be necessary to re-cast a new upper part for this blade.

When making a mould from a single bladed pattern, one of the difficulties is to get the second blade diametrically opposite the first, although marking the pattern at the tip and using reference points will help. When the mould is fully finished and the first prop has been made and trimmed, replace the prop in the mould 180 degrees rotated, so that the blades are in the opposite halves from which they were produced. Any error in alignment will show by the prop not fitting correctly. With one blade correctly placed within the outline, the error will show as the other blade being out of register, the apparent error is actually twice that of the true error, so when re-casting bear this in mind, otherwise the same error will be perpetuated but angled the other way. In this matter, be your own most severe critic, for unless the prop is accurate there will be the greatest difficulty in achieving good balance, particularly dynamic balance.

This up-date of the original article is the result of chatting with modellers who have used this system and correspondence received, and will hopefully clear up some aspects of prop moulding. The general consensus is that the system is straightforward, and the results gratifying. If you have not yet had a go at moulding, why not start now?

FROM THE HANDLE

Jim Woodside reports

FAI Teamrace — F2C rule changes

At the plenary session of CIAM the following important rule changes were passed, effective January 1, 1984.

1. Introduction of the three round system (i.e. the abolition of semi-finals). The aggregate of each competitor, best two race times will determine places in the final and results fourth place onwards.

2. Reduction of the tank size from 7cc to 5cc. I think most competitors will welcome the first rule change, with its built in emphasis on consistency. The new 5cc tank will initially have the effect of slowing down airspeeds as I would guess that 25 laps per tank will become the majority aim (this equates to around 42 laps on 7cc). However the flat out 20 laps option is an interesting prospect while 29 laps in a final will save a stop on a nominal 29 lap setting. Perhaps the biggest problem will be the increased incidence of pit-stop accidents.

It is worth reminding competitors that the rules are not carved in stone and that we should monitor the effects of the changes when they became law and evaluate their worth.

In summary then, two basically sound rule changes which may break the current obsession with faster and yet faster race times as opposed to winning a competition. The recent recognition by CIAM of heat and finals records was not, I thought, a wholly useful innovation.

0.40 Class Goodyear

The grass roots pressure for a safe but 'hairy' class has brought forth a set of provisional rules formulated by the Bilston Club. The club have promised to build three models to the attached rules in order to demonstrate the attraction of the class. If you have the odd HP40 or K&B40 series 70 why not give it a whirl. It should provide the excitement which some teams enjoyed from 3.5 glow Goodyear with a lot less hassle than that now involved in Class B. I wish it well.

Should you require any further details or just want to chew the fat contact Graham Bryant, 48 Fordwater Road, Streetly, Sutton Coldfield, West Midlands B74 2BG 021 353 0642. I am told that a copy of the 40 rules have been sent to the SMAE for consideration.

Proposed rules for 0.40 class Goodyear

General

Models to be constructed conforming to the general standards currently applying to SMAE 2.5cc Goodyear, i.e. models to be based on prototypes that have flown in full-size Goodyear, Continental, or other NPRPA Formula 1 races. Alterations in tailplane area, scale linear dimensions, and colour schemes shall be as per SMAE 2.5cc Goodyear.

Models

(a) Models to be constructed to a scale of one seventh full size.

(b) Maximum engine capacity 0.40cu in (6.55cc).

(c) There will be no restrictions as to the type, design, or make of engine used. An effective silencer must be fitted. Tuned length resonant

exhaust systems are permitted. For reference, the general rules regarding silencers as per SMAE Class B team racing will apply.

(d) The engine must be fitted with a fuel shut-off, operated by the pilot.

(e) The engine must be fitted with either a wooden or glass resin composite propeller. Nylon propellers are not permitted.

(f) The engine must be side mounted, and uncowled.

(g) Fuselage of the model must be profile, with maximum width of 1.5in (38mm) excluding cheek cowls.

(h) Minimum wheel(s) diameter to be 1.5in (38mm).

(i) Lines, two lines of 4mm minimum diameter, and of length 1.769 metres from the centre of the control-handle to the centre-line of the model will be used. The entire control system shall be subject to a pull test of 20 x the weight of the model.

(j) Races will be run as follows: *Heats* 70 laps, including one mandatory pit-stop. *Finals* 140 laps, including three pit-stops. All races will conform to the SMAE general code of conduct, with regard to circle-marking, race procedure etc.

Additional notes

In order to keep this event 'open,' there will be no restrictions as to fuel systems, or refuelling systems. Pressurised tanks and re-fuelling systems may be used. All models will be subject to a general safety check before flying.

2.5cc Diesel Goodyear

The SMAE control-line sub committee have recently published a set of rules for Class 2 Goodyear (Second Class Goodyear as one local wag has already termed it!). Like the grass roots pressure for 'quick goodyear' as just outlined there has been pressure for a 'cheap goodyear'. At least we will now find out if economy will attract newcomers to CL racing. I most sincerely hope it does. The only serious reservation I have at the moment is the prospect of a Nelson powered model travelling at 22 seconds for ten laps in the same race as PAW 2.5 travelling at 32 at ten laps. Lots of wing over overtakes rather reminiscent of the outlawed glow goodyear! Well just a thought.

Those secret fuel formulae!

For John Birkin of Chester (Readers' Letters December '82). The simple reply to John's remark that "fuel formulations are always kept secret" is that they are probably taken for granted as common knowledge. The only major change to have taken place in diesel formulations has been a significant reduction in oil content for certain engines — notably the Nelson 2.5DRV.

So here goes — open book!

Standard diesel brew — PAW, Olivers ED, etc.

| | |
|---------------------|-------|
| Castor oil | 20-25 |
| Ether | 30 |
| Paraffin (Kerosene) | 50-45 |
| Iso-propyl nitrate | 2-2½ |

'Normal' racing brew — Oliver Cub etc.

| | |
|------------|-------|
| Castor oil | 10-15 |
| Ether | 35 |
| Paraffin | 50-55 |
| IPN | 2 |

'Special' racing brew — Nelson, Cipolla

| | |
|------------|---------|
| Castor oil | 5-8 |
| Ether | 38-40 |
| Paraffin | 52-57 |
| IPN | 1.5-1.8 |

The only thing to note is, of course, that the low oil content fuels will not work in 'cheap' engines — that is they are likely to cause seizures rather than give any increase in performance. Horses for courses. Some users add small amounts of detergents (carbon dispersants) to help keep the piston-liner clean and therefore in the best condition for maximum revs. These are usually substances which are used in full size diesel operation to

prevent carbonisation within the injector system. Model engines need only amounts in the range 0.5-1% per cent but their use is by no means essential.

Over the years I have tried most brands of paraffin, all types of ether, amyl nitrate and IPN — and all with no measurable change. I must admit to a brand loyalty to Castrol M oil but I am sure other brands of castor are quite satisfactory especially in the larger percentages. I have not used any synthetic oils in diesel formulations.

Glow fuels — my personal experience only extends to stunt type fuels for which the basic mix is

| | |
|--------------|----|
| | % |
| Castor | 25 |
| Methanol | 70 |
| Nitromethane | 5 |

However in the last two years I flew my ST 46 on the following fuel with complete satisfaction, no engine wear and a cleaner model.

| | |
|------------------|----|
| | % |
| Castor oil | 10 |
| Klotz (ML70) Oil | 5 |
| Nitromethane | 5 |
| Methanol | 80 |

to which was added three per cent of acetone as a mild igniter to keep the flame alive during cool rich runs.

A 'normal' glow racing brew is:

| | |
|--------------|----|
| | % |
| Castor | 20 |
| Nitromethane | 25 |
| Methanol | 55 |

and this would be a reasonable brew for a 40 Class Goodyear. However it should be remembered that high quantities of nitro require that compression ratios be adjusted to make the best use of the fuel. Also synthetic oils may need to be employed when using high quantities of nitro as castor will tend to separate out. Propylene oxide will help with keeping mixtures in solution but oils like ML70 are the real answer when used in conjunction with propylene oxide. Current combat World Champions Tom Fluker uses the following formula in his Fox 15's.

| | |
|-----------------|----|
| | % |
| Castor oil | 10 |
| Ucon 625 oil | 8 |
| Nitromethane | 40 |
| Nitroethane | 20 |
| Propylene oxide | 2 |

The 'Aeromodeller' has carried articles in the past by such fuel maestros as Ron Lucas and Len Steward. A good article by Dave Clarkson, appeared in the 'Control Line Aero Modeller' special which appeared some years ago. These articles explain the uses and effects of additives like xylene cumene, iso-propyl alcohol (IPN) and the rest for which there is not room in this column.

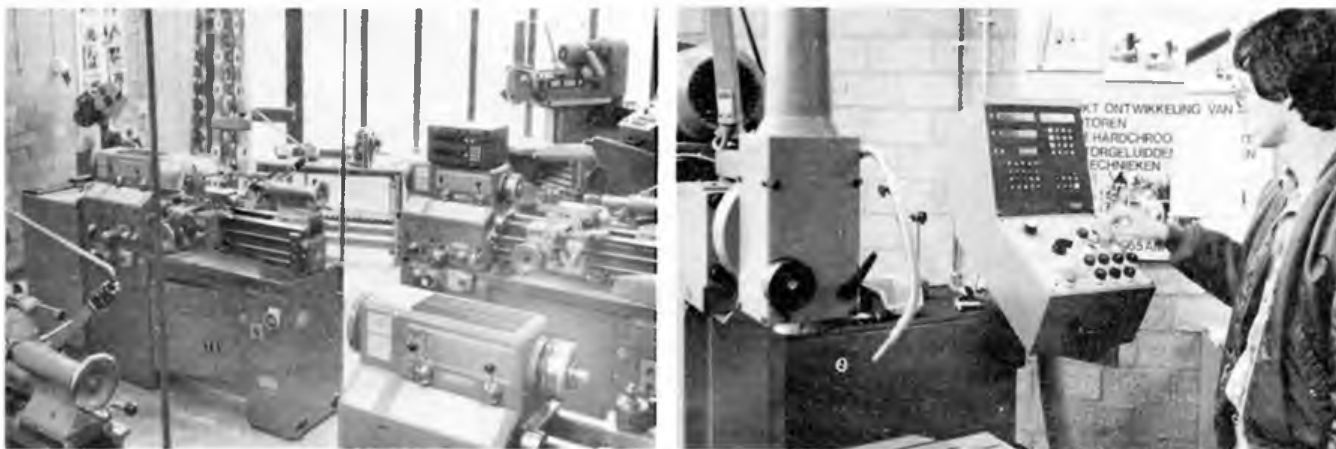
USE 2.5G

It's an ill wind that blows no good and never was this proverb better illustrated than in the project which has brought about the USE 2.5G.

Like most western industrialised nations Holland is experiencing the rigours of recession. Unemployment is rising, especially amongst young school leavers in similar style to the British government, schemes have been sponsored by the Dutch to give short term employment and hence work experience to those young people.

Those, of you who have visited Utrecht will know that it boasts excellent caged flying circles, a workshop, bar and clubroom. In the last year a new commercial workshop has been set up to give six young people training and employment in engineering. Gross cost I would estimate at about £100,000 and the concern is expected to be self-sustaining in two years. The good news is that the product is a 2.5 glow motor of high quality aimed at the combat (F2D) and free flight (FIC) market. The workshop is under the control of expert machinist and well known combat devotee — Jacco de Ridder.

Early groundwork and some engine design was undertaken by Rob Meikemeijer and Rob actually lent the crankcase mould from his own 2.5 diesel.



Left: general view of part of the Dutch Government sponsored factory. Right: computer controlled milling machine - £30,000 worth!

A consequence of this has been that the initial letters FMV appear on the crankcase and some have assumed that the famous TR engine was going into production. Let it be said clearly that this is not so. The production engine is the USE these letters will appear when a new crankcase mould is made.

The first run of production motors was quite small and was an immediate sell-out. The Mk11 is now under development and will be quite different from the earlier model which has a separate front housing and drop in liner. The Mk11 will have a one piece case, an integral finned liner and the exhaust will be at 45° towards the rearward position.

USE 2.5 Mk11 specification

| | |
|--------------|-------------|
| Swept volume | 2.47cc |
| Bore | 15mm |
| Stroke | 14mm |
| Weight | 115gr (4oz) |

The price will be about 300 Dutch guilders. However this price includes the domestic Dutch taxes of 18 per cent, which is not payable on overseas orders.

Details and orders to: Stichting Werkgemeenschap, USE, Floridareef 17, 3565 AM Utrecht Holland. Telephone: 030-611504. Giro Account No 2256153.

Let us wish this bold venture the best possible success.

Goodies Directory Graham Howard Props

After a break of some years during which Graham departed from Stockport to Grantham, Howard props are again available in their distinctive blue colour. Initially these will be glass carbon polyester mouldings but this will change to epoxy bonding in the near future. Three props are available, the Metkemeyer 1980 the shallow cuff South African 7 x 8 and a normal 7 - 6 Good-year. Cost £3.50 each. Contact: Graham Howard, 30 Fair Avenue, Bourne, Lincs. Phone: Bourne 3995.

Europa Cup Utrecht October 2 and 3 1982

This year's contest attracted 21 teams, quite an improvement over the May contest won by the Rossi Bros. The weather was incredibly kind on both days — warm with barely a breath of wind.

As we have come to expect the contest was well administered. A nice touch was a random draw for practice with teams getting ten minutes in the cage three at a time. Those five up practice sessions were ever nerve wracking.

British entries were limited to two teams: Fry Thorpe, fresh from their success in the UK team trials and Heaton-Woodside looking for a trouble-free day.

Round One got underway at 2.30pm and by the end of the round eight teams had times of 3.50 or better. Mau Geschwendtner were top of the pile with a 3.33 using their distinctive T shaped wing model called Klotzbug. This is now powered by the latest development of the BG. Two versions were being tested, both versions being based on a new crankcase. Version one had a drop in liner and version two a finned liner. Both versions had brass cylinder heads with no less than eight 2mm cap head screws retaining the lid. This prevents distortion and according to Jens Geschwendtner makes the engine less 'hysterical'. Nonetheless

the engine remains, very sensitive to set but has potential in the 3.20's when finally sorted. A sketch plan of the 'Klotzbug' will appear shortly in these pages. The van Ulden brother put in a 3.40 using their modified Nelson 100. The Metkemeyer brothers stood at 3.50 despite two long stops to readjust the FMV motor which mis-fired nearly all the time even when flying at 120mph plus!

Rob is considering incorporating a thermal sensor into the cylinder head so that he can take direct temperature readings in the race warm up period. Once the temperature that gives the best airborne setting setting has been established then this can be duplicated each time. As it is now it seems very difficult to bring the engine to its best condition by ear alone and if the engine goes away cold then it will run consistently but up to 10mph below potential.

Round Two at 10.30am Sunday morning saw several improvements with Fisher Straniak putting away a 3.38 with their Cipolla powered model and the Metkemeyers getting nearer to their potential with a 3.40. Fry Thorpe could not find their usual form and recorded their second race of 4.01, while Mau Geschwendtner suffered 'hysterical' engine (now in words) to record a nil. The bogey time for the semis was 3.52.

The semis had their usual mix of good and bad luck with Mau and Visser Buys both suffering trouble. Metkemeyers finally hit the right combination for a 3.28. The van Udens had a virtual solo race for 50 laps to record a 3.39. Meanwhile the Heaton Woodside engine had been quietly

Final Results

| F2C Team Race | | Heat 1 | Heat 2 | Semi 1 | Semi 2 | Final | Engine |
|-------------------------|----|--------|--------|--------|--------|--------|---------|
| 1 Metkemeyer-Metkemeyer | NL | 3 50 8 | 3 40 9 | 3 28 8 | 4 11 2 | 7 14 4 | FMV |
| 2 Heaton-Woodside | GB | 3 47 9 | 3 44 9 | 3 41 8 | 3 40 1 | 7 30 3 | Nelson |
| 3 v Uden-V Uden | NL | 3 40 5 | 3 59 7 | 3 39 5 | 3 42 5 | 8 20 3 | Nelson |
| 4 Mau-Geschwendtner | DK | 3 33 0 | — | — | 4 08 0 | — | BG |
| 5 Fisher-Straniak | A | 3 49 4 | 3 38 6 | 3 45 3 | 3 42 1 | — | Cipolla |
| 6 Visser-Buys | NL | 3 48 2 | 3 45 2 | 5 08 1 | 3 54 5 | — | FMV |
| 7 Thorhague-Rasmussen | DK | 3 50 0 | 3 49 6 | 4 01 0 | 3 54 7 | — | Nelson |
| 8 Martin-Vogel | D | 3 50 0 | 4 10 4 | 4 06 0 | 4 04 4 | — | Nelson |
| 9 Wakkerman-v d Weerd | NL | 3 52 0 | 4 17 0 | 4 31 1 | 4 15 8 | — | FMV |

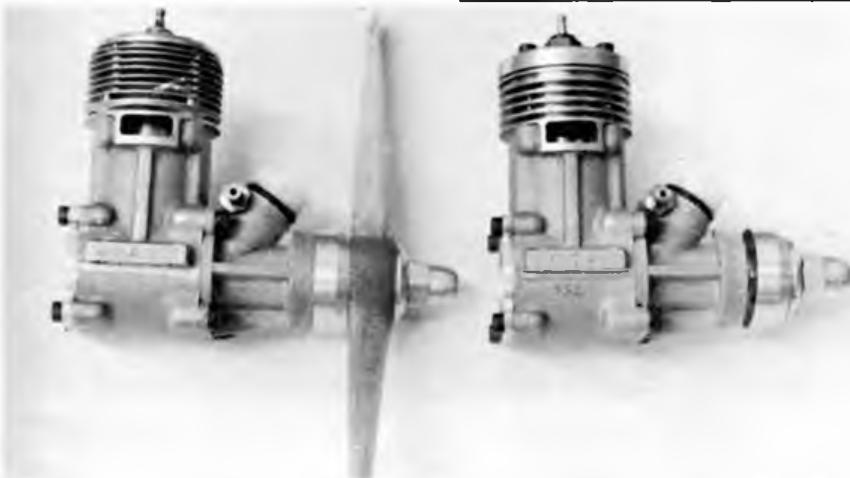
improving to score 3.40 which was good enough in the end for a finals place.

The final was an excellent affair for the eventual first and second and the Metkemeyers had commanding airspeed but Heaton-Woodside were having super stops. What the times might have been had not Rob changed the comp and I had not slipped the last catch well.

The van Udens had setting problems as soon as the race started and were unfortunately out of the running for most of the race.

So, in all, a fairly well attended contest helped by good weather and good fellowship. Thanks to the Utrecht Club friends and helpers.

Two views of the Dutch USE 2.5g Mk11 engine



SCALE MATTERS

by Alan Callaghan

Electric Puss Moth

AN ATTRACTIVE model with an interesting story behind it that came "Scale Matters" way in late 1982 is a *DH Puss Moth* built by David Carpenter of Southampton. Inspiration for the model arose from David's researches for a display of material relating to the history of Wilmot and Mansour, the company whose Frog and Jetex ranges are an important part of UK aeromodelling history.

After experimenting with free flight electric power in two APS scale designs, the *Fairchild Argus* by Eddie Riding and the *Supermarine Walrus*. David came across photos of the *Puss Moth* ready to fly rubber model produced by Frog many decades ago. One of these original models was actually seen at an indoor scale meeting at Milton Keynes in 1982. The *Argus* and *Walrus* met with limited success, so the *Puss Moth* became the third choice as a scale subject to try out David's electric system. The design is based on John Greenland's 1947 APS rubber model enlarged to 1/12 scale and modified using information from Richard Riding's excellent book "De Havilland — The Golden Years."

The motor used in the *Puss Moth* is an unnamed Japanese two volt industrial unit which is capable of driving a 7 x 4 prop without gears at 6000 rpm. Using two 600mAh Nicads it will run for 15 minutes on a full charge, and was well tested beforehand in a modified Graupner *Jolly* kit. Motor and batteries together weigh 113 grams (4oz), and the all-up weight of the model is 350 gram (12 1/2 oz). This represents quite a hefty model at only 933mm (36 3/4 in) span, and demonstrates the main problem encountered with electric power

David Carpenter's 1/12 scale *DH Puss Moth* is Solarfilm covered and electric powered. Details in text.



particularly when it is used in small models. It ought to be possible to build a diesel powered version to the same overall dimensions for a motor such as a DC Dart to an all up weight of between 200gm (7oz) and 230gm (8oz) approximately without too much trouble. Finished in the colour scheme of Jim Mollison's 'The Heart's Content,' David's version is covered in Solarfilm and has been tested as an RTP model to date.

Regular scale flyers will remember the superb flying but large and lightweight electric scale models by the late Alan Palfrey which were seen several years ago at Chobham Common and Old Warden using power systems of Alan's own design. Perhaps other readers have similar systems of their own relating to scale models that are worth seeing?

Scale weights

Occasionally enough potential is to be seen as a flying scale model in a particular aircraft to make the building of it a very attractive proposition despite the fact that little published information may be available on the subject. One type that has appealed to me in this way for quite some time is the *Boulton and Paul P9* of which a photo appeared in last month's column. In this case a model that is simplified in structure but quite accurate in overall outline is the best alternative to delaying a start on the subject until every essential piece of information relating to it has been laboriously unearthed. By this time

enthusiasm has usually drifted elsewhere and a perfectly suitable subject has simply gone by the building board. Although this model was to be basically a very simple quick design it was decided to keep a record of weights during construction, and they are included here as a guide which could be of use to others building models of similar proportions. Ever since taking up indoor scale modelling I have made a habit of weighing all components of all my models and keeping records having found it the best way of improving building technique particularly in relation to wood choice. Most modellers already know that one piece of balsa can be more than four times as heavy as another piece of exactly the same dimensions, but how many times do we really apply this knowledge in the construction of our own designs, especially scale subjects? The small indoor scale model uses little in terms of volume of timber, so even the smallest variation in weight on each piece used becomes proportionately more significant in relation to the finished weight.

Returning to the *P9*, details of this aircraft were found in the superb three-volume set of "British Civil Aircraft" by A. J. Jackson published by Putnam. A quick glance at the small three-view (although rib spacing is quite wrong) shows the aircraft to have simple lines, good general proportions, and enormous tailplane, generous nose moment, and good ground clearance for the airscrew. These are all features to look for in any scale model, but particularly

Below this highly original Vickers Wellesley is the work of John Bunting from the Godalming area. The model is approximately 950mm wingspan yet weighs only 85gm. Power is a standard Telco motor. Right John Coker's unusual Spartan Arrow is still in the finishing stages and is destined for ED Super Fury power, and is built to 1/8 scale.



Aeromodeller

good for a small open rubber indoor type as this was intended.

BP P-9 Basic data

Span 470mm. Wing area 890sq. cm. Tailplane area 135sq. cm. Tailplane area works out at approximately 15 per cent of wing area.

| Weights (gm) | Before covering | After covering |
|----------------|-----------------|----------------|
| Fuselage | 82 | 90 |
| Upper wings | 26 | 37 |
| Lower wings | 13 | 19 |
| Tailplane | 08 | 13 |
| Fin and rudder | 02 | 05 |
| Wheels | | 20 |

Completed airframe weight 230
Ballasted for flight 350 (less rubber)

The model uses a large area four-bladed prop which on first flights has required a 70cm loop of 6mm Pirelli on 750 turns to give a 25 second flight. As the tail peg is located well to the rear of the model (not always essential for good performance) this amount of rubber required no less than 12.0gm of plasticine to get the CG in the correct place for flying trim — hence the need for long nose moments — the longer the better! Metric measurements are given because they are more appropriate to the size of model. For those who still like to work in imperial measure, or do both, a very useful tool is the metric conversion calculator made by the American Radio Shack Corporation, which is sold through Tandy retail outlets for around £10.00. This has all the usual calculator functions including memory, but also indicates conversion facilities for length, area, volume and weight.

The most recent social gathering of '2FSA' free flight scale enthusiasts at Virginia Water shows that winter building boards are as busy as ever. Strange it is that amongst the most well known free flight scale builders in the UK there are those who build and fly regularly who are never to

Charlie Newman's Tiger Moth is a much modified version of the Mercury kit, and features much use of plastic card to represent panelling as on the real thing. Power is a vintage Mills 75.

be seen at SMAE contests, few though these are, and there are those who are never to be seen anywhere else! One exception is Bill Dennis, whose new 1/12 scale DH34 airliner is even now in the process of being re-built. Although the model has previously been test flown successfully, the lightly-built flying surfaces began to warp too much for comfort as the colour scheme was applied. Consequently, Bill has built a full new set of wings and tail surfaces using stiffer balsa, and at the same time is changing the powerplant from a Mills 13 to an ED 246. The large surface area of the commodious fuselage seems to contribute much more drag than was originally anticipated. In red and silver the model will look most attractive when it is eventually finished, the interior of the fuselage already having been fitted out with furniture and curtains!

The most complete finished model of the evening was Cedric de la Nougerede's new 1/10 scale DH Tiger Moth. A great fan of the Tiger, Cedric was fresh from an afternoon of aerobatics in the real thing, and his model certainly shows the benefits of being a builder with access to the fullsize subject. Complete with full instrumentation and controls, rear-view mirror, and a pilot who is either side-slipping to the left, or taxiing with the nose angled to the right, the model would prove a treat on any judge's table. Using only a Mills 75 for power, it may lack performance in anything but a flat calm, but the model would certainly hold its own against a purpose built static subject as a display model.

John Coker's new Spartan Arrow made an interesting comparison with the Tiger, but is built to a larger scale of 1/8. At this stage the Arrow was not fully completed but should evolve into an impressive model



in due course. Spanning approximately 1100mm, it is, as a small subject built large, quite a bulky model, and John has opted for an ED Super Fury as a powerplant. The low thrustline rather precludes a larger motor swinging a larger prop as is normal free flight scale practice but provision has been made for a change to a bigger power unit should the need arise.

One other new model worth mentioning is a CO₂ powered Vickers Wellesley by newcomer to 2FSA meetings John Bunting. This model is a very lightly built to approximately 950mm span, with knock-off wings and a simple but cleverly made three blade prop with removable moulded plastic blades to John's own design. The under-carriage is a plug-in device and although car aerosols rather than an airbrush were used for the colour finish the model tops the scales at only 85gm and should be an excellent flyer on a good calm day.

As ever at these meetings many other models, mostly unfinished, were to be seen. The occasion always provides a good opportunity to see different ideas on how scale models should be constructed with the builders on hand to readily talk about them. Further details of 2FSA are obtainable from Cedric at 111 Merryfield Drive, Horsham, Sussex.

Right: Dave Deadman's Polikarpov PO2 is an ideal FF Scale subject with very generous tail surfaces. This version is CO₂ powered, approximately 460mm span and is built in ambulance configuration complete with patient. Below in the foreground is Cedric de la Nougerede's very accurate 1/10 scale DH Tiger Moth which uses an Indian Mills 75 for power. Behind it, Bill Dennis's rebuilt DH34 shows off its new flying surfaces and will probably be seen at the 1983 Nats.



Free Flight Scene

Martin Dilly reports . .

Stooges

One of the nice things about free flight is that you can fly independently of other people, there is no waiting for a frequency to become clear or for a flight circle to be available. Many rubber flyers now manage to dispense with a human helper for much of the time, relying instead on a 'stooge,' or winding rig, to hold their models.

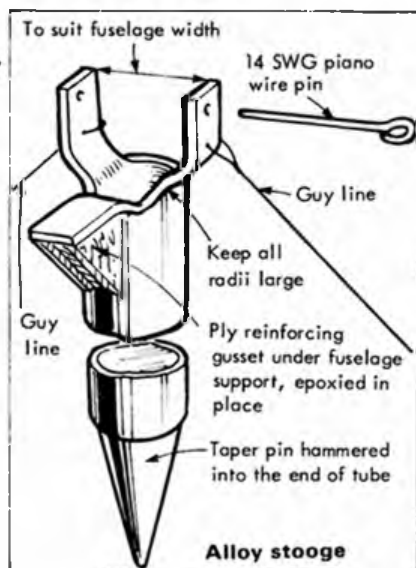
To be any use such a device must be simple, at least as reliable as another modeller, and preferably better. This means that your own winding system should be 100 per cent reliable and you should never need a third human hand at any stage. It pays to develop a routine and to check that you have the items you will need at the stage you will need them. There are usually such things as a thick metal pin to hold the fully wound motor via its S-hook, a length of D T fuse or something similar and the propeller. The latter is best placed near the nose of the model, where you can easily reach it while holding the fully wound motor with one hand, but not where it can be stepped on by a passerby or by you. My own motor holding pin is a 3in length of 1/4in dural rod rounded at one end and with a length of bright nylon ribbon attached to the other, this helps to locate the pin in the grass, though while winding I hold this in my teeth, both to save reaching down for it and to provide something to grit my teeth against in case of a motor break. Others may prefer a cigarette or a dummy. As a fuse lighter I use thick cotton rope, soaked in a saltpetre solution, this gives a hotter glow than D T fuse, is a larger diameter, making it easier to hit the D T fuse end, is easier to light and keeps burning in damp weather. A short length of tight-fitting metal tubing round this lighter fuse can be slid up to the burning end to extinguish it after use.

The stooge itself can take many forms. If you fly Coupe d'Hiver 10 grams of rubber are not going to exert a very great pull, so the device can be lightly built, my own consists of a 3ft length of 1/4in light alloy tubing with one end hammered into a taper so that it can be more easily pushed into the ground. The upper end of the tube is split as shown in the diagram to form a U-shaped yoke and a forward-projecting support for the fuselage. Holes through the yoke allow a 14swg wire pin to hold the model in place by passing through its tubular rear motor page. It pays to attach this pin to the top of the stooge with a few inches of cord so it stays where it is needed.

The fuselage support will need reinforcing with a large gusset of thick ply epoxied in place, as stoozes tend to get quite rough handling during transport. Depending on the alloy from which your tube is made, it may be necessary to soften it once or twice during construction. To do this, rub soap onto the metal in the area to be worked and play a flame on the other side till the soap turns brown, quench in water and carry out some of the work. Re-anneal and finish the job. Try to keep all radii as large as possible, and remember that the metal will work-harden, it will age harden sufficiently for our purposes when the work is finished.

A couple of long cords, with a guy rope type of length adjuster in each one, run from the top of the stooze to two skewers, make sure the loops of the skewers are fully closed up, or one will soon be lost. Angle these skewers into the ground to minimise the chances of their pulling out under the tension of a fully wound motor.

The one occasion when it can be useful to have



a helper is when winding in strong wind, steady hands near the wingtips, but preferably not actually touching them, can save the wing if a sudden gust of wind arrives. Why not touch the wing? If a motor breaks the model will inevitably recoil backwards a little, and a firm grip on the wing when this happens can be disastrous. Some people use the tailgate lock plate on a station wagon or a van to anchor their stoozes, this obviously needs to be tailored to your particular vehicle, but has the advantage of providing a good windbreak to protect the model, in the form of the car plus the open tailgate.

Tri-Cresyl Phosphate

I have located a source of tri-cresyl phosphate (or tri-ortho phosphate as it is now classified), which, as microfilm flyers will know, is an excellent plasticiser for film solutions. Unlike castor oil which is sometimes used it does not produce a tacky film. It can also be used to plasticise clear dope on outdoor free flight models, and avoids that slightly oily appearance that castor oil can produce, use 10-15 drops per 4oz (100cc) of clear dope. Cost is £1.20 for 10cc.

Comments from Dave Hipperson Timing of rounds and flyoffs

With the advent of the super accurate silicon chip controlled digital watch one would have assumed that timing of flying periods and their punctuation with hooters would have become less troublesome. Wrong! Confusions and misunderstandings are becoming more numerous. I was involved in two such incidents last year and a far too well documented one the year before. However in FA1 particularly glider the situation got silly both at the Nationals and the Trials. At this latter a well known glider flyer insisted that he had been hurried by an early hooter whilst on tow and as a consequence was unable to reach full catapult height from the zoom launch and thus didn't quite max! The disputed hooter was alleged to be something in the region of 30 seconds early which is really quite a small percentage error when timing a 30 minute period but nevertheless it could have been avoided.

We will never reach absolute perfection in this but if a little more reason is shown on both sides then the problem can be all but eradicated. Will contest directors remember when they start a period with a hooter they have taken the responsibility of bracketing an important piece of the contest. A great deal may hang on them getting the next horn absolutely right. Never give the job to someone else at this crucial moment in case, as happened last year, that person misunderstands his instructions and blows it early. In the majority of instances a few seconds either way will hardly matter but very occasionally split seconds are vital. It's not a bad idea to have a look around just

before the deadline for scenes of frenzied activity or people toying. If possible they should be reminded of the deadline or even given a count-down — it's part of the CD's job. It may not be easy if there is no public address but sending someone over to them is far better than blindly blowing. It also serves as a double check on that occasion when it is you that have got the time wrong! Of course a ten second warning would be a very good scheme but only if it is made perfectly clear at the start of the event. Don't whatever you do set a schedule of rounds of flyoffs and then expect everyone to keep to them without enforcement. These are the days of advanced tactical and thermal detector flying the deadlines will always be taken close. What is more double check that periods are adhered to accurately in themselves and not simply flown to BST as was the case at an event a couple of years ago when a final hooter was blown at the 'advertised time' but the start hooter had been blown three minutes late thereby shortening the ten minute period drastically and causing much confusion.

As far as the contestant is concerned you will make your own life easier if you synchronise a watch of your own with the CD's official time-piece right at the start of the contest. Forget BST, go by his time because that will be the one he goes by. Then when flying close to time for goodness sake be ready to launch on the signal. Remember the end of the blast marks the end and beginning of periods. Last of all don't be ridiculous in your demands of CD accuracy otherwise we will be down to splitting up single seconds into tenths!

The future — 83 and on . .

We had some frights last year with sudden and ill-conceived proposals for calendar and rule changes. All this is behind us but some experimentation with classes and rules should be going on all the time if only in an attempt to encourage more participation. We have a minority sport and its following is getting smaller each year. Without support the SMAF will find it increasingly difficult to find us aerodromes. As Chairman of the Free Flight Technical Committee for '83 I am interested in your ideas for the future of Contest Free Flight so that my Committee might benefit from a broader sample of opinion. Please contact me with your ideas and opinions. Dave Hipperson, 35 Anthony Road, Boreham Wood, Herts.

Analysis of SMAE Free Flight Results — 1982 . . . Report by Dave Hipperson

Our analysis this year bears a close similarity to the SMAE Senior Championship list. In fact as far as order, it is virtually identical but the Aero-modeller Analysis accepts results from all plagued SMAE events whereas the SMAE Senior Champs for some reason left out the Trials, the *Ripmax Trophy* event at the Southern Gala for A1 and Coupe d'Hiver at the same event. These loopholes have been patched up for 1983.

Steve Philpott won CO at the Nats very convincingly and for the second consecutive occasion. Also at the Nats he was third in the A1 flyoff, and the same again in HLG at the Driffield Mini meeting. Probably the placing with which he is most pleased was his third at the Trials putting him into the A2 team for the first time with a final flight that could so easily have won it for him.

Mike Howick is very consistent in all disciplines of Rubber. His first here was at the much coveted *Gamage Cup* at the second Area meeting. His second was at the Southern Gala once again in the Open Rubber flyoff for the *Flight Cup* and once again a ten minute plus flight. His third was like Steve's right at the end of the season and put him too, for the first time, in the World Champs team for Wakefield. His consistency in Open and CdH also won him the Overall Rubber Champion of the Nats for the second year running. Dave Greaves did his best in Rubber too but quite a number of his 15 or so entries were in Glider. He was second in the Area centralised CdH again at the Beaulieu Mini and Wakefield at the fifth Area.

Four people stand at equal 11th Ian Kaynes flying in only nine events during the year managed to win the *Gutteridge Trophy* for

Waketfield at the fifth Area meeting and place second in CdH at the Southern Gala and Tailless at the Nats. Actually he had a very busy Nats and flew quite well in all three rubber classes as well as Tailless and only missed the overall Rubber Championship here by one point equivalent to five seconds in CdH! Chris Parry put up a very similar performance to last year with a win at the Southern Gala in A1 for the *Ripmax Trophy* and second in Open Glider at Easter and A2 at the terribly windy last Area meeting. Good to see Ray Moore in this list. Ray admits to enjoying flying so much more than he does building that he seldom has enough, or the correct, aeroplanes ready. This didn't stop winning the *Halifax Trophy* for FIC at the second Area do. He also flew well in Vintage at the Nats where his trusty power design, coincidentally a Halifax Rapier, was second in the flyoff. His two thirds were in Open Power at the Easter Meeting and 1/2 A power at the windy sixth area event which was probably as much a surprise to him as anyone! Martin Dilly is also a name not on this table last year. Martin seems to have flown a little less than usual but to much better effect winning the Open Glider flyoffs at the Easter Meeting and Southern Gala, this later for the *Pilcher Cup*. His third was in CdH at the Fourth area event.

Roger Baggott didn't win a thing, but placed in over half the events in which he flew. He was second in both F1C at the Fourth area and 1/2 A power at the Southern Gala. His four thirds were in 1/2 A at the Nats the Driffield Mini and Open Power at the Club Champs and the Southern Gala.

Russell Peers is ninth with only one actual win after flying a great deal throughout the year. This was a spectacular one however taking the *White Cup* for Open Power at the third Area event with a colossal 24 minute plus flyoff. He was also joint second in Open Power at the first Area event and like others has been awarded fractions of a point in the SMAE scale as a consequence! His three thirds were Tailless at the Nats, Open Power at the Club Champs and Open Power at the Northern Gala. Johns Cooper and O'Donnell share the number seven slot. John Cooper, as he has done before, being the highest placer not to have won anything at all. Nearly all his success having been in Glider events which, because of their very high entry numbers, are understandably the most difficult to win consistently. He was third no less than five times and all the glider events had large entries. Open Glider at the second Area event, the third Area event, and both A2 and Open Glider at the Easter Meeting along with Open Rubber at the first Area event. His seconds included Open Glider at the second Area event and A2 at the Nats. He only flew in the Trials, to win a ticket for the prize-giving and after leading almost the entire contest dropped to second right at the end! Definitely the best glider flyer in the country and probably the most consistent.

John O'Donnell won Open Rubber at the Easter Meeting, and A1 and CO₂ at the Beaulieu Mini however, this later having only his entry he only qualifies for one point. His second was in A1 at the Nats and his two thirds at the Northern Gala in Open Rubber and Open Glider. John had a somewhat busier year than last and also managed successes in other contests. His non-appearance at the Southern Gala was probably because of shortage of models. John is still a remarkably cool flyer and it is only lack of suitable aeroplanes that keeps him from the top of this list. He would also insist that a full time assistant is invaluable tool.

Phil Ball has topped this chart twice and will inevitably top it again. This year he has had to be content with sixth place partly due to efforts channeled into his European Champs performance and partly due to occasional over confidence. He started the season well with a win at the Easter Meeting in Wake to top the European Team. His other Rubber first was in Open at the Club Champs where we saw a little of the old Ball 'Magic'. The rest of his placings were at the Nats where really he did very well to win HLG, come to a very close second in Open Rubber (and in so doing become the most consistent placer at this event in recent time) and take third in the Vintage flyoff. Although he still possesses two of the most

terrifying Open Rubber models, at the last three consecutive SMAE events for the class he dropped flights for a variety of reasons, not the least being risking only partial trimmed models.

An interesting note is that four out of the five top flyers specialise in — Power. One would have hardly thought there were enough events to go round but Pete Harris padded out his performance this year with some very promising CdH placings. Just out of the money on a number of occasions but coming in second at the tricky Driffield Summer Mini event. He obviously had everything going right that day as he won 1/2 A too. He had a very unlucky run at the start of the season after his equal three way tie for second at the Frog Senior at the first Area meeting (hence decimal SMAE points) placed in nothing else before breaking the bad run and winning 1/2 A at the Beaulieu Mini. He rounded off the season nicely with a runaway first in 1/2 A at the sixth area event with a score that should have been impossible in the conditions. Pete finishes fifth this year.

The season got away to a slow start too for fourth placed Trevor Payne. He came second in Open Power at the Easter meeting then found an extraordinary 1/2 A 'streak' when he won the Nats, followed this with a third at the Beaulieu Mini then won again in 1/2 A at the Southern Gala for the *Quickstart Trophy*. He had additional Open Power successes at the fifth area event where he was second in the very rainy flyoff and a clear win at the Northern Gala for the *Hamley Trophy*. A very useful return on the mere 14 events in which he flew.

Julian Hopper is primarily an Open Power flyer but nothing went right for him until his second place at the Nats. At those first two Area meetings for the Frog Senior and White cup he actually dropped flights. However, he came particularly good around mid-season with HLG — winning both the Mini meetings rather convincingly. He then found form to top Open Power at the Club Champs and continued later in the season with a frustrating second at the Northern Gala after having set his heart on winning the Hamley four times consecutive. After another second this time in 1/2 A at the very windy sixth Area meeting he went on to finish the season beautifully at the Southern Gala, exactly as he had done the year before incidentally. He took HLG again with the only full score and produced a breathtaking Power flight in the Open flyoff to win the *Short Cup*. He flew more than last year and was also seen with CdH and A1's occasionally.

Dave Hipperson who was also seen with a glider once during the season flew in 21 events and his poor performance in Open Rubber last year was eradicated. The season even started well with a win in Open at the first Area event in blustery conditions. He managed third in the Open Rubber flyoff in the Easter Meeting and then won the *Weston Cup* for Waketfield at the third Area meeting with an extraordinary flyoff in the same patch of lift that had given Russell Peers his remarkable 24 minute Power flight. He won CdH at a rather poorly attended Beaulieu Mini and then took the *Model Aircraft Trophy* at the Nats with an unsensational but useful Open rubber flyoff. There then followed a slight slackening in mid-season form with second in Open Rubber at the Club Champs and a meagre third in the CO₂ flyoff at the Driffield Mini. Then as with Hopper he had a good Southern Gala winning both the CdH and Open Rubber Flyoffs to take his tally way up, but perhaps the finest moment came with the winning of the Waketfield Trials which had eluded him for 16 years.

To quote this piece from last year's report — "some people get very high in this list by flying excellently in only one class". Never could that have been more true than this year. Although the top few are closer and performed better than ever, comfortably out in front is Stafford Screen. He flew in 16 events and placed in no less than 12 of them which is a remarkable ratio of success. Even more amazing when one considers over half of those were first places. For the first few months of the season it looked very much like Stafford had divine assistance as his record is almost impossible to believe. It went like this.

He won the *Frog Senior* for Open Power at the first Area meeting, then came second in the FIC flyoff at the second Area meeting. The next weekend he came out and topped the Easter meeting in FIC, the European Trials, thus assuring himself of a place in his seventh consecutive British Team. The next day he won the Open Power flyoff! On the *White Cup* Open Power day his flyoff was only good enough for third, but at the Nats he almost had the Grand Slam. He won FIC and Open Power both in flyoffs and placed second in 1/2 A. Thus far he had placed in every SMAE event in which he had flown — it had to break soon. The fourth area event came along and with it poorer weather — he won again. This time the *Astra* for FIC despite his increasing preparation for the forthcoming European Champs. It wasn't until June 27 at the Beaulieu Mini that he dropped an event. He lost

Analysis of 1982 Free Flight SMAE Results ... Table of Top 30

| Name | Events flown | 1sts | 2nds | 3rds | Pts | SMAE Pts |
|--|--------------|------|------|------|-----|----------|
| 1 S. Screen | 16 | 7 | 3 | 2 | 29 | 25 |
| 2 D. Hipperson | 21 | 7 | 1 | 2 | 25 | 22 |
| 3 J. Hopper | 16 | 5 | 3 | 1 | 21 | 18 |
| 4 T. Payne | 14 | 3 | 2 | 1 | 14 | 15 |
| 5 P. Harris | 22 | 3 | 2 | 1 | 13 | 12.66 |
| 6 P. Bail | 20 | 3 | 1 | 1 | 12 | 12 |
| 7 J. O'Donnell | 18 | 3 | 1 | 2 | 11 | 11 |
| = J. Cooper | 17 | 3 | 3 | 5 | 11 | 9 |
| 9 R. Peers | 18 | 1 | 1 | 3 | 8 | 7.66 |
| = R. Baggott | 11 | 2 | 2 | 4 | 8 | 8 |
| 11 M. Dilly | 11 | 2 | 1 | 1 | 7 | 7 |
| = R. Moore | 12 | 1 | 1 | 3 | 7 | 7 |
| = C. Parry | 12 | 1 | 2 | 1 | 7 | 4 |
| = I. Kaynes | 9 | 1 | 2 | 1 | 7 | 5 |
| 15 D. Greaves | 15 | 3 | 3 | 1 | 6 | 6 |
| = M. Howick | 10 | 1 | 1 | 1 | 6 | 5 |
| = S. Philpot | 11 | 1 | 1 | 3 | 6 | 5 |
| 18 M. Cook | 8 | 1 | 1 | 1 | 5 | 5 |
| = R. Pollard | 6 | 1 | 1 | 1 | 5 | 5 |
| = R. Johnson | 3 | 1 | 1 | 1 | 5 | 4 |
| = J. Brookes | 4 | 1 | 1 | 1 | 5 | 5 |
| = J. Pool | 4 | 1 | 1 | 1 | 5 | 5 |
| = R. Monks | 7 | 1 | 1 | 1 | 5 | 2 |
| = G. Madelin | 15 | 1 | 2 | 1 | 5 | 5 |
| 25 M. Groome | 1 | 1 | 1 | 1 | 4 | 4 |
| 26 M. Gilmore | 1 | 1 | 1 | 1 | 4 | 4 |
| 27 P. Carter | 1 | 1 | 1 | 1 | 4 | 4 |
| 28 A. Crisp | 1 | 1 | 1 | 1 | 4 | 4 |
| 29 J. Buskell | 1 | 1 | 1 | 1 | 4 | 4 |
| 30 J. Walker, M. Warren, D. Oldfield, T. Bamford, J. Cuthbert, I. Dowsett, C. Shepherd, M. Fantham, A. Crodes, C. P. Williams, M. Brown, J. Godden, J. Hook, G. Ferrer and M. Gregorie all had one single SMAE win each. | | | | | | |

his faithful red 1/2 A model and failed to place for the first time. He was way ahead on points already. The pressure of the forthcoming Champs began to tell, he dropped a flight at the Club Champs and when he attended the Driffield Mini although he came close to winning both CdH and 1/2 A power, single dropped flights kept him out of the placings. He didn't attend the fifth area meeting as he was busy assisting Ray Monks and Dick Johnson in beating the Russians in FIC and winning the Team Power prize at the European Champs! He came home and placed again in both the Power events at the Southern Gala, second in Open and third in 1/2 A.

He was home and dry the Senior Champion. Winning the Trials a few weeks later was just the icing on the cake but put him in the history books as being the first ever Trials Flyoff winner in any class. It also gave him his eighth consecutive



Stafford Screen, top of the pile in the SMAE 1982 results. He not only found time to win most of the power competitions but turned up at many of the rubber powered contests.

British Team Place in eight attempts. There has never been a performance in the power classes to equal this, not even in the day of John West and George French. Flying power to this standard is a knife edge affair — enormous quantities of time have to be put in on airframes and checking trim. As with all the great power flyers in the past he makes it look so easy — its deceptive — and how does he always stay so clean — damn it!

The SMAE Junior Champs

This was rather difficult to calculate as numbers of active juniors are very small and finding them when they are not marked as such in the results is almost impossible. However the final tally reads as below

1 — S. Dixon
1st Jnr O G Third Area
1st Jnr O R Club Chps
1st Jnr O R Nats
3rd Jnr CDH Nats
1st Jnr A1 Fifth Area

2 — N. Dixon
2nd Jnr O G Third Area
2nd Jnr O R Club Chps
1st Jnr A1 at Nats
2nd Jnr CDH at Nats
2nd Jnr A1 Fifth Area

3 — J. Walker
1st Jnr O G Second Area
1st overall Second Area
1st Jnr O G Club Champs
1st Jnr CO at Nats
2nd Jnr HLG at Nats

It will be appreciated that the same system of points awarding as used in the Senior Champs does not lend itself to the Junior event as the number competing quickly becomes a critical factor. Therefore to simplify calculations this year the Junior Champs will be decided only on events held at the Nationals (not including Junior Kit

Contest, HLG Scramble and CO. Scramble). The same points scoring system will be in force but at least this way those interested parties will be able more easily to keep an eye on what's going on and if necessary fly themselves into the ground!

For '83 the SMAE Senior Champs system stays as it was in '82 but this year *all* SMAE Free Flight events (as published in Model Flyer at the start of the season) will count apart from Free Flight Scale at the Radio Nats, HLG scramble and CO. Scramble at the FF Nats

Results collation 83

Following on from this it might be an appropriate moment to remind those interested in receiving full results of all six SMAE Area Centralised events that they can do so by letting me have six SAE's of a 9in x 4in minimum dimension as soon as possible. Results from each event will then be forwarded to them within 10 days. This year I am also responsible for collating and retaining the full results from each and every SMAE Free Flight event. These will be held for reference by whoever is interested and also for calculation of the Senior Championships. Envelopes to Dave Hipperson, 35 Anthony Road, Boreham Wood, Herts

| | |
|-----------------|------|
| (3 Jnr entries) | 3pts |
| (2 Jnr entries) | 2pts |
| (2 Jnr entries) | 2pts |
| | 1pt |
| (3 Jnr entries) | 3pts |
| | |
| (3 Jnr entries) | 2pts |
| (2 Jnr entries) | 1pt |
| (1 Jnr entry) | 1pt |
| (3 Jnr entries) | 2pts |
| (2 Jnr entries) | 2pts |
| | |
| (1 Jnr entry) | 1pt |
| | 3pts |
| (1 Jnr entry) | 1pt |
| (1 Jnr entry) | 1pt |
| (2 Jnr entries) | 1pt |

YEARS AGO IN AEROMODELLER

By Dave Day

THEME of this issue was the Sopwith Camel, beginning with a Laurie Bagley cover painting illustrating a 'hairy' incident from "Camel Close Up" by P. L. Gray, describing the peculiarities of the aircraft which became a killer in inexperienced hands.

"Aircraft Described" number 90, also by P. L. Gray, featured the Sopwith Camel — of course

This issue contained a readers' survey questionnaire, the return of which automatically entered the reader for a 'Popularity Pick' competition with a prize of £25. The idea of this was obviously to persuade people to return the questionnaire. However, as the Editor pointed out in his editorial "People who do not wish to enter the competition should not let this deter them from sending in a completed Survey" — Hmm!

Three pages were devoted to a report of the FAI CIAM meeting (now *there's* a coincidence!) which saw some interesting changes which have been mentioned in previous months. This meeting also gave approval for a C. L International to be held at the Brussels World Fair in 1958 and to be known as the 'Criterium of Aces.' This event

was to alternate with the C. L World Championships for many years.

Plans Service introductions were a varied bunch ranging from Laurie Ackroyd's 54in. span C. L Fokker F VIIb 3M 'Southern Cross' for one 3.5-5cc engine with freewheeling outer props, via Hansheiri Thomann's A/2 design 'Aquila' with an unusual asymmetrical 80in. wing, to Laurie Ellis' Sea King, a 45in. delta winged flying boat with slotted prop for 1.5cc engines. These designs hailed from New Zealand, Switzerland and Canada — a cosmopolitan bunch.

'Model News' had as its 'Model of the Month' a type of model which is virtually non-existent these days — a 'Dynajet' powered C. L scale model. John Claydon of East Ham built a 38in. span 'Super Sabre' weighing 6 1/2 lb. The rear fuselage was finished with glassfibre and further heat insulation was provided by a 28swg alloy tube.

'Engine Analysis' No. 45 by R. H. Warring featured the 1cc Taifun Hobby RS from the German Graupner firm. This reed valve diesel was considered to have a disappointing power output at 0.71bhp at 12000rpm.

'Aircraft in Service' No. 4 featured the Republic F-84F 'Thundersteak' by G. A. G. Cox and included colour and insignia details together with sketches of the undercarriage units.

A report of the eleventh Australian Nationals at Campbell Town, Tasmania

contained a mention of young Doug Harlow winning the C. L combat event. Doug now represents Australia in International Stunt events and has many friends in this country following visits to our Nationals.

An article on 'Unit installation for R/C equipment' pointed to the future with its suggestion that equipment should be mounted on a common base and installed in plastic foam.

These notes are being written on January 4 which is the 25th anniversary of the passing of the great pioneer Sir Alliott Vernon-Roe, OBE at the age of 81. This fact was recorded in the 'Hangar Doors' column together with a short history of his early achievements contributed by an eye witness who was no stranger to Aeromodeller — Col. Taplin.

Finally, 'World News' contained the following extract from the Australian 'Model News' magazine. "Pete Scott from the Banana Festival Champs, Murwillumbah, who is said to have made his 'Thunderbird' do things which would make Bob Palmer take up Chuck Gliders. His repertoire includes a square seven, eight and nine and was all set for the ten when it appeared to come into the centre for further instructions. However it must have misunderstood the pilot's commands, for it did a roll, one hamburger and a marshmallow. This set the judges in a flap, but it was ruled that since no-one else could attain the same standard, they could not award points."

DAVE
DAY'S

SHOP TALK

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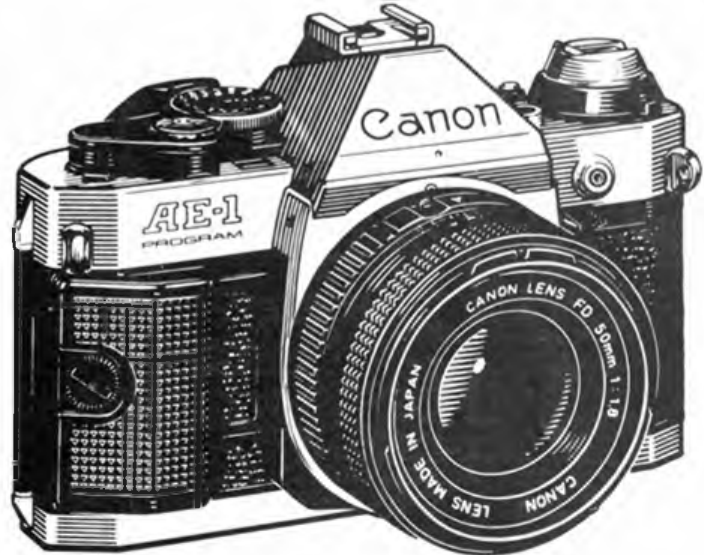
SAMS are now stock specially selected balsa in 3in. and 4in. widths x 2, 3 and 4 foot long. weight and grain type should be specified when ordering, some sample prices are: $\frac{1}{32}$ in. x 3in. x 24in. 36p, $\frac{1}{16}$ in. x 3in. x 36in. 57p, $\frac{1}{8}$ in. x 4in. x 48in. £1.56, $\frac{1}{4}$ in. x 4in. x 24in. £1.16. Almost any size or weight can be supplied by order.



MAGNIFYING LAMP

Ideal for shortsighted modellers or those interested in indoor models (sounds like just what I need!), the Luxo Magnifying Lamp has a 4in. diameter lens giving x 2 magnification and illuminated by a 40w bulb. A spring balanced arm keeps the lens positioned just where it is wanted and leaves both hands free.

Available from Luxo Lamps Ltd., 108 Bromley Road, London, SE6 2UX and costs £17.95 plus £1.85 p&p.



CLUB CANON

Most modellers are photographers, some by choice, some by necessity. Those who own Canon Cameras will be interested in Club Canon which has just been formed.

Members will receive a news letter and the club magazine and will be able to attend

one-day seminars and weekend workshops. They will also be able to try out latest lens and accessories at camera evenings, write in for advice and obtain discounts on books and services.

Further details are available from Club Canon, P.O. Box 104, Sheffield, S1 4FP

McDANIEL RECHARGEABLE GLOWPACKS

Everyone who uses a glowplug motor requires some means of lighting the plug for starting. One very convenient way of doing this is produced by McDaniel R. C., 13506 Glendundee Drive, Herndon, VA 22071, USA, and uses a single 1.2AH Ni-cad cell directly connected to a co-axial glowclip. The basic model is called the 'Ni-Starter' and is available in the standard version (illustrated) at \$21.95. In an extra long version for reaching fully enclosed engines or in a version incorporating a 90° bend with either long or short reach, all at \$24.95 including mains charger.

Another version, the Bo-Starter incorporates a tommy bar for use where it may be necessary to slacken off the plug when starting. Price \$29.95 including mains charger.

Fast charge leads for charging from a car cigarette lighter are available at \$10.95.



FAI RUBBER

FAI rubber, well known to contest rubber flyers is available from SAMS in hanks of approximately ½ kilogram (1lb) x ¼ in. wide at £15.90.



OS 40 VR-P

While intended primarily for R/C Pylon racing, the latest OS 40 has obvious applications for Formula 40 and Open 40 C/L Speed flying.

It is a rear exhaust, rear disc valve, Schnuerle ported, racing motor incorporating OS's version of the ABC type of piston liner. The coating used for the brass liner is not chrome but OS's own special plating process.

Supplied complete with a stub exhaust suitable for connection to a tuned pipe, the motor costs £73.25. Distributed by OS Products Ltd. and available from model shops.



COMET KITS

These well-known flying scale kits are now being imported by Flair Products. A vast range is available of which just four are shown. All kits include plan, tissue, strip wood, die-cut sheet parts, rubber preformed undercarriage, wooden wheels and nose-plug, plastic prop, etc.

The 12in. span Fokker DVII costs £1.76; a 22in. Curtiss 'Robin' costs £3.97; a 24in. span Curtiss 'Jenny' costs £3.97; and the 21 3/8 in. span semi-scale 'Meteor' costs £3.60, available from model shops.



Model Engineer Reported continued from page 109

31 Dave Baker of SAM 35 (right) chats with Eric Clutton, modeller and designer of the full-size "Fred" light aircraft. 32 Mr. Barrie Hares, who built the working model of the Rolls Royce Merlin XX aero engine, seen here about to start it at the Model Engineer Exhibition. 33 Peter Shires built this RTP Bleriot from a Flying Aces plan published in the mid 30s. 34 Our own Dave Day exhibited his good old faithful "Even Nobler" stunt model. 35 Mike Whittard's Westland Widgeon III is 1/10 scale, radio controlled and powered by a Magnum 91 four stroke motor. 36 This 1/10th scale Fairchild A10A (Thunderbolt II) is powered by two OS 40 VF's driving ducted fans and has re-tracting undercarriage.



Letters

Dear Sir,

Recently I placed an ad in 'Aeromodeller' (cost £6+) for help and 'gen' to build two small CO₂ models. The response was instant and very generous. Messrs. Callaghan, Smeed, Boddington, Deadman and Arthur W. Evans all sent letters, while Messrs. Deadman and Evans excelled with 'gen,' instructions, many model photos, pictures, plans, rib templates and all possible information and help. I was amazed at the response to this ad. Money well spent, indeed. Your ads MUST be consistent because many years ago (1950 or so) I advertised for 'Kalper' engines and/or spare parts. At the time of insertion I owned only two Kalpers. Three weeks later I had 26 (twenty-six) AND enough spare parts to make up six others! Many were sent free, some free but wanting postal charge reimbursement, some only asked £1 to £2, one reply sent three engines for £2 plus post. I got 'Kalpers' from: Haifa 1, Cairo 1, New Zealand 1, Brussels 2, New York 3, Paris 2, Middlesbrough (Cleveland) 4, plus a tinful of spares, Paisley 1, Glasgow 2, and one came all the way from The Isle of Bute on the far north coast of Scotland. It was not long before my club 'wags' called me the 'Kalper King' and it was reputed I was actually breeding them!

These little jewels gave me years of happy modelling in planes, boats, airboats, cars and one was used to power a mini-generator using a small DC motor as generator (this won me £15 from three doubting Thomases). It could light 1 1/2 v bulb to about 3/4 brilliance. Kalper was water cooled, flywheel fitted.

I thought it would be a nice gesture to let you know just how good a result your ads can get.

Sunderland, Tyne
and Wear

Les Clarke

Dear Sirs,

With reference to the article on team race speeds and regulations, my feeling is that is necessary to bring down T/R airspeeds if only because if remained unchecked, they will increase ever more until accidents are the norm, rather than the exception.

We must however accept that whatever we do today (if anything), in ten years' time we will have the same situation. My suggestions, for what they are worth, are as follows:

(1) Increase model size, say 300sq.in. total area, with say a 5in. x 2 1/2in. fuselage size cross section and a minimum length, say 18in.

This would have several effects, it would slow models down somewhat, not a lot, but it would have some effect. Some of the recent increase in airspeed is due to the emergence of the flying wing, and this could be banned on the grounds of scale or semi-scale appearance. If you remember, the SMAE did this some years ago in the late '50s I think it was. A rule requiring separate wing and tailplane with a specified distance apart horizontally would achieve this.

The larger model size would make way for silencers, a feature we will be forced into adopting some time in the not too distant future. Silencers themselves would have a speed reduction effect also.

(2) The line size could be increased to 0.4mm, a slowing down effect and a safety feature.

(3) A return to a more scale appearance would have a speed reduction. If it were tabled that the maximum cross section must be at the cockpit as at present, but specify that the front line of the cockpit must not be further forward than 50 per cent wing cord, this would make fuselages bigger immediately.

None of these features would have a great effect taken individually, but adopted all together even without silencers would, I am sure, result in a significant drop in airspeeds.

I have no doubt many teams have already built or decided on their models for 1983, so let's do what the Formula One racing cars do, give one year's notice and commence with the new models in 1984.

I cannot see anyone really objecting to larger models, the same scope is there for design and light construction, and the best teams will still come out on top because of experience and effort.

Looking eight or ten years ahead, the engine size could be reduced to 1.5cc given between five and ten years' notice, to enable manufacturers and teams to develop motors for the new capacity size.

Well there are my suggestions; they won't please everybody but we have really only two alternatives. Make immediate drastic changes to reduce airspeeds, or leave things as they are and stop moaning about accidents and incidents, accepting them as a normal hazard. Whatever happens, our team (Neville/Graham) will not be World Champions, we don't devote enough time to T/R because we enjoy building other types of model as well, but we still greatly enjoy team racing, and will continue to do so under the present or any future rules. To us, that is the important thing.

Watford, Herts.

Bill Graham
(Neville/Graham)

Dear Sir,

I would like to take this opportunity of writing to you to inform you of the great pleasure I have obtained in the making of several models from the plans you have

published of late

Having been in the Royal Air Force as a long term regular and serving in the real things, I retired and took up model aircraft (boats and cars too) after a long lapse of 20 years, together with the fact that I was settled and no longer continually moving from post to post.

However as an ex-Signaller, I now enjoy learning to fly the various models I make and must admit to being a very happy modeller and model pilot (not yet quite the scale Spitfire type but learning).

Being settled meant being able to take up the hobby seriously and in between building training kits with four channel control, I have built up quite a collection and the ones I refer to mainly are as follows: Apl. 81 Airship by R. Morse. Aug. 81 Little Willie CO₂; June 82 Lawn Ranger by J. Stroud; July 82 Coolie by Ian Barrett; Nov. 82 The Dwarf by Phil Siddall.

The last four were built from the scrap box but the challenge was the 7ft. hot airship electric powered balloon. I had no major problems and the materials were supplied by Charles Saffry of Bath who was most helpful and I have written to thank him for being so very helpful; in the main I completed all the parts as per the plans in Aeromodeller.

My collection now covers: a Jolly Roger trainer, a Tyro Major, a Fleet Wing sports, Mick Reeves Spitfire, a rebuilt (by me) 1970? Hurricane, a Cambria Fun Spitfire, one Nymph 10ft. slope soarer, a spare parts Ridge Rider 8ft. span made up from salvaged bits and it's a goer! Currently I am building an Airacobra almost complete and in initial stages one.

However my main reason for writing is the fun and pleasure I get from the plans you supply as listed above. Please keep publishing these delightful plans as I am sure if they help me to recuperate my almost lost art, they must be of great importance to the younger modellers of lesser means than myself.

Ruislip, Middlesex Mike Goodwin

Dear Sir,

How pleasant to see such good write-ups and comments about 'B' TR in April 1982 issue. 'B' has always been the Blue Riband T/R class, and I have never understood the disproportionate interest in this 'A' class nursery event. The publicity of events will hopefully see the end of the 'B' recession. So far as the future of 'B' is concerned, 3 1/2cc motors are already eligible but let's not make them compulsory. The smaller engined long range model has always been a traditional part of 'B' racing, let's keep it as an option, and to add interest. OK let 'em have 35' lines. If the ultimate 29 model is now getting too hairy, let's seize the opportunity to curb the excess power with efficient non-critical small outlet expansion chamber silencers, and kill two birds with one stone.

Ealing, London

Ian Russell

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