

Aero modeller

JULY 1982 60p
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 **MODEL
MAGAZINE**



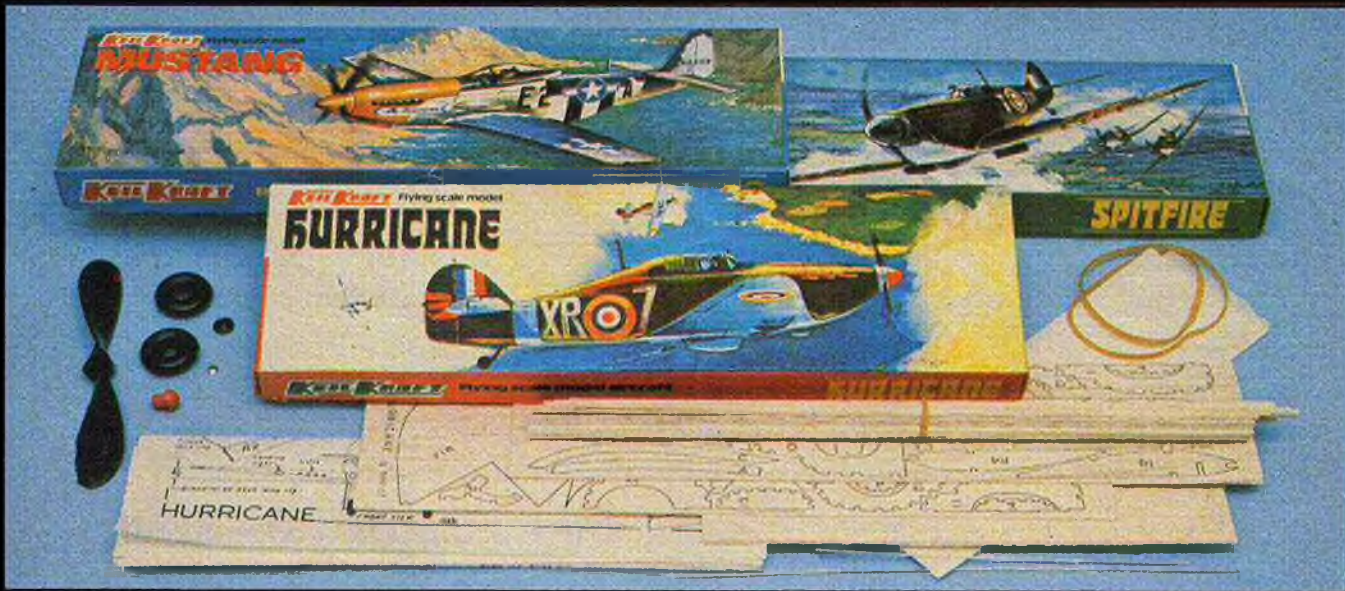
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Aero modeller

JULY 1982

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MAP

MODEL DIVISION MAGAZINE

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Comment

MY recent visit to the Three Sisters Recreation Area site to see their Control Line International proved to me what can be achieved by an enthusiast group of modellers and a progressive-thinking council.

On arrival I was greeted by Peter Farrimond and taken for a tour of the 109 acre site, which consists of an arena laid-out with four circles, one with a permanent fence and concrete circle, two with tarmac rings and one grass for combat use.

There is also a racing track and a 4½ acre lake designed for informal recreation which also acts as a balancing reservoir for the site. Although R/C flying is banned, Free Flight is allowed, hence the development of the Wigan 70 class model.

Obviously all this costs money, in fact £40,000, and without the efforts of people like Derek Leigh (representative of the modelling interests) the local council would never have agreed to put up with rate-payers' money.

Before development the site consisted of three 150ft. high spoil tips, and now it has

not only provided a much needed recreation area but has also brought back wildlife. 18,000 two-year old and 1,500 seven-year old trees have been planted which already give a visual improvement and will of course eventually provide even more of a nature reserve.

To keep the site in order there are three permanent wardens who are assisted by junior volunteers. Well, this shows what can be done and we would all like to congratulate everyone who has been involved in this project for their most successful venture.

Editor

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On the Cover

Robert Dulake's VTO Stunt control line model, (see page 330 in this issue), which gave a most impressive display of its flying capabilities at the Stoneleigh Model and Craft Show on May 22/23.

Next Month

If you haven't seen a Carrier control line model before, here's your chance! We will be publishing an APS plan of Norman Ashford's successful 'Corsair' design which will include detailed perspective drawings, rules and building instructions. There will also be a full report on the Free Flight Nationals plus all our regular news and views. On sale July 16, price 60p.



p.337



p.344

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1st-9th JAN 1983

52ND Model Engineer Exhibition

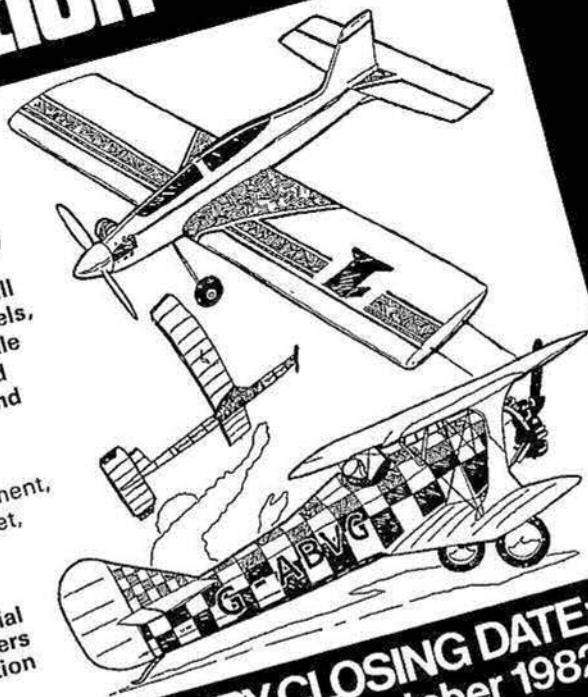
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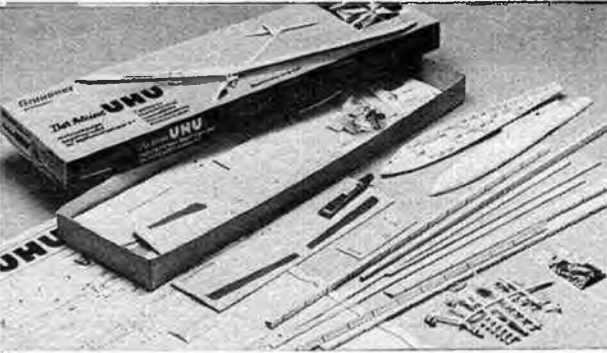
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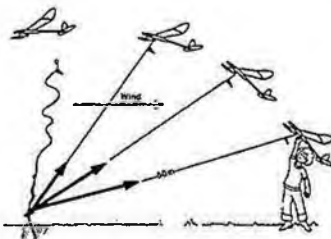
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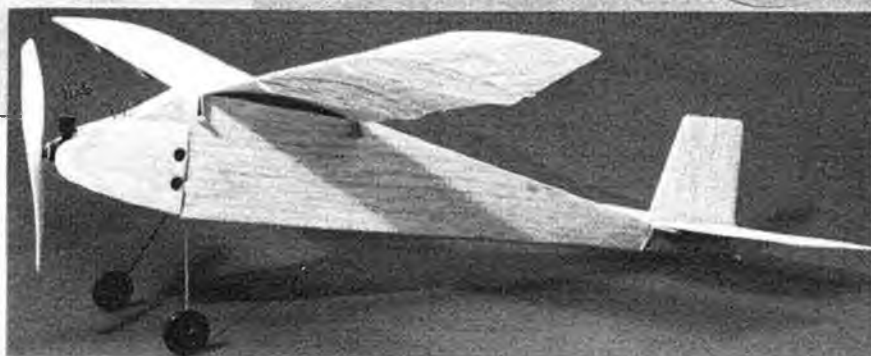
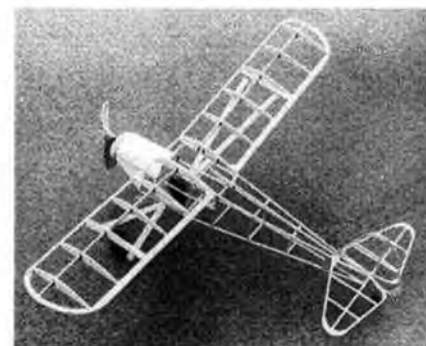
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The all-balsa model has a lot going for it. Especially if good flight performance is what you are after. All-sheet construction for flying scale and CO₂ powered models up to 24 inches span or so. There's a lot of pleasure in *building* such models in top quality balsa, too. A material which feels right, looks right — and *is* right for smaller flying models. Ideal for simple gliders, too — where you can go up to about 36 inches span*. (Some contest modellers even use sheet-balsa wings on very successful A2 designs).

Of course, for *maximum* flight performance you really cannot beat built-up balsa construction. And that goes for almost *any* size and type of free-flight model. To improve performance — add more lightness! That's a very basic rule of aerodynamics.

Take two identical models with total airframe weights of, say, 6 ounces and 8 ounces. The 6-ounce model will outperform the 8-ounce one. Load the 6-ounce model up with ballast to bring it up to 8 ounces — and it will still outperform the other at the same weight.

Building light places a premium on balsa selection — to get strength where required without adding excess weight. Use a grade lighter than average and boost spar *sizes* only where necessary. And use the best obtainable balsa throughout — that is, Solarbo Balsa! That's another old aeromodelling rule — Solarbo Balsa models fly better!

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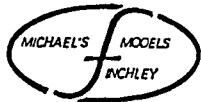


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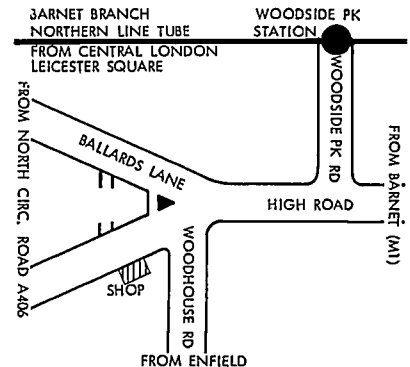
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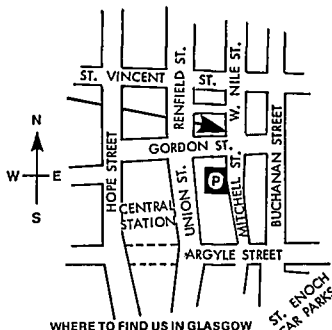
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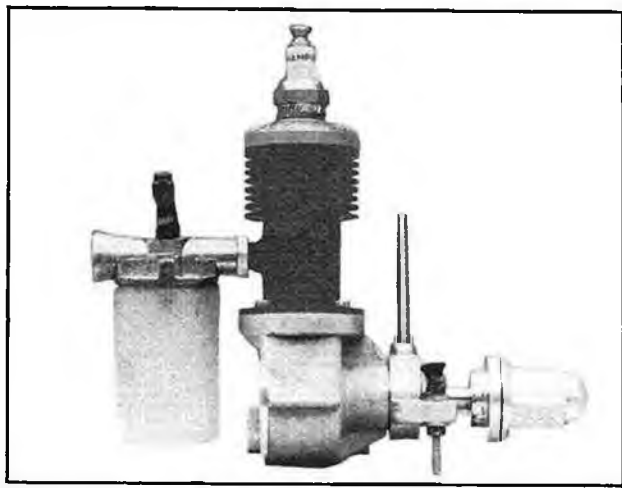
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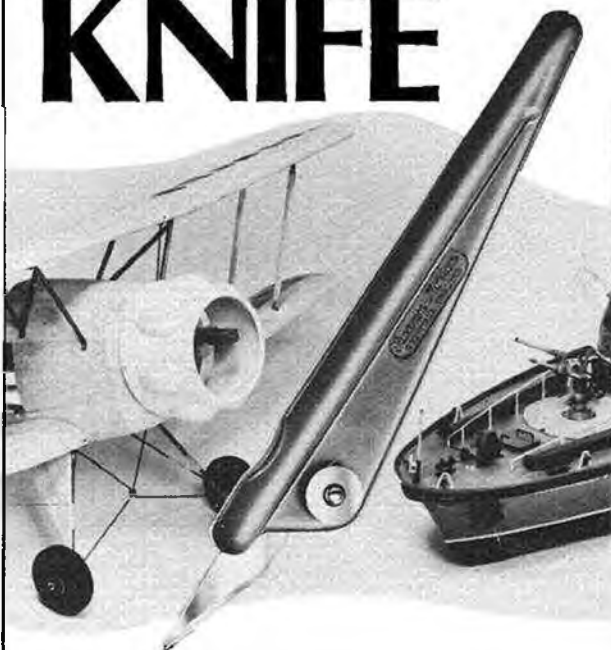
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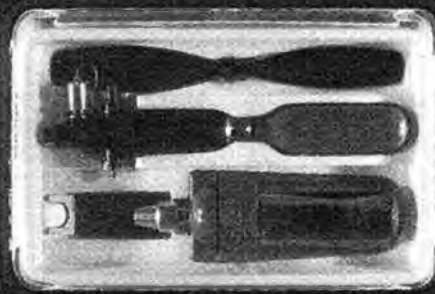
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**SAME DAY
DESPATCH!**



Dunlop Day

This latest picture of the Dunlop Pitts Special shows the modified engine cowl, three bladed propeller and cantilever undercarriage. Brian Lecomber will make two aerobatic displays during our Dunlop Pitts competition which is to be held at Old Warden on July 4. Just to remind you of the modelling categories which are: static, free flight, control line and radio control. Details of the competition and entry forms are available from the editor.

Indoor flyers take note

This year Cardington has been obtained for only £50 per day, half the price of last year. The last meeting on May 1 had a very poor attendance and it has been suggested that as the full calendar for Cardington was published in *Free Flight Scene* (May 1982) and not under *What's Happening* that this was the cause.

So to refresh your minds, the dates are: June 6, June 20, July 4, July 25, August 8, August 28-29, September 12 and October 17.

Unless there is a reasonable support for these events, there is a danger that this most important indoor site will be lost, so please try and attend at least one or more. Further information can be obtained from: Laurie Barr on Maidenhead (0628) 25595 or Bob Bailey on Stevenage (972) 723642.

CLAPA

To save clashes and subsequent low entries, CLAPA contest liaison officer Reg Lowe is keeping a register of all Control Line aerobatic events. He would be pleased if anyone organising an event would let him know the date fixed as soon as possible, and also the results, so that he can keep the league tables up to date. Reg Lowe's address is 49 Commons Close, Newthorpe, Nottingham NG16 2BV or phone Langley Mill 66786.

Woodvale '82 — F/F Standoff Scale

Liverpool and DMAS are promoting their fifth Annual F/F Standoff Scale event as part of the two day Woodvale Rally. The event will be held on Saturday, August 7. There is no entry fee: the airfield entry charge covers this. It is intended to run two classes (three if entries permit). Power and rubber/CO₂. Static judging will take place in the hangar from 12 noon and flying from 4.30 onwards.

Generous prizes will be given and in addition the NW area has kindly agreed to allow the award of the E. J. Riding trophy to the model scoring the highest points in any class. Entries should be sent to (include



sae); M. Duce, 20 Granville Road, Southport PR8 2HJ. Tel: Southport 60474.

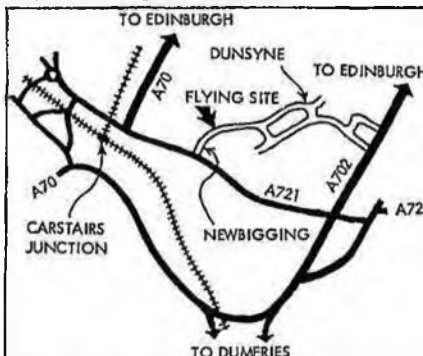
New Scale Event

The SMAE Scale Committee has obtained the use of RAF Abingdon for an All-Scale Day meeting to be held on July 18th. There will be contests for R/C, C/L and F/F power and rubber models. It is hoped this will become a regular event so please try and give this meeting your support. See *What's Happening* for details.

Scottish Antique get together

Bruce Duncan of Burngrange Farm, Burrelton, Perthshire PH13 9PL, Scotland, has organised a vintage flying meeting on

August 22. Radio, Control Line (hand launch only possible) and Free Flight vintage models are all welcome, but all flyers must show their insurance. If you fancy going to this super location, give Bruce a ring an 08287 374 after 6pm weekdays or during the weekend.



Scale Models

A very special issue

August issue of SCALE MODELS should be on top of every serious modeller's shopping list. With every copy (UK only) comes a free 76 page "MATCHBOX" full colour catalogue listing the entire 1982 range from this prolific manufacturer. There's also a supplementary survey of all the world's vac-form kit manufacturers. These two bonus elements ensure that the August issue of SCALE MODELS will become a classic collector's item. Other editorial features include a detailed appraisal of the WWII Convair Privateer US Navy patrol bomber with photos, scale drawings, colour notes and modelling data, plus a special vacform feature on the Handley Page Hastings and a colour plate of Manfred von Richtofen's famous Albatros D.III. On sale July 2, 1982.

Coming in following SCALE MODELS are Me Bf 110 night fighter schemes and model projects; HMS *Repulse* kit review with plans, and first-ever accurate scale plans of the RAF's new multi role combat aircraft, the MRCA GR1, plus the now famous and fully vindicated Sea Harrier.



1982 Gold Medal for design of self-adhesive stickers has been awarded to the Academy of Model Aeronautics for the oval badge, this in strong competition from top marketing agencies - congrats AMA.

NFFS awards

The National Free Flight Society is very proud to announce its selection for the ten Models of the Year Award.

International Class

F1A — Nordic: 811 by Ivan Horejsi (Czechoslovakia).

F1B — Rubber: Espada by Lothar Doring (West Germany).

F1H — Glider: Hot Max by Jorgen Korsgaard (Denmark).

AMA/Outdoor

Large Power: Sweet Daddy Pearl by Richard Covalt.

Small Power: Pay-Triot by Harry Murphy.
Rubber: Monarch II by Chris Matsuno.

Indoor

Paper Stick: Paper Tiger II by Jim Richmond.

Hand Launched Glider — Upstart by Mark Drela.

Special Awards

Model Aeronautic Yearbook by Frank Zaic.
Chambermaid by Bill Henn.

How about this for enthusiasm? David Hope-Cross seen here with his DH Fox Moth which he is bringing to the All Scale Day at Old Warden on June 19/20! We should point out that David lives in Auckland, New Zealand.



What's Happening?

June 19/20

ROTHWELL AERO MODEL SOCIETY RALLY R/C SPORT, VINTAGE & SCALE. Venue: Harewood House, Nr. Harrogate. Contact: Ron Greenwood, 7 Shadwell Walk, Leeds 8. SAE please.

June 20

AEROMODELLER SCALE DAYS. Venue: Old Warden.

June 20

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

June 20

SMAE SOUTHERN AREA C/L STUNT AT HMS DAEDALUS (LEE BEES). SMAE members only. FAI and NOVICE pre-entry required. Contact: Mick Harvey, 10 The Croft, Stubbington, Hants. Tel: Stubb 5232.

June 20

NOTTINGHAM MAC C/L EVENT, F2B AEROBATICS, NOVICE AEROBATICS, C/L SCALE 'STAND-OFF'. £1.50 per event, good prizes and trophies for 1st, 2nd and 3rd. Venue: Bastard Hall Miners Welfare. Contact: Reg Lowe, Tel. Langley Mill 66786.

June 27

MIDLAND AREA T/R RALLY 1/2A, FAI, GOODYEAR AND MINI GOODYEAR. Venue: Fulback. Contact: Graham Howard. Tel. 07782 3995.

June 26/27

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

June 27

PETERBOROUGH MFC COMPETITION 1/2 COMBAT. Venue: Peterborough Embankment, Contact: Brian Katerland. Tel: Market Deeping 343722.

June 27

COTSWOLD RCS OLD TIMER DAY PRECISION & TEXACO & FUN FLY. Venue: Cocklebarrow Farm Aldsworth Glos. on A433 Burford to Cirencester Road. Start 10.30am. £1.50 pre-entry £2 on the day. SAE to Mike Whittard, 2 Cotswold Terrace, Nymphsfield, Stonehouse, Glos. Tel: Dursley 860793.

June 27

WHARFEDALE OPEN MINI GOODYEAR COMPETITION SMAE rules but no age limit. Venue: Dewsbury. Contact: Jeff Smith. Tel. (Leeds) 0532 663432.

June 27

FELTHAM & DMAC LONDON AREA GALA, FAI, TEAM RACE, CLASS 'B' £50 for prizemoney and 1/2 A TEAM RACE, F2C and F2D. Venue: North Weald Aerodrome, Nr. Harlow, Essex. Contact: D. Bank. Tel: 01 205 8809.

July 3/4

BRITISH COMBAT OPEN INTERNATIONAL, F2, FAI COMBAT F2D. Venue: Dytchleys' Country Estate, 20 miles from Central London. Full on site accommodation plus three meals a day (limited camping available). Parking toilets etc. Pro-entry essential. Closing date June 1. For full information large see to: British Combat Int. 82. 26 Premier House, Waterloo Terrace, Islington, London N1.

July 4

DUNLOP PITTS SPECIAL DAY C/L, F/F & R/C plus fly for fun in C/L & F/F. Venue: Old Warden.

July 4

TYNEMOUTH TEAMRACE RALLY FAI, GOODYEAR, 1/2A. Venue: Albermarle Barracks (ex RAF Ouston) — entry to airfield by special pass only. Contact: R. Wilson, 77 Oakfield Road, Whicham Grange Estate, Newcastle-on-Tyne NE16 5QP. Tel. 0632 881127.

July 4

SMAE SOUTHERN AREA CLUB 20 FLY IN AT BEAULIEU (SOUTHAMPTON). Contact: Andy Trowbridge, 7 Shirley Towers, Shirley, Southampton.

July 4

WIDNES MFC EVENT C/L STUNT, F2B & NOVICE. Venue: St. Josephs School Field, Highfield Road, Widnes. Usual trophies and cash prizes. Contact: A. Atherton. Tel. 051 486 6825.

July 4

WALSALL MAC OLD TIMER MEET. Venue: Walsall Airport, entrance of Bosty Lane, Aldridge. Flying starts 10am. Free parking. R/C Flying £1 includes entrance to one comp. All Classes of Vintage and Texaco. Prizes presented by Gerald Smith. Contact: Jim Shelley. Tel: Walsall 28553.

July 10

SMAE SOUTHERN AREA INDOOR FLYING AT COLLEGE OF FURTHER EDUCATION, SOUTHAMPTON. Gym shoes must be worn. Contact: Howard Metcalf, Brook Cottage, Winters Hill, Dursley, Hants. Tel. Dursley 447.

July 10/11

WITHAM MAC TWO DAY C/L MEETING. 4th CLAPA CHAMPS (MEMBERS ONLY) AT ST. JOHN AMBULANCE GALA. PLUS ON SUNDAY C/L OPEN NOVICE STUNT, OPEN CARRIER & OPEN SCALE. Venue: Essex Show Ground, on A120, app. 2 miles from Braintree. All classes pre-entry only. SAE to: P. Burgess, 42 Blunts Hall Road, Witham, Essex (Tel. 0376 516881). Camping on site from Friday night, July 9. Please state when entering if camping.

July 10/11

MIDLANDS R/C CHAMPS. Venue: Birr, Co. Offaly. Contact: K. Townsend, Beechwood, Church Lane, Greystones, Co. Wicklow.

July 11

CROYDON MINI CONTEST. 1/2A, CD'H, AL, CO₂, HLG. Venue: Chobham Common. Start 10.00am. Contact: Ray Elliott. Tel. 01 997 1563.

July 11

SMAE SOUTHERN AREA OPEN FORMULA MOUSE AT HMS DAEDALUS (LEE BEES). SMAE members only. C/L Team Racing to rules published in August 1981 Model Flyer, but with £15 engine limit. Pre-entry required. Contact: Mick Harvey, 10 The Croft, Stubbington, Hants. Tel. Stubb 5232.

July 11

PETERBOROUGH MFC COMPETITION 3RD ROUND CLASS A BRITISH DIESEL COMBAT CHAMPS. Venue: Peterborough Embankment. Contact: Brian Waterland. Tel: Market Deeping 343722.

July 18

SHUTTLEWORTH MODEL GROUP OPEN DAY F/F AND C/L PLUS STAND-OFF C/L SCALE. Venue: Shuttleworth, Old Warden, Beds. 9am to dusk. Contact: Mick Staples, 11 Whitehill Road, Cambridge CB5 8LT

July 18

SMAE STAND-OFF CONTROL LINE SCALE AND F/F SCALE EVENT. Venue: RAF Abingdon. Contact: V. Willson. Tel. No. 0734 471964.

July 18

WHARFEDALE OPEN DIESEL COMBAT COMPETITION. Engines .15 to 19 cc. No pressure. Venue: Dewsbury. Contact: Jeff Smith (Leeds) 0532 663432.

July 18

SMAE SOUTHERN AREA F/F SPORT FLY IN AT BEAULIEU (LEE BEES). VINTAGE, UNCONVENTIONAL, CONCOURS ETC. NO R/C. Contact: Dennis Underwood, 15 Galemora Drive, Alverstoke, Gosport, Hants. Tel. Gosport 82330.

July 18

SHUTTLEWORTH MODEL GROUP OPEN DAY F/F AND C/L PLUS STAND-OFF C/L SCALE. Venue: Shuttleworth, Old Warden, Beds. 9am to dusk. Contact: Mick Staples, 11 Whitehill Road, Cambridge CB5 8LT.

July 25

SMAE NORTHERN AREA FLY FOR FUN DAY. Venue: Church Fenton. SMAE members only. Contact: D. Kerswell. Tel. 0653 2580.

August 7/8

SUMMER HOT-AIR BALLOON EVENT. Venue: Holker Hall, Cark-in-Carml, Cumbria. For further information: The Manager, Tel: (044 853) 328.

August 7/9

WOODVALE RALLY 82 R/C SUPER SCALE, STAND-OFF SCALE AND LARGE SCALE (35MHz ONLY), FREE FLIGHT SCALE. For full details SAE to: Tom Ditchfield, 77 Holmefield Road, Aigburth, Liverpool L19 3PF.

August 8

WAKEFIELD MFC C/L EVENT NOVICE STUNT. Venue: Thorns House School Playing Fields, Thorns Park, Wakefield. Sponsored by Wakefield Sports Council and Wakefield MFC. Contact: Brian Temporal, 45 George Street, Horbury, West Yorkshire. SAE.

August 8

THREE KINGS AEROMODELLER CARRIER SCALE FLY IN. Silencers required. Venue: Old Croydon Aerodrome. Contact: Wal Cordwell. Tel: 01 764 1661.

August 8

WOODBURY RALLY — OPEN RUBBER/GLIDER/POWER, COMBINED MINI, VINTAGE DURATION, CHUCK GLIDER. Venue: Woodbury Common. Contact: Chris Chapman. Tel: Exmouth 3413.

**FREE FLIGHT CALENDAR
ON PAGE 348**

THULIN TYPE NA

**AIRCRAFT
DESCRIBED**

No. 253



By
Goran Lundin

THE ENOCH THULIN AEROPLANE MANUFACTURING CO. — usually abbreviated AETA, which is short for Aktiebolaget Enoch Thulins Aeroplanfabrik — at Landskrona, Sweden, was founded in 1914.

Production started with a series of licence-built Blériot monoplanes of the widely copied and used XI-type, which were given the designation Thulin type A. They served as trainers both in Sweden and Denmark.

The B and D types that followed were slightly improved Morane-Saulnier G/H and L monoplanes, none of them built in more than a few examples.

With the E-type two-seater biplane in 1916, a line of Thulin-designed aircraft was commenced. The main contractor for this and subsequent types were the Swedish Army and Naval Air Services, but a comparatively large number, especially of the FA and K types, were also exported.

During its short production life the Thulin Co. outgrew its original premises — which were literally nothing more than a couple of sheds, and moved into a modern factory building including metallurgical and aerodynamic laboratories. This was equipped with a wind tunnel where aircraft models and airfoils could be tested. The production expanded, and the number of employees rose from a mere ten in 1915 to over 800 in 1918.

After the armistice the civil market was virtually flooded with comparatively cheap surplus aircraft. The AETA could no longer find a market for its products, which in addition were in certain respects a bit obsolete by 1918/19 standards.

In addition to his work as a manager, designer and aerodynamic expert, Enoch Thulin was also a very skilled and experienced pilot and as if the financial troubles of the firm were not enough, on the 14th July, 1919 Dr. Thulin was killed when his personal type K single-seater monoplane crashed into the dockyards of Landskrona. The accident was probably caused by structural failure of the aircraft.

A few months later production ceased, and the AETA was forced into liquidation. Production then totalled 99 aircraft of 14 different types and some 700 engines of five types. The engine built in largest quantity was the famous 110hp type A, which was basically a LeRhône rotary, considerably improved by a new crankshaft/piston connection evolved by AETA designers. The A-type rotary was also exported to Germany under somewhat obscure circumstances, and used in Fokker Dr. 1s.

The last aircraft design to emerge from the AETA was to be the NA of 1919. Drawings were prepared during 1918, and early in the spring of 1919 the NA was ready for transport to the Ljungbyhed aerodrome, where today the R.S.A.F. Flying School resides.

During the spring some preliminary ground tests were conducted. The pilot's view was found too restricted, and consequently the front seat was slightly raised. This also necessitated a modification of the throttle/mixture-control mounting, which was replaced by a rather makeshift console.

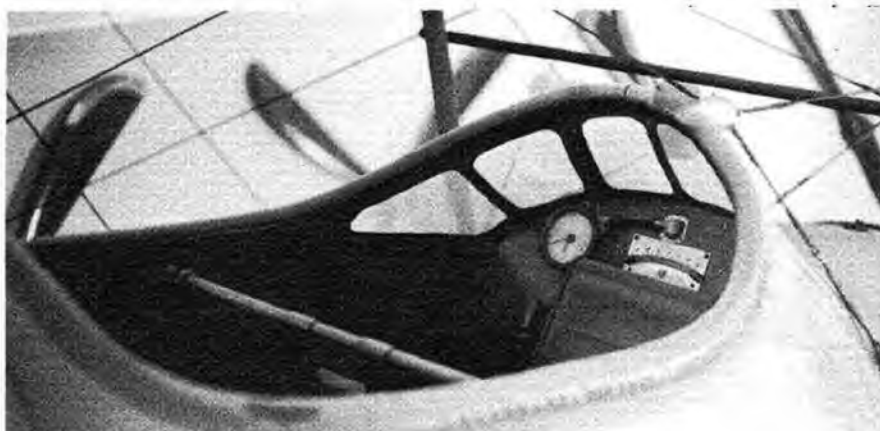
However, the trials were never concluded due to the liquidation of the AETA, and the NA was more or less forgotten. It was not until 1921 that the first and only test-flight was made by Count von Bismarck, a German pilot visiting Sweden. He is said to have expressed great satisfaction with the performance and general handling qualities of the aircraft.

The NA was in essence a development of the previous type N single-seat fighter, which it in many respects resembles. Only one example of the N type and NA were built and both still survive. Both the N and NA were powered by the 135hp 'G' rotary, final development of the Thulin/LeRhône engine.

The NA is usually described as a two-seat fighter, but this is in fact quite misleading. The word 'fighter' is an often misused one in early Swedish aviation, for very few of the aircraft so designated did actually carry any armament, even if the general idea was that they should be able to do so.

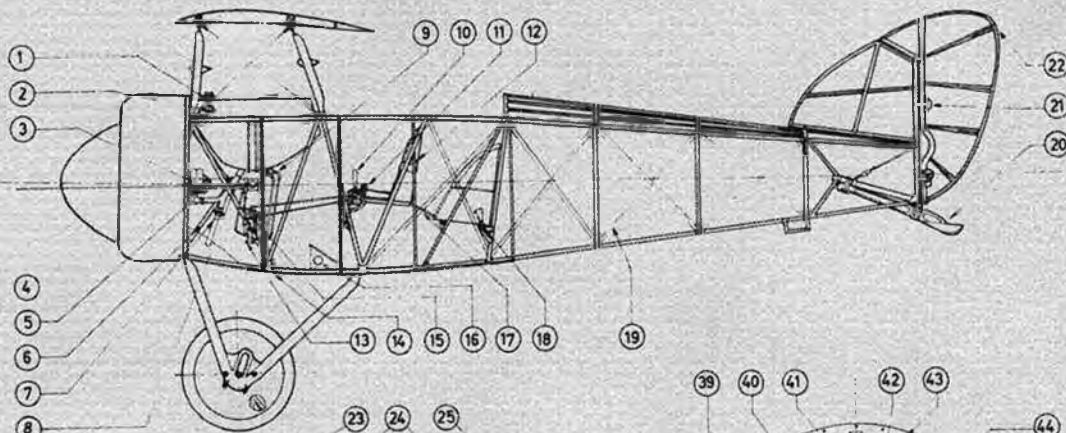
In the NA case it does not seem as if it ever was intended to be equipped with any kind of armament. As far as can be judged by the writer this would have been im-

Cockpit with 'streamlined' windshield and leather padding. The transverse tube visible just above the windscreen is part of the harness in which the aircraft is suspended.



SHEET No. 1

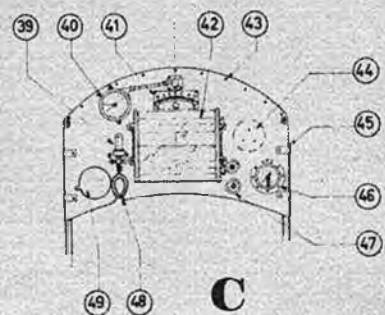
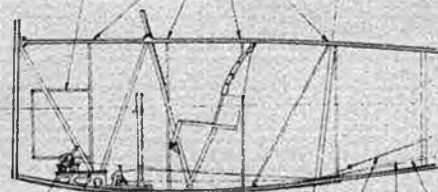
1. Fuel filler cap.
2. Oil filler cap.
3. Bosche magnetos, one on each side of crankcase.
4. Two degree upthrust from fuselage datum line.
5. Oil pump.
6. Steel-tube pylon support for rear engine mount.
7. Oil drainage cock.
8. Main oil cock.
9. Main fuel cock, also for tank drainage.
10. Throttle control handle.
11. Mixture control handle.
12. Original, lower mounting lugs for pilot's seat.
13. Fuel filter with mixture valve.
14. Fuel draining pipe leads through floorboard inside port lower longeron.
15. Throttle control bellcrank.
16. Plywood footrest for passenger.
17. Steel-tube strut between seats.
18. Harness secured to transverse member supporting seat.
19. Diagonal bracing; turnbuckles not shown.
20. Rubber-cord sprung wooden tailskid.
21. Rudder hinge with wooden fillets bolted to rudder mainspar.
22. Steel-tube ribs of rudder and elevator are offset from each other at outer frame.



A. SIMPLIFIED VIEW OF COCKPIT

23. Reinforcement frame around service hatch, inside of panel.
24. Wooden auxiliary formers to which the plywood panelling is screwed.
25. Fabric covering of rear fuselage starts here.
26. Aluminium-tube rudder bar with metal stirrups.
27. Plywood footboard.
28. Aileron cable pulley.
29. Elevator cable pulley.
30. Upper elevator cables.
31. Lower elevator cables.
32. Rudder cables.

A

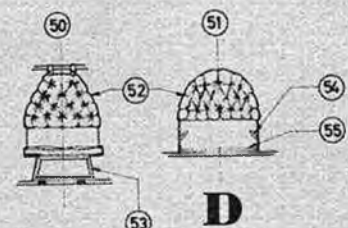
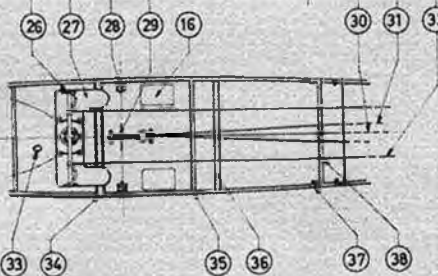


C

B. VIEW OF COCKPIT FLOOR

33. Aperture in exhaust shield for oil draining pipe.
34. Transverse U-bar between former wing mounts.
35. Rear wing attachment lugs.
36. Thin wooden strip over floorboard joint.
37. Floorboard fastening clamps.
38. Cable guides.

B



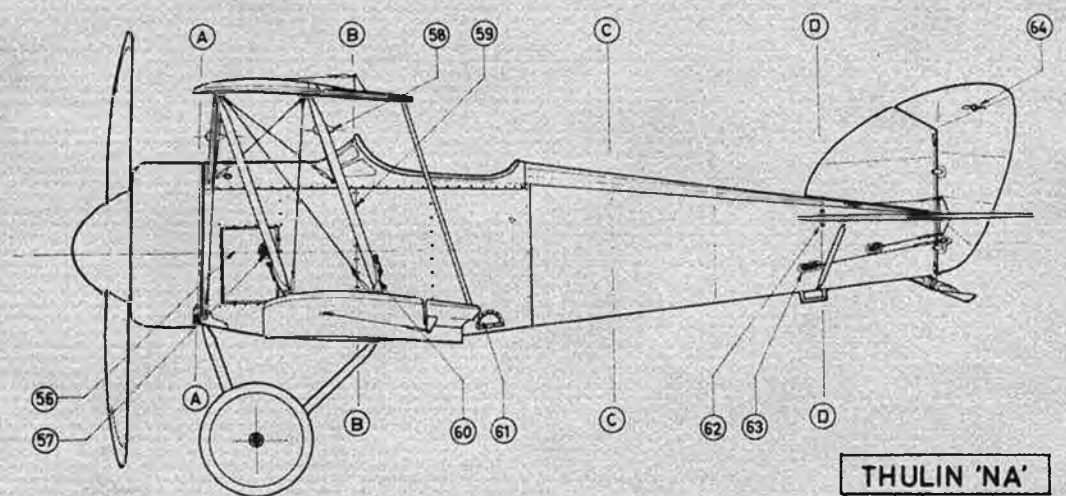
D

C. INSTRUMENT PANEL, twice given scale

39. Oil pulsometer glass.
40. Fuel gauge.
41. Bank indicator of air-bubble type.
42. Map case with map spools and transparent cover.
43. Panel screwed to former.
44. Probable location for compass.
45. Clamps securing panel to former.
46. ASI.
47. Ignition switches.
48. Copper oil pipe.
49. Cut-out for rev. counter.

D. SEATS

50. Pilot's seat.
51. Passenger's seat.
52. Imitation leather upholstery.
53. Welded U-profile support for seat.
54. Cut-out for harness.
55. Cushion for rear seat similar to that of pilot's seat.
56. Service panel, held in place by knobs.

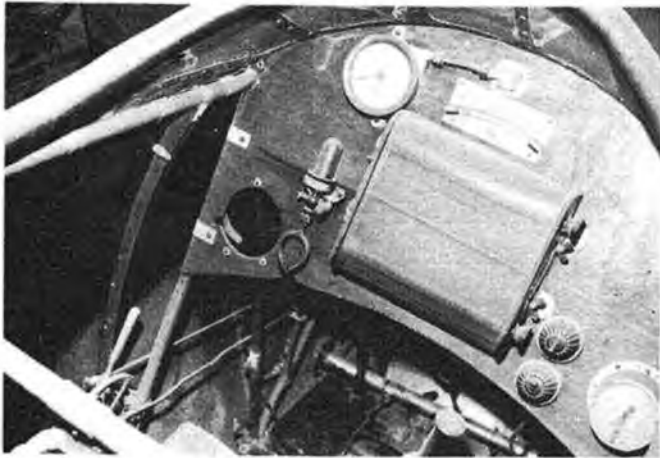


57. Carburettor air intake; both sides.
58. Wooden fairing at crossing of centre section bracing wires.
59. Plywood panels joint.
60. Locking device for dismantling and re-erecting of wings.
61. Footstep; port side only.
62. Adjustable mounting for tailplane.
63. Metal reinforcement of fabric at cable leadouts.
64. AETA trademark decal.

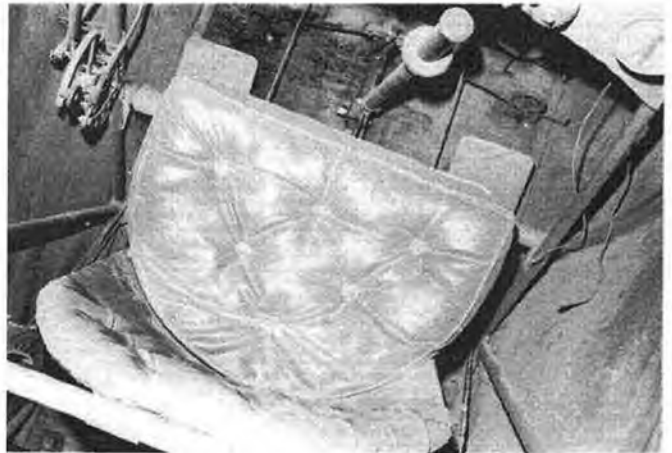
THULIN 'NA'

1

M.					
FT.					



Instrument panel; for reference see detail on drawing. The throttle/mixture control levers can be seen in the lower left corner of the picture.



Pilot's seat. Disconnected ASI tubes can be seen dangling to the right. Top left throttle/mixture control levers also note guide pulley on floor for aileron cable.

possible without fairly radical alterations. The fuel and oil tank unit, would as it is, prohibit any conventional arrangement of forward-firing guns, while the cockpit is too crammed to allow any practical use of a flexible gun for the observer. It is also very likely that the extra weight of a gun installation would have proved detrimental to the aircraft's performance.

The NA is a fairly conventional-looking single bay biplane, to some extent bearing a resemblance to the Sopwith Camel, e.g. the wing arrangement and 'broken' upper longerons. The slab-sided, welded steel-tube fuselage, diagonally braced in the rear portion by 'endless' wire-loops, also suggests that the AETA designers might have been influenced by Reinhold Platz of Fokker fame.

The front side panels are covered with plywood, screwed to four wooden auxiliary formers on each side, providing a smooth fairing between the circular cowling and the flat-sided rear fuselage. The sheet-metal top decking consists of two screwed-on components, the foremost covering the tank unit and the rear one pressed in one part with the streamlined windscreen frame. The entire cockpit is surrounded by leather padding.

The rear portion of the fuselage is covered with unbleached, varnished linen.

All tail surfaces are welded steel-tube structures, fabric covered and bolted to the fuselage. Both fin and tailplane incidences can be adjusted, though not during flight, which by 1919 standards perhaps seems unnecessarily primitive.

The 9-cylinder 135hp 'G' rotary is bolted to a star-shaped bearer frame in the circular front former, its rear mounting being supported by a pyramid shaped steel-tube pylon fixed to the front former with its apex pointing rearwards. The tank unit is internally separated into two compartments for oil and petrol respectively and is suspended behind the top longerons immediately behind the engine. It has its lowest point exactly above the carburettor/throttle unit which is fed via a fuel flow regulator/filter mounted approximately midway between the cockpit floor and the fuselage datum line on the port side of the cockpit. All fuel and oil piping is copper tube with brass cocks and connections. The oil pump is mounted on the



Close-up of control stick, cables and pulleys on cockpit floor.

engine bearer plate and driven from the same gearwheel as the Bosch magnetos for the two separate ignition systems. Lubrication is controlled by a pulso-meter glass on the instrument panel.

The wooden instrument panel is dominated by a large, glass-covered map case, around which the few necessary instruments are grouped: A.S.I., fuel gauge, rev.-counter, a simple bank indicator of the air bubble type and the two brass-cased ignition switches. The rev.-counter is missing on the aircraft together with at least one other instrument which may have been a compass or an altimeter. It is possible that some of these instruments were never fitted. The instrumentation is completed by an air bubble climb indicator on the starboard upper longeron, immediately aft of the instrument panel.

Seats are made from plywood, with the

backs and separate cushions covered with brown imitation leather.

Wings are orthodox in construction: fretted plywood ribs with wooden capstrips on two hollow mainspars and a smaller-sectioned auxiliary rear spar. The mainspars are interconnected by steel tube compression struts, and internal bracing is by means of piano wire. Ailerons of welded steel-tube construction are carried on all four wingtips, those on the upper wing are balanced and linked to the lower ones by streamlined steel-tube rods.

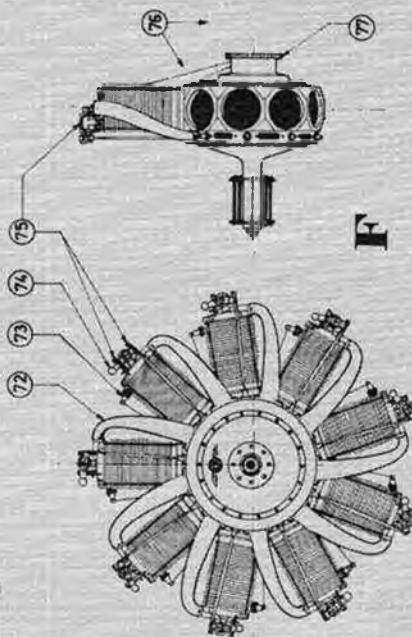
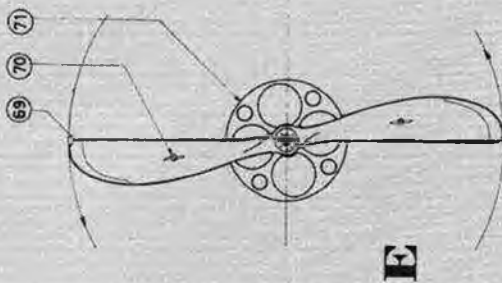
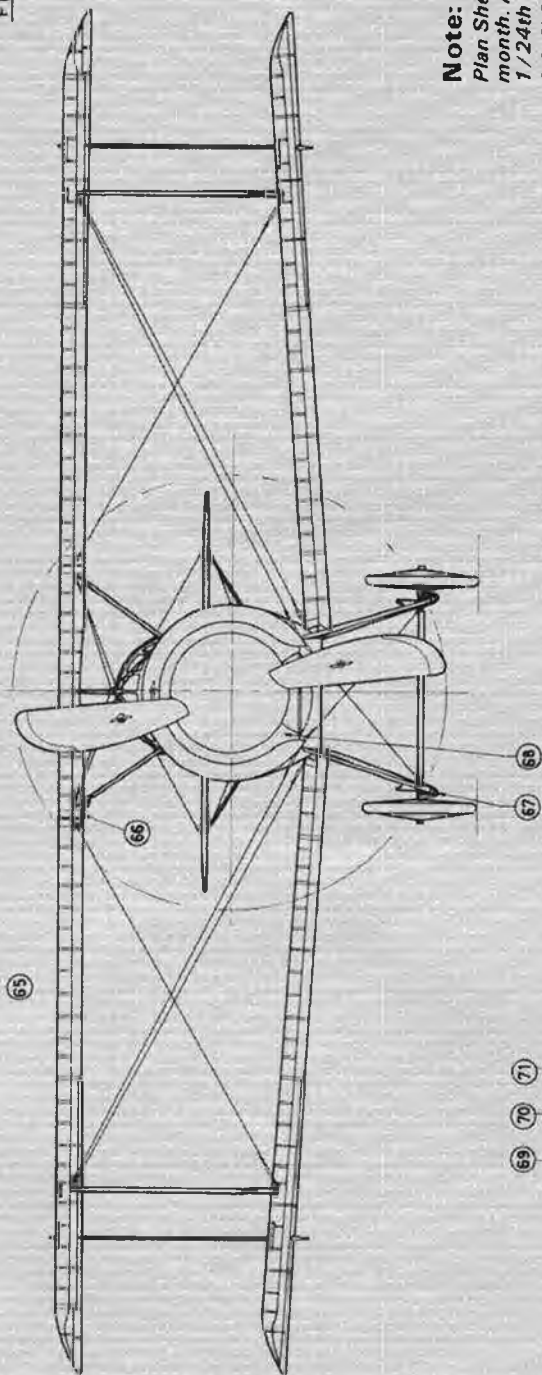
All struts including also the landing gear V-struts are of streamlined tubing. The wings can easily be dismantled and re-erected without the usual wire adjustments, thanks to a simple but rather ingenious locking-device provided at the lower ends of all four main struts. All wing surfaces are fabric-covered.

After the single flight made by Graf von Bismarck in 1921, the NA was put aside and was for many years stored at the old Thulin factory. Today it is suspended from the ceiling in the Thulin-section of the Landskrona town museum, which also houses a collection of Thulin engines and airscrews.

Despite the fact that no attempts towards rebuilding or restoration have been made, the NA is in a very good condition for its age. Of course the fabric is very brittle and even punctured here and there, but the aircraft is complete apart from a missing pair of instruments. The Technical Museum of Stockholm also keeps aircraft of the A, B, G and N types; all except the A-type in store and, due to lack of funds, in a rather deplorable state.

DATA AND PERFORMANCE

Length: 19¼' 1/8"/5.8m
 Span: 26' 6¾"/8.1m
 Height: 8' 3¼"/2.53m
 Wing surface: approx. 220sq.ft./20.45m²
 Lower wing dihedral: 3 dgr.
 Upper wing dihedral: nil.
 Stagger: 16 dgr.
 Weight empty: 882lbs./400kg
 Flying weight: 1,146lbs./520kg
 Max. load capacity: 661lbs./300kg
 Engine: Thulin 'G', 135hp 9-cylinder rotary with double ignition systems, spark plugs and magnetos made by Bosch.
 Maximum speed: 134mph/215kmh
 Landing speed: 59mph/95kmh
 Climb to 3,278ft./1000m/3.5 min.



Note:

Plan Sheets 3 and 4 will be published next month. A set of dyeline prints to a scale of 1/24th of these 1/48th scale drawings are available as Plan No. 3048, price £1.50 inclusive of VAT plus 35p p&p from the Aeromodeller Plans Service, PO Box 35, Bridge Street, Hemel Hempstead, Herts. HP1 1EE.

SHEET No. 2

- 65. ASI tube at leading edge of top wing. Missing.
- 66. Copper piping from pilot to ASI joined by rubber bushes.
- 67. Rubber-cord sprung axle.
- 68. Engine not shown.

E. LAMINATED AIRSCREW WITH SPINNER BACKPLATE

- 69. Brass reinforcement at blade tips.
- 70. AETA decal.
- 71. Spinner backplate, fretted for lightness and held in place by airscrew bolts.

F. 135 HP THULIN 'G' ROTARY

- 72. Inlet tube.
- 73. Bosch-made sparking plugs, two per cylinder.
- 74. Counter balance on valve rocker.
- 75. 'Hairpin' valve spring.
- 76. One cylinder only shown. Crankshaft extension, mounting plate, magnetos, oil-pump and carburettor not shown.
- 77. Gear-wheel for electric starting, not used on the NA.

THULIN 'NA'

SWINGLINER



VTO Control line stunt model for 2.5cc diesel motors. Designed by Robert Dulake.

Building

Swingliner is constantly evolving with new theories and modifications being incorporated. The plan presented here is for Mk.10 which features a very large, 6-inch throw, bellcrank and counter-balanced elevator, features which improve control precision, especially on very long lines where bow due to line drag begins to make control soggy.

However, this entails an extra pair of auxilliary pulleys, and a simpler, 'basic' control system, which, will give acceptable results on lines of up to and around 100ft. is also shown for those content to sacrifice some smoothness.

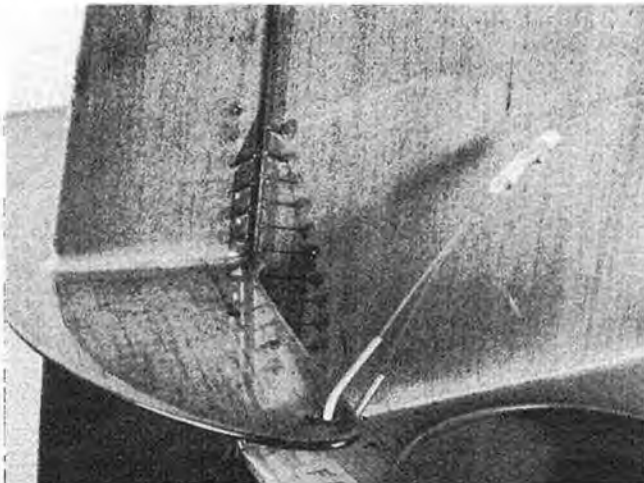
Whichever control system is used, the result will be a fully aerobatic model which flies at a level speed of 40-45mph on 100+ft. lines in wind of up to 20mph and with vertical take-off as an alternative to hand launching.

The final requirement is a motor, any motor which weighs no more than eight ounces with silencer and will give a constant thrust of over 2lbs. through fuel head changes of up to five inches. This admits 'hot' 2.5s of the Oliver ilk, or most average .19s, but remember, a bulky side silencer is 'out'.

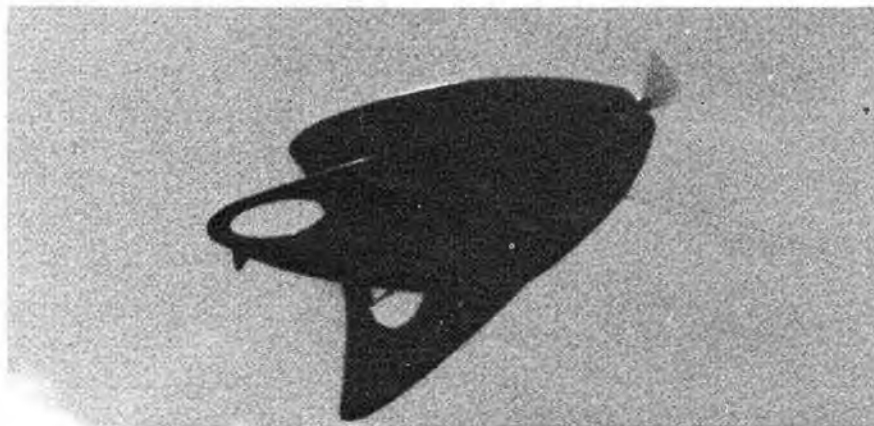
Whilst in some respects the aerodynamic refinement of the design extends no further than the brute force necessary to pull it along, this brute force has to be harnessed and directed and therefore, geometrical accuracy and balance are very important. Unintentional inaccuracies, i.e. warps, are easily built into an all-sheet structure of



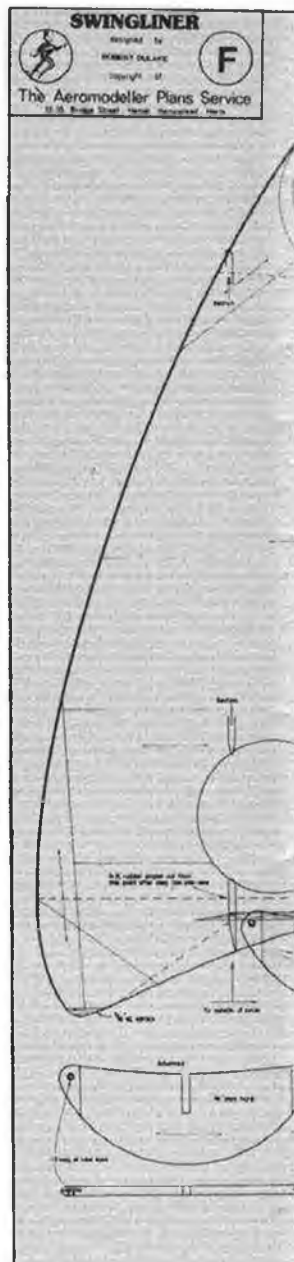
Detail of control pulley housing. Note the alternative holes for positioning the forward pulley.



Below: elevation control horn. Note reinforced area with sewn hinge and laystrate connection to horn with aluminium tube fitted so as not to allow kinking of wire.



Full size copies of the plan reproduced here to 1/5th scale are available as Plan No. CL/1442 price £2.95 plus 45p postage and packing. Overseas orders obtainable from appointed agents or direct from Aeromodeller Plans Service, PO Box 35, Bridge Street, Hemel Hempstead, Herts., HP1 1EE.



this type and special care to support the surfaces truly and rigidly during building, particularly in joining the surfaces together, should be observed. To this end it is worth spending some time selecting warp-free wood in the shop and in plasticising all cellulose finishing materials to the point where they have no shrinking,= distorting, effect.

Once the cruciform interlock of the two surfaces is complete, the rest is a matter of making the tank bay and adding the remaining ornaments, notably the pulley housings and the elevator with its 'coat hanger' bell crank and counter-balancing surfaces. The anti-scoff plates on the inboard wing, too, are important. The originals were made from acetate sheet, but this is difficult to glue and 1mm ply is advised.

Adequate notes for all stages of building

are on the plan. However the plea for accuracy in alignment cannot be over-emphasised, especially regarding the control system.

Here are some tips:

1. Build the surfaces over a glass sheet covered with polythene.
2. Rough finish the surfaces with the biggest sanding block you can grip.
3. Add up to 10% glow fuel to dope, less to sanding sealer, as a makeshift plasticiser.
4. Tissue cover the surfaces dry, brushing through sanding sealer as adhesive.
5. Seal the surfaces while separate and flat.
6. Make a right angled jig for joining the surfaces.
7. Align the pulley journals with 'drifts'.
8. Remove any high spots causing pulley/housing friction.

Tank

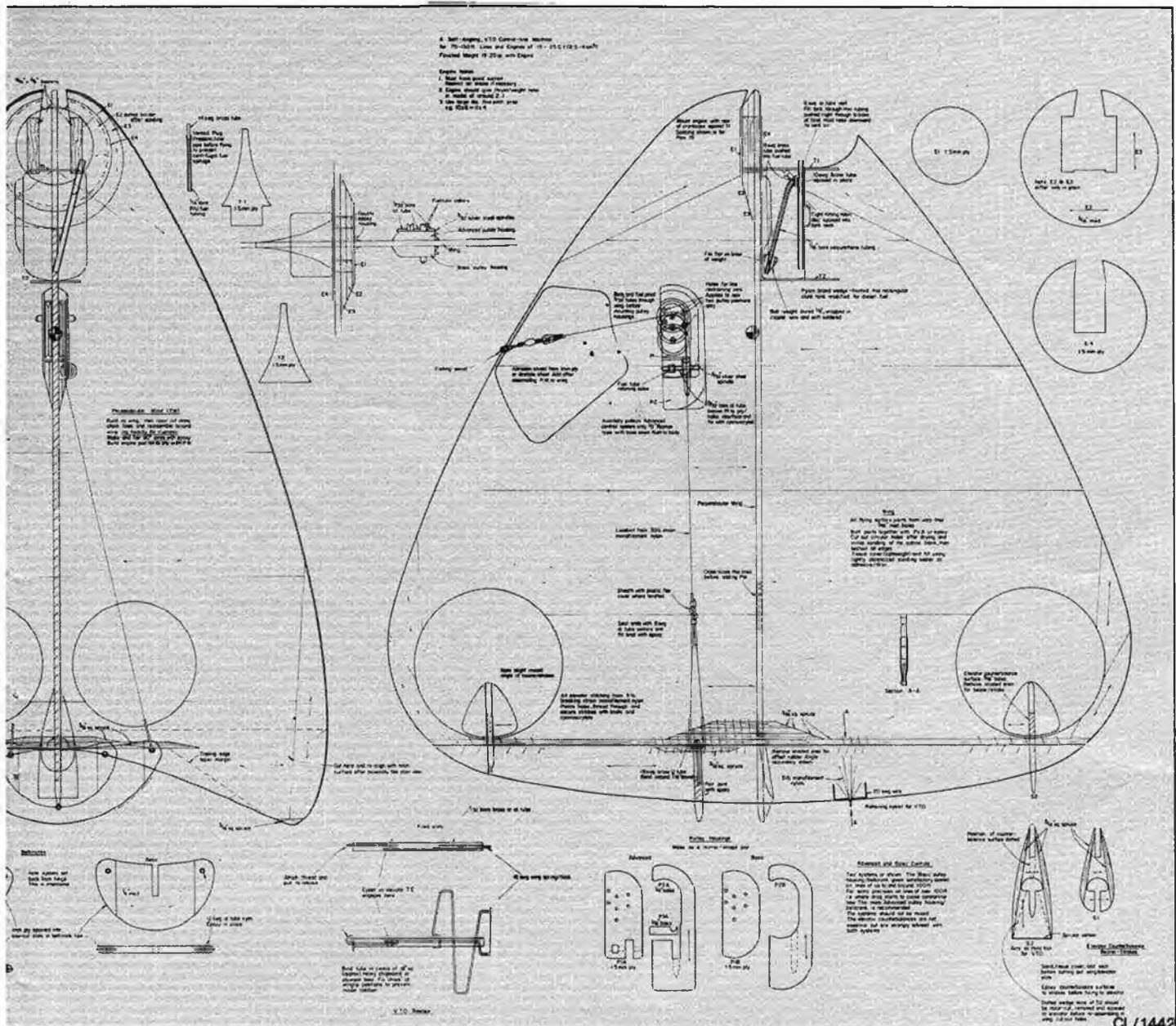
Use a commercial 4oz. wedge-fronted rectangular type. Remove 'flash' and truncate the normal front end candlebra to allow it to fit snugly against the rear of the engine. Use polyurethane 'clunk' tubing if the engine is a diesel. Again, the plan advises on this.

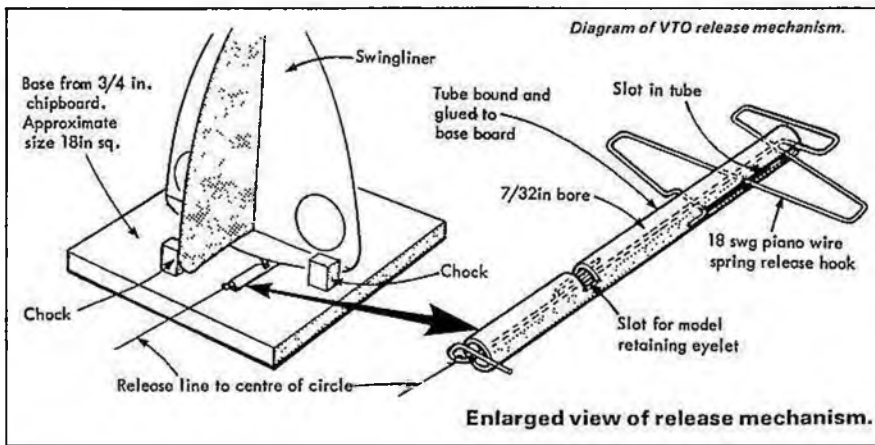
Balance

Make sure the C.G. is in the correct place, displaced towards the inboard wingtip. Add weight, but not drag, towards this tip.

Vertical take-off

A heavy ply or chipboard 'pad' with some form of spring-loaded catch will be needed to anchor the model so that it can be released by a thread held in the pilot's free hand. A suitable catch is shown on the plan and the general anchoring arrangement of





the model on the pad is shown in the diagram.

Scaling-up

There is no reason why the plan should not be scaled up by a factor of 1.25-1.3 and made from 1/4 in. sheet for a .35 or .40 c.i. motor.

Now there's a thought . . . and perhaps the answer to 200ft. lines???

Flying

If there are no warps, the C.G. is approximately where shown, the engine is run-in and the controls are free with the pulleys in the middle journal, find out what *is* amiss, remedy it, and fly the beast on 100-110ft. lightweight Laystrate lines.

Peak the engine, when well warmed, with the model held pointing vertically and with the tank one quarter full. There should be a healthy vertical pull well in excess of model weight and the engine should hold this indefinitely without slowing or needing significant control adjustment. An accumulating hot overcompressed effect indicates too much nitrate and/or too little oil and ether, all of which act against cooling, mainly by reducing fuel consumption. As little as 1/4% nitrate is enough for most diesels at moderate revs. on hot days. Some will manage with none. The engine will drop a few revs. when the model is held again horizontally, but should continue

running evenly in this position and pick up smoothly and quickly when again pointed upwards. If however, the engine cools off and misses, i.e. over-richens, when held horizontally and/or misses or cuts when returned to the vertical, there is too little suction and the choke area should be reduced a little by sleeving with aluminium tubing or fitting a fatter spraybar. This symptom may also be another indication of over-nitrated fuel.

Frothing of the fuel in the tank may also upset the engine run. If present, re-angle the propeller relatively to top dead centre or try other types, preferably larger, in order to reduce vibration. Check all props for serious imbalance before use.

When the motor is running well in all attitudes, half fill the tank, insert the vented plug, check that the leadouts are correctly engaged in the pulleys and have the model gently hand-launched pointing slightly upwards. Control response is especially sharp at very low speeds so keep the elevator near neutral for the launch. The feel of control will be a little strange at first after flying normal control-liners, the remoteness and slowness of the model contrasting with its speed of response and ability to keep going in whatever direction it is pointed.

Fly alternately high and low at first, checking the constancy of the engine run in flight. Watch the angle of the model to the lines. The outward swing upwind should be

obvious and should maintain adequate line tension without persisting and overpulling downwind. Some adjustment is possible. Moving the pulley forward will reduce the outward swing a little, mainly downwind. Moving the pulley rearward will give the opposite effect and reduce speed slightly also.

If the engine run is impeccable, and line tension is in order, as it should be, fly out the tank in level flight, recording the total flight time for future reference, re-fill, and try some large loops and a little inverted flying, again listening to the engine. Very large loops may show a slight but sudden drop of the nose just before reaching the highest position. This occurs when the 'G' of the loop changes from positive to negative, and is unique to the Swingliner design. Normal stunt models are incapable of flying 'changing G' loops other than squares due to their speed which, being enough to pull more than 1G at line length radius, will pull simultaneously with much greater than 1G from the centre of the loop.

Wingovers should be flown *into* the wind, at first rounding off smoothly just after passing the top of the circle, and listening for engine irregularities in the following seconds. Upwind pull-outs are then made progressively lower until, if at all, the engine falters. Wingovers flown away from the wind, as in normal practice, tend to be dangerous, the combined influences of wind pressure and climbing attitude causing excessive swing angles, leaving only a small thrust component for the climb itself.

Other standard manoeuvres have their peculiarities with Swingliner and have to be re-learned. For instance, the sharp decelerating turns on squares very easily become acute when handled with the control excess required by conventional stunters, although this may also indicate a need for more weight at the *inboard* wing tip. The long straight sides of a square have to be 'flown' the whole way, the slow speed showing up all irregularities. The importance of the lateral placing of the C.G. in governing smoothness of manoeuvres has only just been discovered — an example of constant design development — and has considerable effect on control sensitivity.

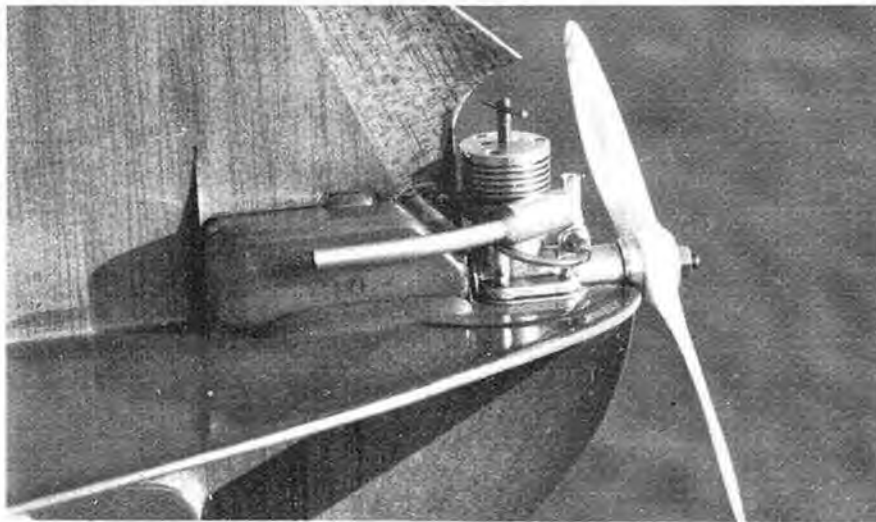
All the FAI manoeuvres are readily accommodated by Swingliner but tend to get lost in the large canvas available. More interesting is the possibility for new manoeuvres.

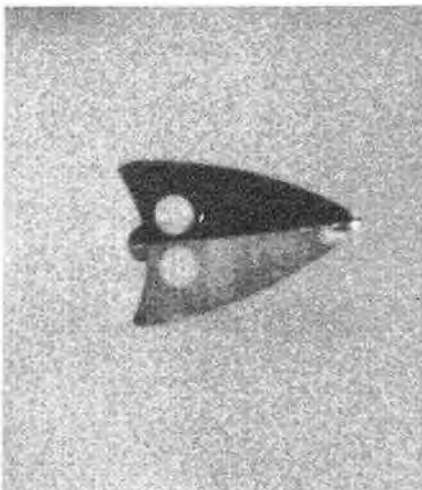
Overhead pull is, given a good thrust/weight ratio, strong and continuous, enough in fact to allow the model to break off from a wingover just past top dead centre upwind, wheel round in a high three-quarter circuit and dive back over the original climb route. This is new manoeuvre No. 1. See diagram.

The 'changing G' capability in round manoeuvres has been mentioned. The slower the airspeed of the model, the tighter the turn radius at which this occurs, and full up elevator applied at the top of a climb halfway downwind, i.e. when air-speed is at its lowest, gives a very tight turn to inverted in a few model lengths. This

U.K. and U.S. patent applied for

PAW 19 fitted with exhaust muffler and intake restricting tube. Note the position of the clunk tank which should be fitted as close to the engine as possible





Swingliner in flight and right: worm's eye view of new manoeuvres.

manoeuvre, mirrored in a downwind inverted climb on the other side of the circle, gives a sort of 'double stall turn' or sagging lazy eight, contained completely within the upwind half of the hemisphere. This can be continued ad infinitum in the same way as eights in the downwind half of the circle. This is new manoeuvre No. 2.

The biggest inconvenience not yet dealt with is landing. This is safe over grass, but it is always best to flare out and land on the last gasp of airspeed to be on the safe side. A somersault on landing is normal and although ungainly, absorbs a large proportion of the landing shock. Light weight

and low airspeed make the design fairly crashproof. Mk.5 has survived a 'deadstick' plummet from 100ft with only a dent in the wing leading edge to show.

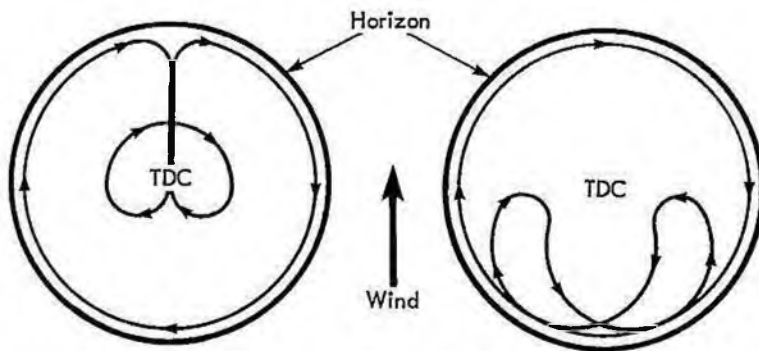
As an alternative to hand launching, vertical take-off is simple and does not need a helper. With the engine running at flying setting, the model is anchored by passing the spring-loaded pin on the previously described launching pad through the elevator eyelet. When this pin is pulled away by means of a thread held in the left hand of the pilot, whilst holding the handle at neutral and having checked that the long lines are not snagged in grass, weeds, etc.,

the model will go where pointed.

In flying on lines which are, for any given engine size, twice as long as those used in normal practice, Swingliner also takes up four more times the flying field area. This need not, however, be as anti-social as it seems, as the circle is itself uncrowded and two or three slow-flying Swingliners can fly in it without getting in each other's way. If necessary, one can fly double stall turns upwind while the other(s) flies normal manoeuvres downwind, and the two need never overlap. In calm weather, five, six, or even seven might fly combat on 100-ft. lines.

New Manoeuvre No. 1

New Manoeuvre No. 2



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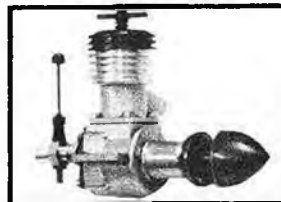
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7th Sandown Park Symposium

This event is always a pleasure to visit and this year was no exception. The weather was absolutely superb giving ideal conditions for the continuous flying displays.

Although we aeromodellers often criticise the all plastic ready-to-fly model, the latest import from Acoms, an electric powered R/C 'Cessna Skyhawk' gave a most impressive display. At one time there were four flying at once, each giving a duration of around six minutes and all the models performing loops, spins and wing-overs with plenty of power to spare. A full review of this Richard Kohnstam import will appear in a future issue.

The need for a quiet power unit has been stressed many times in these pages and the availability in recent times of four stroke IC

Large size prototype Turbotank for the Telco CO₂ motor. Micro-Mold are also producing a new charger, just visible here.

engines has helped considerably. HP seem to have come up with the ultimate design for a four stroke motor. On the Ripmax stand a representative of HP was demonstrating the quiet running and quick response to throttle of a prototype 15cu. in. motor.

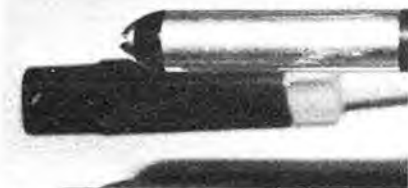
The secret of the motor to be able to pick



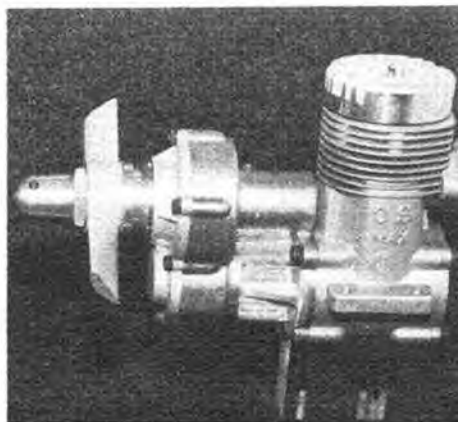
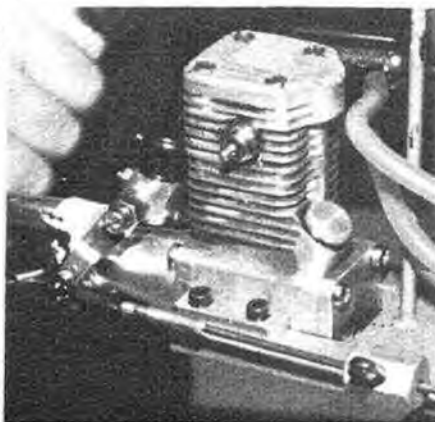
Janine and David Rawlins take time off to pose for the camera!

up revs after a long idle run, is the use of a rotary valve rather than the conventional valve system of pushrods mushroom valves etc. Although we were not given a detailed technical description, it is possible to give a rough idea of the function. The rotary valve (which is a vertical hollow tube) is housed at the rear of the crankcase cylinder casting and is driven via bevel gears housed in the crankcase rear. Fuel passes up the rotary valve and is drawn into the combustion chamber as the valve aperture lines up with the intake. The clever part is that the valve seals the glowplug from the fuel mix until it is compressed and in a combustible state. This avoids cooling or oiling up of the plug as can happen with conventional designs. The production motor will be a 20

The substantial size of the Micro-Mold Wallis Autogyro can be seen here. We will be reviewing this model in a future issue.



Far right: new OS Max 60 reduction geared motor. Centre: prototype HP15 four stroke engine. Note: the circular cap rear of crankcase is for test measurements and will not be on the production version. Below: Riko electric powered Cessna Skyhawk for R/C.



SOLARTEX

Mike Booth reviews the latest iron-on fabric covering material from Solarfilm

SINCE nearly doing permanent injury to myself by spraying two part polyurethane I have been a confirmed user of 'Solarfilm.' No fuss, no smell, no danger. Like most progressive modellers I have turned my attention to bigger and yet bigger models but have been a bit 'put off' by the very high cost of imported iron-on fabrics.

When I was invited to conduct a test on the practical use of 'Solartex,' I did not have a large airframe of my own on which to test the new material.

I was lucky that Tony Downs of the Blackpool Club had just finished, ready for covering, a rather nice Svenson quarter scale Stampe, which he kindly agreed to allow me to use. The fuselage of this rather large lump was covered in about two hours including photography time, in only four pieces of 'Solartex.'

The technique is just about the same as with 'Solarfilm' except when covering sheet surfaces. Where you start from the centre and stick-shrink outwards.

I started by reading and then re-reading the very comprehensive and clear instruction sheet provided with the material. This is always a worthwhile exercise as it makes sense that any manufacturer knows more about his products than a first time user.

The appropriate temperature tests were done with scraps of 'Tex' and the iron allowed to settle down at the correct temperature.

'Solartex' is remarkably tolerant of temperature variations, the main consideration is the requirements of the structure to be covered. Details are very clear in the instructions.

Panels are cut out of the roll to allow about one to three inches overlap and as there is no grain or preferred shrink direction whatsoever the material can be cut to minimum wastage.

The bottom of the fuselage was covered first and the Solartex was tacked down at several points around the panel. The iron temperature was then raised a little and the 'Tex' was sealed between the tack points being careful to gently pull out any wrinkles which appeared. The overlaps were then

trimmed by laying a strip $\frac{1}{4}$ in. square balsa behind the excess material and using a new razor blade to trim off the excess, this leaves $\frac{1}{4}$ in. overlap to seal around the framework. The sides and top were then covered in the same way but ignoring the difference between open and sheeted areas. All overlaps were then sealed together. The amazing, property of 'Solartex' is that the overlaps and joints just disappear completely. The base fabric is so fine that the adhesive bonds right through the fabric without showing a line or increase in thickness.

After a quick check that all joints and edges were fully sealed the iron was set up to 'shrink' and lightly wiped over the surfaces — magic — absolutely drum tight and not a single wrinkle. A tap on the fuselage produced the satisfying metallic 'ping' which one can get with a good nylon covering job.

Meanwhile while I was very carefully covering the fuselage our friend Tony had virtually grabbed a wing half and a panel of 'Solartex' big enough to cover the whole panel both sides. He worked in mid air without use of the bench and proceeded to 'throw' the 'Solartex' on!

He started at the leading edge and covered the bottom of the panel using iron and scissors in apparently wild abandon, slapped an aileron in place and fixed a 'Tex' hinge. The top surface was similarly treated and tips, which are fairly curvaceous, were shrunk down and overlapped.

Now Tony is a good builder but that panel looked a disgrace and I began to wonder if the covering would come off as easily as it went on. It turned out that I had been wasting my time taking so much care of my bit. Tony shrunk up the wing covering as suggested and the end result was absolutely perfect. Not one wrinkle, no warps, no joints showing and a perfectly fitted aileron hinge with no gap and floppy free.

I noted particularly that there were no places where the 10 per cent shrink had deformed the structure 'Tex' seems to shrink to drum tightness but stops shrink-



As an extreme test we covered a tennis ball with Solartex. As can be seen from the photograph, over half the sphere has been successfully covered so there should be no difficulty in covering any compound shape found on a model.

ing before the framework 'gives.'

Having witnessed this performance I decided to see what really could be done with 'Solartex.' So having recently confiscated a new tennis ball, and that's another story, I used normal techniques to see how much of the ball could be covered in one piece. (See photograph).

I have heard one or two criticisms that 'Solartex' in the standard 27in. wide sheets is not wide enough for some jobs, so I cut a strip from a piece of waste material and ironed the ends together. It was impossible to pull the joint apart! So now, if necessary, sheets of 53in. wide can be made quite easily.

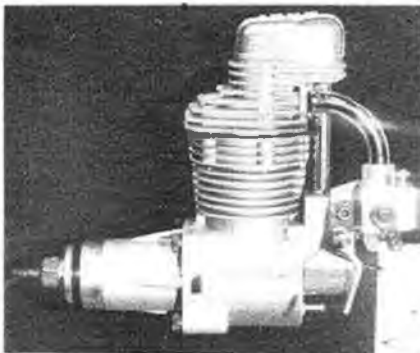
The overlap should be 1in., pinned out straight on a flat surface and simply ironed together. Shrinking should be done with an iron and only up to half of the joint to allow half of the overlap to shrink and the other to take the strain. When cool the other half is treated the same way.

The colours are opaque and brilliant and the 'antique' is exactly right for a doped fabric finish.

Other colour schemes can be arranged by using the nearest colour of 'Solartex' as a base colour and using automotive spray cans to produce the final finish colour. The base colour should always be lighter than the final colour required. If the final colour required is lighter than the 'Solartex' range then the 'brilliant white' makes an ideal base coat.

Although the finish is 'fuel resistant,' I feel that the surface texture could hold dirt, cow pat splashes etc. so I think that a light coat of proofer, Tufcote, Furniglass etc. would make it easier to keep a model in as new condition.

New Enya 61 four stroke motor is a nice piece of engineering. Shown by Ripmax.



cu. in. and a 90 cu. in. version will also be available at a later date. Ripmax should have these motors on the market this autumn.

Another new HP device on show was a throttle fitted with an accelerator pump, designed to fit existing motors.

The continual vintage upsurge was evident with a replica kit of the Keil-Kraft 'Slicker 50.' This kit and a vintage transfer sheet of NGM, NGA, APS, SMAE and ABA logos were on sale at the Vintage Hobby Scene stand.

As always DPR Models were there with their range of beginners' models. David Rawlins tells us the demand for his new glider kit 'Rare Bird' is tremendous; good news, we wish them all the luck in these

hard commercial days.

Micro-Mold had two larger tanks than the Standard Turbotank on display, which have over twice the capacity with very little increase in weight. We have plans to try one of these units in a control line model. Also on show on the Micro-Mold stand was a very impressive Wallis Autogyro complete with pilot.

Of course there were many other interesting models and many activities, not all aeromodelling; the car and model railways put on a terrific show. Some of the railway layouts are getting so complex they require quite a large team to run them.

If you haven't ever been to the Sandown Symposium, make it a date next year, you won't be disappointed.

25 YEARS AGO

By DAVE DAY

A change of cover style distinguished this edition, instead of the usual tinted monochrome photo (which sometimes managed to convince you that it was a colour photo), there was a reproduction of a Laurie Bagley painting of Billy Barker's Sopwith 'Snipe.' This was complemented by 1/72nd Scale drawings of the aircraft (Aircraft Described No. 86) and Arch Whitehouse's feature on Billy Barker V.C.

Commenting on the change in his editorial the editor said that while 'Aeromodeller' was a 100% model aviation journal it did not prevent the inclusion of 'Authentic stories of the men who flew historic machines such as the Snipe'. The recent coverage of the 'Gossamer Condor' and 'Albatross' proves this policy is still a sound one.

Hangar doors had 'News of yet another fatal accident caused by an Aeromodeller flying too close to high tension cables', with the comment that 'Fatalities of this type seemed to be occurring almost at the rate of one per month'. Happily, this no longer seems to be the case; are we learning some sense at last or is this merely a reflection of much reduced interest in C/L flying?

There were three plans service introductions in this issue, plus a fullsize plan. A 1/6th scale (72in. span) Cessna

172 by W. P. Holland (yes that W. P. Holland) was intended for F/F or R/C, the original weighing less than three pounds and being powered by an AM25 Diesell 'Hatchetman' was a 42½in. span A/1 Glider by J. Roderick. The most interesting plan was 'Star Dust' by W. B. Hart, this being a mid-wing, 'V' dihedral, twin fin, swept forward wing, power model with knock-off wings and an airbrake D/T (Whew!). Span was 48in. and suggested power 1 to 1.5 cc motors. A profile 9in. span catapult or Jetex powered model of the Convaire XFV 'Pogo' formed the fullsize centre spread plan.

'Model News' had the usual interesting selections of readers models including a couple of ducted fans (very popular in those days) and a pair of attractive speed models by a certain Ron Irvine.

Indicating the enormous progress in engine design since 1957 was 'Engine Analysis' number 37 featuring the DC 'Rapier' which was considered to be a 'hot' 2.5cc motor and produced .2125bhp at 13,800rpm.

'Motor Mart' contained news of the new OK.049S Glo-Motor which featured a pull start device, with the suggestion that for ducted fans (those two words again), this was the real answer.

A notable feature of this issue was an article on the 'Galloping Ghost' by Nathan H. Rambo III (better known to his friends as 'Nate'). This remarkable device really

deserves some sort of prize for sheer ingenuity. From a single channel R/C outfit it provided proportional rudder and elevator control from a single electric motor (the ubiquitous, and justly famous, 'Mighty Midget'). Latter versions even provided engine control too! While things at the receiving end were remarkably simple, however, this was complimented by remarkable complexity at the transmitting end. This was solely due to the then state of the electronic art and a modern version could have much to offer in terms of a super light set-up for small models.

Both 'World News' and 'R/C and Combat at Woburn Park' contained news of a world tour by Messrs. Howard Bonner and Bob Palmer of the USA to demonstrate R/C and C/L Aerobatic Flying. Bob Palmer's model, illustrated in both reports, was the original prototype of his famous 'Thunderbird' design, complete with radial cowling. These photographs, and later articles on the model, made a great impact on the writer who proceeded to produce a long string of radial cowled stunt models. These notes are being written on the 25th anniversary of the Woburn demonstration and I cannot remember why I was not there but, strangely enough, I had never actually seen the model until recently. Last year Ron Moulton, who had been given the model by Bob, asked me if I would care to restore it. Naturally I leapt at the chance of this, more anon.

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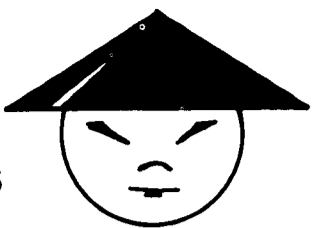
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COOLIE



CO₂ POWERED SPORTS

MODEL DESIGNED BY IAN BARRETT

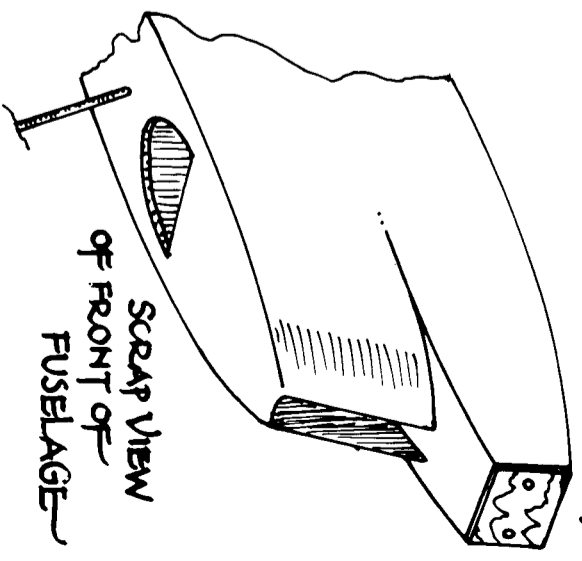
5° PT. SIDE-THRUST

TOP DECKING 1/16 SHT.

φ 3/32 WING DOWELS



WING



SCRAP VIEW OF FRONT OF FUSELAGE

5° DOWN THRUST

SPONGE RUBBER

TWO LAMS OF 1/16 SHT. FACED WITH 1mm PLY

F1 F2 1/16 SHT.

F3 TWO LAMS. 1/16 SHT.

F4 & F5 1/16 SHT.

F7 1/16 SHT.

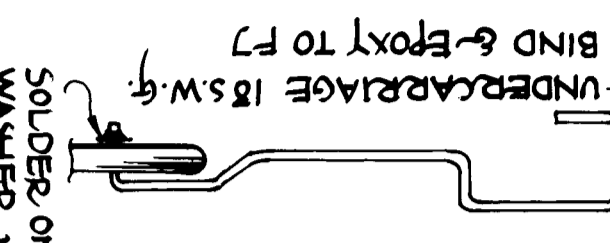
F8 1/16 SHT.

FUSELAGE SIDES 1/16 SHT.

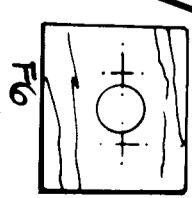
TOP & BOTTOM 1/32 SHT. N.B. GRAIN DIRECTION

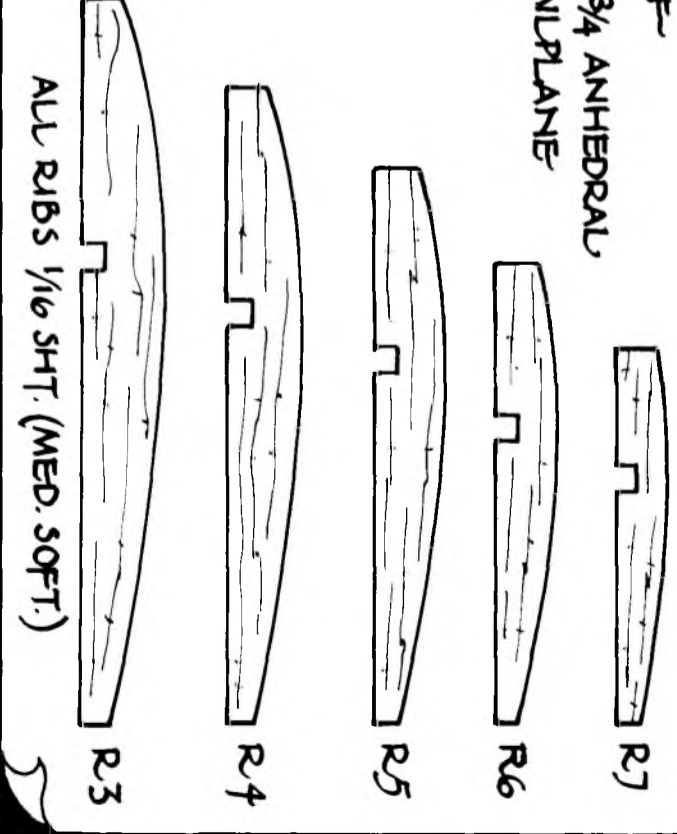
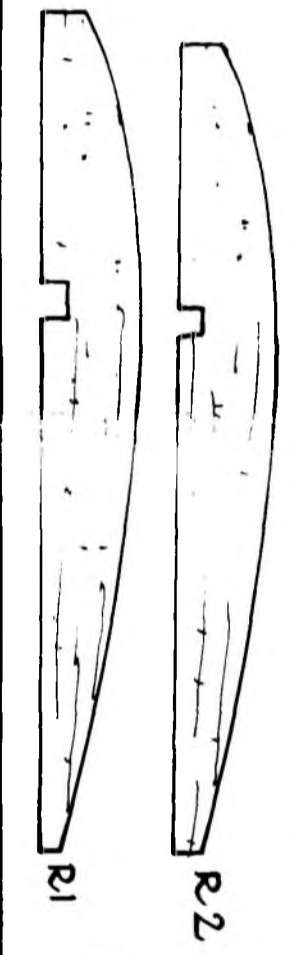
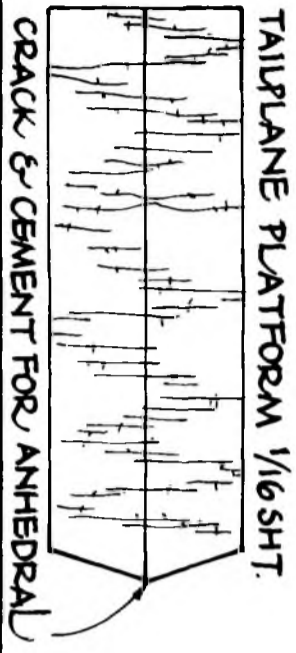
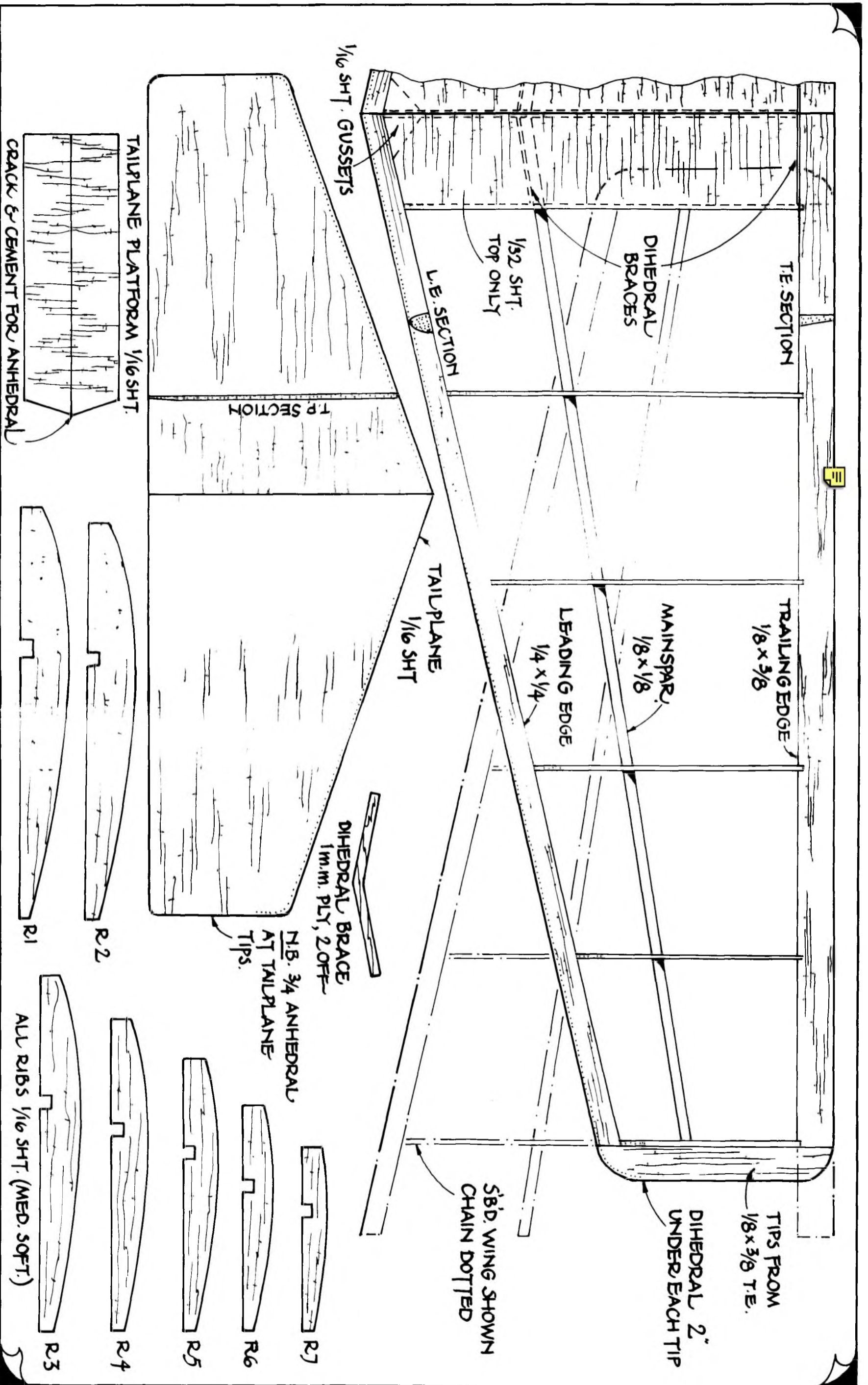
STRAKE 1/16 SHT.

FIN 1/16 SHT. N.B. FRONT EXTENDS TO BOTTOM OF FUSELAGE



JOIN LINE





Vintage Corner

By Alex Imrie

'Improved' James 1938 Motor

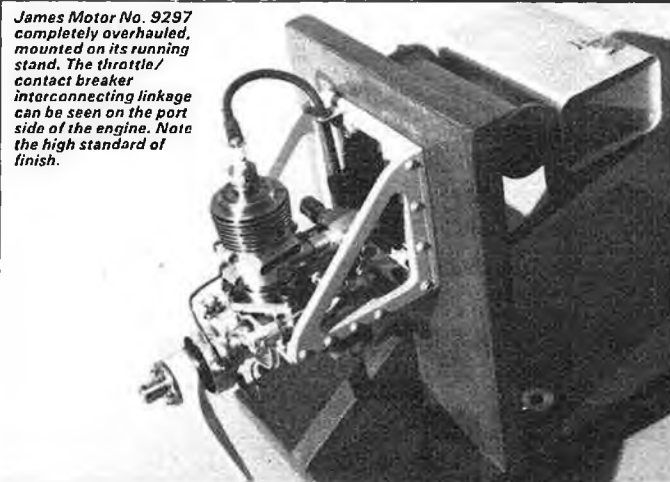
A number of years ago Mr. David Hawes of Liphook, Hants., was given some parts for a petrol engine and has recently re-worked these into a working example. From previous descriptions given by Mr. Hawes, the writer considered that the engine was a James of pre-war vintage, and sight of photographs now confirm this. The engine (serial number 9297) was a 1938 version of the James, having a capacity of 10.6cc and was said to have been capable of developing ¼ hp at 5,000rpm swinging the recommended 13in. dia. by 7½in. pitch propeller. The cylinder has 9 cooling fins and a detachable jacket manifold around the cylinder similar to the old Ohlsson Gold Seal engines. It is not mere coincidence that this engine resembles the Gold Seal in several ways, since component parts for both motors were made by the Rice Manufacturing Company, whose owner, Harry Rice, was later to join forces with Irwin Ohlsson to form the well known engine firm of Ohlsson and Rice.

The full details of all the changes made by Mr. Hawes, including many photographs of the component parts, really warrants a separate article on the subject, and this will be undertaken when space permits. The main changes were as follows: new method of cylinder fixing, new front bearing housing, new crankshaft, piston and connecting rod, contact breaker extensively overhauled and re-bushed, and a completely new carburettor made up from a Merco throttle unit. The whole engine is now mounted on a very fine test stand complete with fuel tank and batteries, switches and controls.

Mr. Hawes reports that initial test runs with a 12in. dia. by 4in. pitch Topflite wooden propeller show about 9,000rpm being obtained, which augurs well for the future when the intention is to fit the engine to a flying scale radio design probably of the Desoutter high wing cabin monoplane. To those amongst us who are against this sort of thing and argue that any restoration should merely have been aimed at making the engine look as it did in its heyday, remember that the engine was unidentified and no illustrations or data were available, finally Mr. Hawes has the following to say: "... I have in the process, converted a box of rusty, damaged, and missing parts into a working power pack which shows promise of many further years of useful life."

Below right: a reconstruction of the James petrol engine before Mr. Hawes commenced re-building. Note the odd cylinder fixing, where four screws in a square base are rotated through 45° to place screws fore and aft. See text.

Below: fifteen year old Mark Olarsch of Baltimore with his King Burd, with which he placed third in a recent Texaco style contest (2cc of fuel being allocated for each ½lb model weight). Mark also won the club's construction contest and the trophy for the 'Best Junior of the Year.' Well done Mark!



James Motor No. 9297 completely overhauled, mounted on its running stand. The throttle/contact breaker interconnecting linkage can be seen on the port side of the engine. Note the high standard of finish.

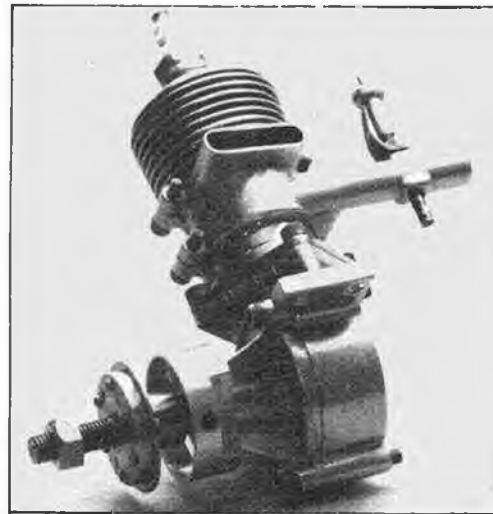


A 'Do-it-Yourself' Ignition Coil

Many readers have indicated an interest in the construction of their own coils and the following article from a 1944 Model Aircraft magazine (Vol. IV, No. 1) has been selected for their guidance since the steps given appear to be easy to follow. We would welcome any comments from readers who decide to follow these instructions, and would be interested in hearing about the results they obtain.

Core. This is made from soft iron wires 2in. long. It is important, for good results, that the right type of wire is used. It can be obtained from an old car ignition coil to ensure that it is of the right quality. Sufficient wires to make a core of ¾in. diameter are required and the finished core should be wrapped with empire cloth insulation (one layer), or modern equipment.

Primary Winding. The primary winding consists of approximately four layers of .024in. (23 S.W.G.) enamelled copper wire, hand-wound onto the insulated core, reversing the winding ½in. from each end. (D.C. resistance, .4 ohms).



Secondary Winding. This consists of 8,000 turns of .0024in. (46 S.W.G.) enamelled copper wire (D.C. resistance 5,000 ohms). A winding fixture or bobbin is required to produce the secondary winding successfully, and a suitable fixture for this purpose is shown in the illustration. A former made from adhesive paper tape 1½in. wide should first be wound on to the spindle of the winding fixture. Four layers are required, and care must be taken to see that the former is not too tight on the spindle, or you may have difficulty in withdrawing the finished secondary winding from the winding fixture. Start winding the secondary, interleaving each layer with paper .001in. thick and reversing each layer ¼in. from each end of the fixture. Make off the start and finish off the winding with a flex pigtail for connection purposes. Do not forget this. Withdraw the secondary winding from the winding fixture when complete.

Assembly. Insert the core and primary winding inside the secondary winding former, and place the assembled coil in a suitable container, joining the finish of the

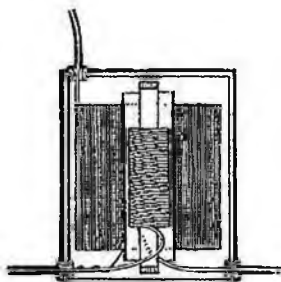
MINIATURE COIL

PRIMARY WINDING

CORE INSULATED FROM PRIMARY WINDING WITH LAYER OF EMPIRE TAPE

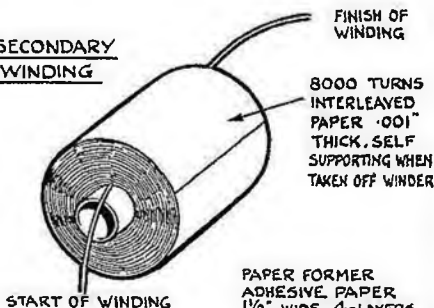


SOFT IRON CORE 2" LONG. $\frac{3}{16}$ " DIA.



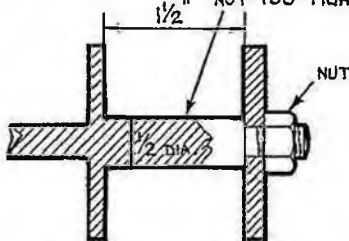
COMPLETE COIL

SECONDARY WINDING



8000 TURNS INTERLEAVED PAPER .001" THICK. SELF SUPPORTING WHEN TAKEN OFF WINDER

PAPER FORMER ADHESIVE PAPER $\frac{1}{2}$ " WIDE 4-LAYERS NOT TOO TIGHT



WINDING FIXTURE FOR SECONDARY COIL

primary winding to the start of the secondary winding and leading this through a suitable aperture in the casing. Lead the start of the primary winding and the finish of the secondary winding through the casing at suitable points in a similar manner.

Now immerse the complete coil and casing in hot paraffin wax, leaving it a few moments until all air inside the container has been expelled. Withdraw from wax and drain off.

Old Magazines

The first model aeroplane magazine to be published in this country is thought to have been 'The Amateur Aviator' sponsored by the model supply firm of Weston Hurlin & Co. before the first World War. It would be most interesting to see any of the three issues produced before the magazine stopped publication. While model aviation articles were to appear in many periodicals after this, notably in 'The Model Engineer and Practical Electrician', as far as is known it was not until Model Aircraft Supplies Ltd. of 53 Old Kent Road, London S.E.1 produced their 'Model Aircraft' monthly from September 1932, that an all-British magazine devoted entirely to the hobby once again became available. Can any reader tell us how many issues were published before this magazine ceased publication? 'Aeromodeller' emerged in November 1935, and incorporated 'The

Sixty three year old Mr. Prince Frankum of Victoria, Australia, built this attractive freelance model powered by a 30 year old ED Racer diesel. The builder admits that his 64in. span model is not an old-timer but he maintains that he is!

Skybird', a bi-monthly publication that had enjoyed a two year run as the official organ of the Skybird League which was devoted to solid scale model aircraft. Hard on the heels of 'Aeromodeller' came another British model aero monthly when 'The Model Aeroplane Constructor' came out in May, 1936, but eventually this periodical ceased publication and was absorbed by 'Aeromodeller' from December, 1938.

During 1944 'The Journal of the SMAE' began to change from the newsletter type of layout with mainly club reports to a small magazine format, and it adopted the title of 'Model Aircraft'. This magazine was to enjoy a life of some 21 years before it too was absorbed by 'Aeromodeller'. There must have been other British model aircraft magazines not known to the writer, and it would be interesting to compile a complete listing of them. Any information on any of the above mentioned or other early magazines containing model aviation topics will be gratefully received.



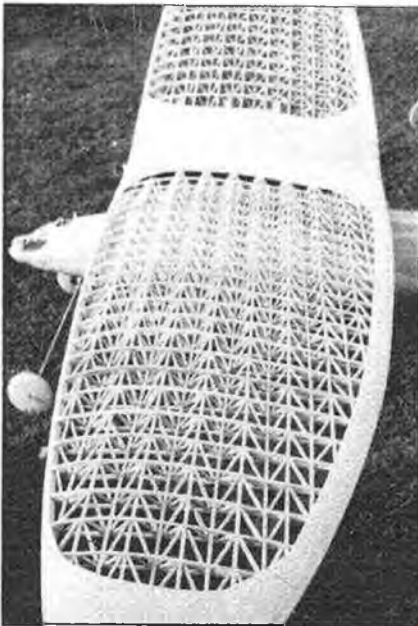
Cover of the December 1932 issue of the Model Aircraft magazine produced by Model Aircraft Supplies, London.

Readers' Comment

Don Read of 21 Guildford Road, Farnham, Surrey tells us that he still has in his possession a Veron Cardinal which was found on Chobham Common last year. If you think it is yours write to Don with a description of the model to claim it.

Jack Humphreys has certainly produced a warp-free wing structure for his Valkyrie by fitting inter-rib diagonals over the whole span. From photographs seen of Carl Goldberg's original model no such bracing was incorporated. However, in the articles describing the model in Air Trails (September and October, 1938) one third of the span was so treated over a depth of half of the chord, so obviously Goldberg felt the need for some rigidity. Jack will use a glow-plugged 60 to power his model, so the slight increase in weight should not trouble him. Apart from building giant models Jack is currently making compressed air engines and tanks and hopes to be able to power some of his smaller lighter models with these.

Eric Clutton of 92 Newlands Street, Shelton, Stoke-on-Trent is still hard at it modifying glow engines to spark ignition, and reports that he has recently converted



The Humphreys family of Northampton like them big! Jack reckons that there are over 2,000 pieces in this 10ft. span Valkyrie wing, but every time he tries to count them he loses count. Jack's wife Ann already has her own Valkyrie and Super Buccaneer. See text.



Danny Sheelds, that active old timer from Maryland, has just finished this replica of Colonel Bowden's Blue Dragon. Powered by Brown Junior Model 'D' cut-off by Old Imp clockwork timer two channel radio controls elevator and rudder. Hidden by the wing in this view are the original 4 1/2 in. diameter M&M airwheels.

a Fox Eagle ball-bearing engine, and also does throttled engines, so his scope is widening with experience. Eric tells us that he uses 'probe' wire from Tandys for HT purposes with a miniature crocodile clip soldered to each end. He also suggests making the other coil connections via a plug in order to be able to use the coil in different models.

Three pancell type nicads and two Sub C type provide the power for his airborne ignition installations, and he recommends using car type 12 volt condensers. The ones with a lug are best and seal the wire entry point with epoxy, cost of these is around 50p each.

The original Hep Cat was designed by Charles Guarnieri and was described in October 1944 Air Trials. Made for Ohlsson 23 size engines, its span was 46 inches. Peter Bull enlarged the design and flies his with radio control using a Snipe 1.5cc diesel fitted with a throttle. He had some exciting flights when the elevator was linked to the throttle (in order to operate three controls on two servos). 'Up' elevator opened the throttle, and 'Down' elevator closed it. This worked very well in calm weather, but when allowing the model to drift down a 15mph wind Peter found that full throttle made the model climb without penetration, so he had to let the model run before the wind while following it in his car. Needless to say, Peter has now fitted conventional three-channel radio and just accepts the extra weight of the third servo, the model now weighing 2lbs. 14 1/2ozs. which includes 4ozs. of ballast. Incidentally Peter can supply copies of the Hep Cat plan, and is keen to obtain a copy of the Peerless Panther drawing.

A number of readers wrote in showing an interest in the brass gear wheels mentioned in this column in the May issue. Unfortunately the manufacturer cannot



Below: Peter Bull of Tonnypark, Kilkenny, Eire, built and flies this 57in. wingspan Hep Cat, held here by his daughter Marion. See text for details.

produce the wanted items in the small numbers and at the reasonable prices that were initially envisaged. I am currently running down other leads which include approaching local model engineering societies, and when I have something tangible to report will make my findings known. Mr. Simeon G. Bull of Canterbury is building two Jackdaws and has used the brass gears from a Rico marine gearbox.

This item provides power to two shafts from one motor, the gears give a choice of ratios, but I am unable to state just how good these gears are and whether or not they will stand up to the strain of wound rubber. Another source might be gears from meters or similar measuring devices, and if any readers have information on the sort of gears such units contain, the writer would appreciate details.

Frog Ski-Plane recently acquired by Mike Wilson of Enfield is one of the rarer versions of the famous Interceptor, and brings Mike's Frog collection to over 20 different examples.



SCALE MATTERS

by Alan Callaghan

Indoor Scale Nationals Milton Keynes

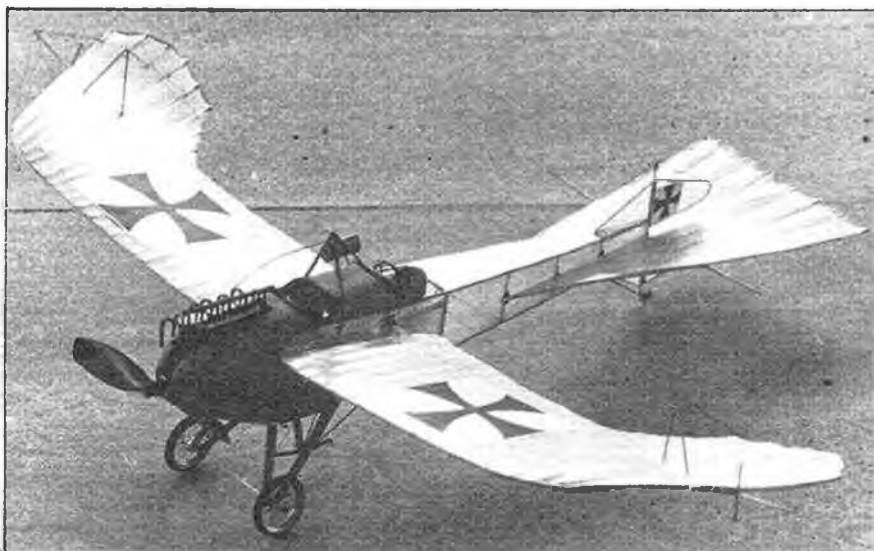
This meeting will undoubtedly go down as the most well-supported indoor scale event yet to be held in the UK. The idea of using formal pre-entry as a means of keeping down numbers mainly to ease the burden on the static judges as anticipated following the entries at last year's event at Derby seems to have backfired and encouraged more models than ever to make an appearance. Contest directors just can't win, or so it seems. This year the pre-entries were evenly spread with 28 in Peanut, 25 in Open Rubber, and 22 in CO₂/Electric. We have yet to see an electric powered model take part by the way.

Actual entries boiled down to 20, 16 and 9 respectively when called for duty, which nevertheless is quite a healthy response. As always, there were many other models brought along just for sport flying.

The sport flying and trimming sessions as allowed were rather short and sweet but upon reflection this is not such a bad thing since this is meant to be a Nationals event and the contest element is the prime consideration.

It is quite impossible to account for every good flight or model at such a meeting but the general impression gained was that flying and building standards were well up to previous levels. In Open Rubber, Peter Michel's vintage Cessna No. 1 set the standard for flight performance with 95.5 points as it did at Crawley, but there were three other models, Rick Granger's DH6, Mark Hinton's Santos-Dumont 14bis, and Chris Chapman's winning Peanut sized Fokker DVIII all within four points of the Cessna's flying score. Only the lack of good scale documentation kept this model down to a final 9th place. It was good to see ingenuity reap its rewards with Mike Hetherington's Junkers D1 taking a well-

Below left: this trio of peanuts belongs to Paul Briggs. The Spitfires are all-foam models covered with tissue applied with PVA glue. Painted version can have the U/C retracted for flight. The superb Sopwith Triplane led Peanut static marks by a wide margin. Below right: Reg Boor's much modified 'Peck Mustang' has sliced ribs, flying four blade prop and many extra details. Tricky subject to fly but well worth the effort.



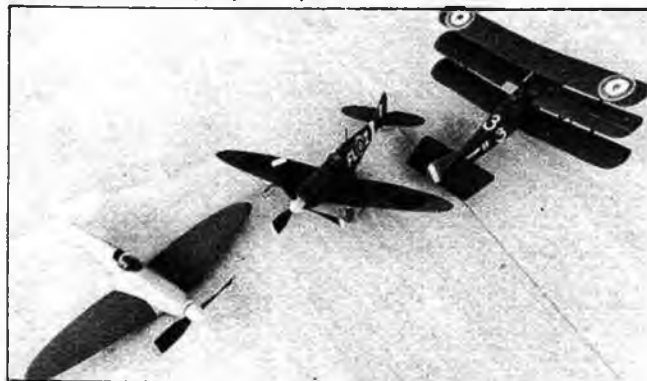
Above: John Blagg's 'Jeannin-Tauba' for CO₂ power is a super detailed piece of work. Look at those wingtips! Below: having just charged up the CO₂ motor in his 'Austin-Ball AFB.1, Rick Granger checks in with the flight judges before a contest flight

earned 3rd place being as it is a low-wing subject, of mostly paper construction, and with a geared motor too. Statically, the finish on this model is somewhat non-scale but the end result speaks for itself as far as other aspects are concerned.

With duration not being an overriding factor in Open Rubber, some of the more elaborately built, but low duration, Peanut models can fare well in this class.

Chris Chapman's Fokker DVIII placed only second highest in static in Peanut (16th in flying) but held a 16.5 point static lead in Open Rubber which together with second highest flight score easily ensured a deserved first place. With sixteen returned flight scores, it would seem that Open Rubber is experiencing a boom in interest as more people are realising the benefits of the larger model as far as trimming goes, but in fact four of the first five places were taken by Peanut models. Must be a moral there somewhere!

The Peanut event was not quite the closely-fought battle that it usually is. With no maximum being imposed on flight times, Mark Hinton's Santos-Dumont on its usual superb flying form was able to romp away with no less than a 68 second lead over its nearest rival, Peter Frostick's Piper Cub on a two flight aggregate score. Together with a fairly generous static score for an unpainted model, the Santos was virtually



unavailable from the word go. Top in static by a long way was a beautifully made Sopwith Triplane by Paul Briggs which has yet to be fully trimmed for flight judging by its low placing of 19th in flying. Hopefully we will see much more from this model in future. The only other triplane entered, Rick Granger's Fokker Dri, managed a couple of qualifying flights of just over 30 seconds and finished up in 9th place notwithstanding its all foam quickie construction. Other exceptions to the thirteen high-wing monoplanes in Peanut were the very pretty conversion of the Peck P51D Mustang kit by Reg Boor, and the FW190 by Flt-Lt. Gatherer. Reg's model was being tested for the first time and like all these challenging Peanut low-wingers, it is very often a question of is it the flyer who tests the model or vice versa? Once trimmed, however, the rewards are greatly appreciated.

In trying to review this meeting as an impartial observer, I have found it difficult to let pass the opportunity to comment once again on the Peanut scoring system still in use. I am no student of statistics but a simple study of the full results sheet will reveal that if the placing system (i.e. where a 1st place in flying plus a 3rd place in static gives a score of 4, and the person with the lowest total wins) is removed, and the scores simply added up, then only two of the twenty entries would remain in the same final positions. One model, almost unbelievably, would drop nine places, another would gain five, and there would be one tied placing instead of the 10 (out of 20!) as at present. None of this re-interpretation of the same scores, which is not by any means wrongly-founded, is possible within any other class of competitive scale modelling and it is difficult to understand why it goes on being happily accepted in its present form. Perhaps flyers do not study results hard enough, or are not really bothered. If this is so, in either case it is hard to see why so many fly competitively at all when flying for fun is just as rewarding, if not more so. Is this why so many good Peanut models are entered in Open Rubber, and do so well as a consequence?

Of the 22 pre-entries in CO₂, only eleven turned up, of which nine actually returned flight scores. The winner, Nick Peppiatt's familiar Sopwith Tabloid was being proxy flown by Butch Hadland as Nick was due to become a father on the very day of the meeting! The Tabloid was top in static but was edged into 2nd place in flying by Rick



Above: Chris Chapman won Open Rubber Scale with his immaculate Fokker DVIII. Below: Butch Hadland's 'Lacey' on a CO₂ flight two laps after release on the ground shows a very consistent flight pattern.



Granger's superb-flying 4th place Austin-Ball A.F.B.1. Rick's standard Telco motor was happily turning an 8 x 4 wooden prop to effortlessly fly the large 26in. span model from a very short take-off run. Butch's rubber convertible 2nd place Lacey could not match the flying qualities of the two biplanes but out-pointed the A.F.B.1 on its static score. In 3rd place overall and 2nd in static came Mick Staples' Udet Flamingo which Mick prefers to fly outdoors due to its higher wing loading compared to the other larger biplanes specially built for indoor flying. Not entered but well worth a special mention here is John Blagg's new Jeannin Taube monoplane which is still in the process of being completed. This is a very challenging subject especially in the techniques of wing construction and unfortunately sustained some damage by flying into a judges' table. John also managed a few tentative flights with his amazing Breda-Pensuti triplane which is almost as long as it's high as it's wide. Tucked away in a quiet corner behind the stall Mark Hinton was at last managing to coax a few test flights out of his Short S-23 and discovered that without the undercarriage (accidentally removed) and with some clear film fill-in panels between the vertical front longerons the model looks as if it will go.

Many flyers, and indeed the organisers, were disappointed to see an unfathomable stall/contraption occupying a large portion of the floor space. Its presence was anticipated but not its size. Roughly paced out however, the remaining floor space was still larger than the average sports hall. One criticism heard from several flyers was concerned with the line of judges tables which could have been accommodated to one side of the stall well out of the way of the flying area and making another fifteen feet or so of floor space available. The flying sessions were strictly controlled with the powerful P.A. system being used effectively to let flyers know what they should or should not be doing at any given time. This occasionally led to periods when no models at all were airborne for several minutes on end — rare at such an event. With the external entrance doors now fitted, no problems with draughts occurred.

A full set of SMAE plaques was available at the presentation at the end of the day, together with several prizes awarded at the discretion of the Contest Director, Barrie Hotham, who also had news of a special trophy that he will be providing for next year's event which will be at Derby. All thanks are due to Barrie and his team of eight judges for all the hard work put in.



Left: the standby queue at flight line one in Open Rubber Scale ... don't know how many cooking motors you can spot, but I wish I'd brought my banjo and spoons!

Peanut Scale		Static	Place	Flying	Place	Total
1. M. Hinton	Santos-Dumont	36.5	4	189	1	5
2. B. Hadland	Morane-Saulnier	37	3	100	5	7
3. P. Frostick	Piper Cub	35	6	121	2	8
4. M. Hetherington	Fokker DVIII	34.5	7	103	3	10
5. D. Day	Lacey M10	33.5	9	100	5	14

Results

Open Rubber Scale

		Static	Flying	Total	
1.	C. Chapman	Fokker DVIII	82.5	94	176.5
2.	B. Hadland	Lacey M10	65	86	151
3.	M. Hetherington	Junkers D1	64.5	73	137.5
4.	J. Whatmore	Comper Swift	48	84	132
5.	M. Hinton	S.-Dumont 14bis	36.5	92	128.5

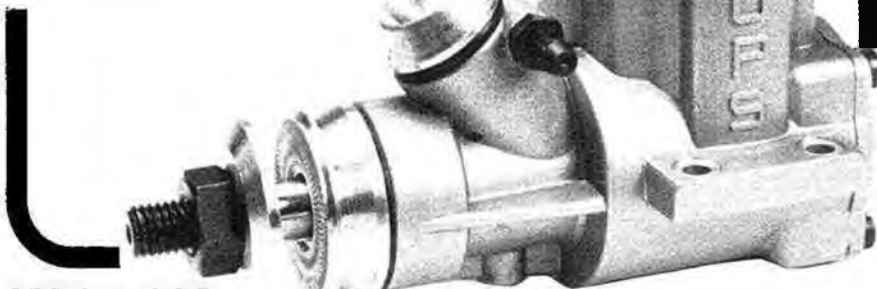
CO₂ Scale

		Static	Flying	Total	
1.	N. Peppiatt	Sopwith Tabloid	533	570	1103 (proxy)
2.	B. Hadland	Lacey M10	474	565	1039
3.	M. Staples	Udet Flamingo	515	445	960
4.	R. Granger	Austin-Ball AFB1	377	575	952
5.	P. Iliffe	Vought Corsair	396	240	636

Engine News

by Peter Chinn

New OPS Speed 2.5 SLA-STD for F/F, C/L combat, etc. Also available for similar applications is rear exhaust SPA-STD version.



OPS Speed 2.5

OPS (the letters formerly stood for *Officine Picco e Saoner* — in other words the workshops of Picco and Saoner, the founders of the original enterprise, though neither is now with the company) first made their mark some fourteen years ago with the original OPS 60 racing engine. This early production Schnuerle-scavenged motor outpaced the crossflow-scavenged Rossi and Super-Tigre 60s of the period in Italian 10cc control-line speed events, winning the Italian speed

championships and establishing a new record for the class.

Since that time OPS 60 engines have also achieved many successes in international model power-boat racing and tethered car racing, while the .40cu. in. models have done well in R/C pylon racing. The 3.5cc engine has gained a considerable following in the R/C model car racing world and there have been successes with OPS 29 and 65 engines. In fact, the only contests where the OPS name has not been in evidence, are the 2.5cc class events.

Now, it seems, OPS are endeavouring to make good this omission by introducing the new OPS 2.5 Speed.

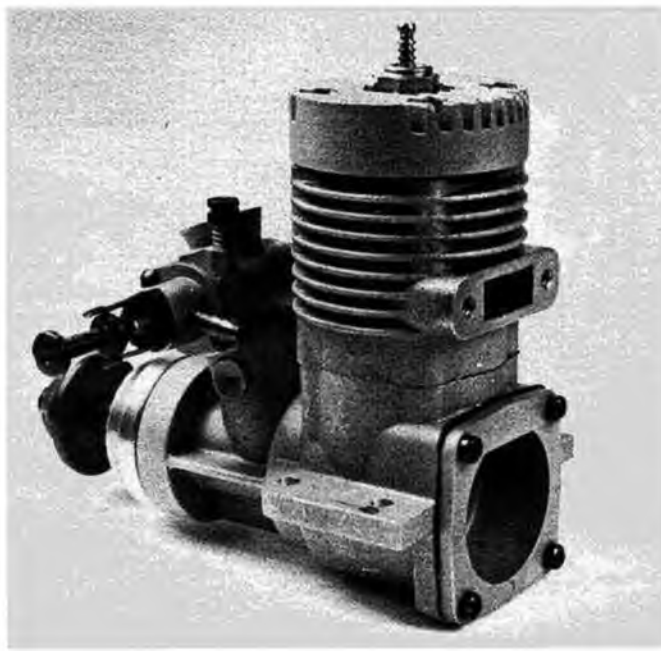
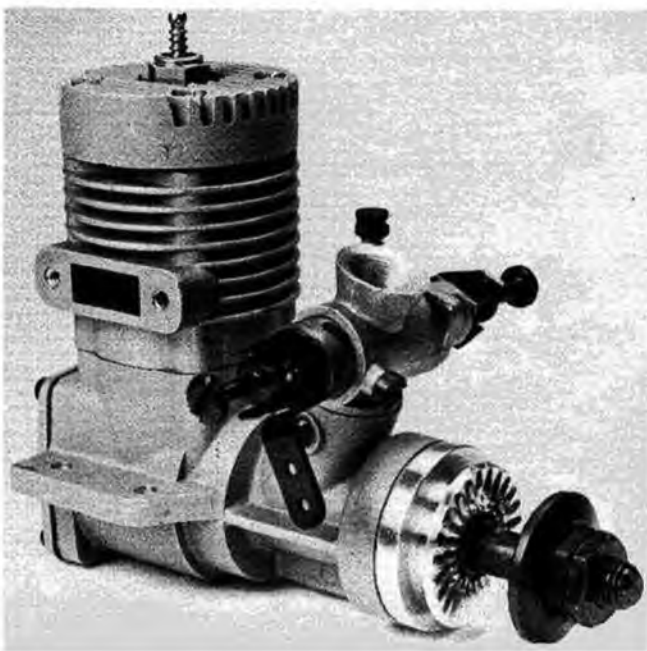
The thing that has made it possible for OPS to cover such a wide range of contest classes has been the rationalisation of their designs. Under this policy, certain basic components have been designed to serve many different models but in a number of different combinations. Certain models are then tailored to specific use by the addition of special parts. Thus, most of the 60 and 65 models, for example, are in some way linked to each other, even though they may have front or rear induction, side or rear exhaust, standard or piped timing, air or water cooling and be based on any one of three main castings. The same goes for the 29, 40 and (just about to appear) 45 models.

It is not surprising, therefore, to find that the new Speed 2.5 is closely related to the Speed 3.5. Like the 3.5, it is available in a choice of side exhaust and rear exhaust models and each of these shares its body casting with that of the corresponding 3.5. Other parts common to both 2.5 and 3.5 include the backplate, front and rear ball bearings, needle-valve assembly, etc. However, since both the cylinder bore and the piston stroke are reduced in the 2.5, other major parts, such as the crankshaft, piston, cylinder liner and head assembly, are all different.

Like most other European 2.5cc motors, the OPS has a 15 × 14 mm bore and stroke measurement and, since the o.d. of the chromed bore brass cylinder liner is the same as that of the 16.6mm bore 3.5 liner, cylinder wall thickness is substantially increased from 1.2mm to 2.0mm for the 2.5. This has the advantage of providing better directional guidance for the incoming gas through the angled ports. Porting follows an orthodox Schnuerle-

Left: throttle equipped SLA-RCA version of OPS Speed 2.5 has Perry carburettor. Below: parts of OPS Speed 2.5 SPA-STD. Based on Speed 2.5 main casting, engine has generous 12mm dia. crankshaft and a thick-walled cylinder liner.





Above left: entirely new Fox 19BB is first Fox engine of this size to feature Schnuerle scavenging and twin ball bearing shaft. Above right: feature of Fox 19BB is a separate cylinder jacket and 90° transfer channel enabling exhaust to be rotated to rear or either side.

plus-third-port layout of a single unbridged exhaust flanked, on each side, by transfer ports that are inclined slightly upward as well as angled towards the opposite side of the cylinder where the incoming charge joins the upward flow from a relatively steeply inclined third port.

Using the 3.5 crankcase and retaining the same ball bearings has enabled the 2.5 to have a large diameter crankshaft main journal (12mm) which, in turn, has permitted the use of a generous rotary-valve area. That a large valve port area is more important than having a large bore gas passage through the shaft, has become more widely recognised in recent years and it is not surprising, therefore, to find that, while the valve port in the shaft is actually larger than that of the 3.5, the cross-sectional area of the gas passage, through the shaft, has been reduced by just under 29 per cent (i.e. exactly in accordance with the smaller swept volume of the 2.5).

The OPS 2.5 is to be made available in a total of five models, each of which is identified by a different set of suffix letters. Shown in our photos are the side exhaust 2.5 Speed SLA-STD (free-flight, combat, etc.) and its throttle-equipped variant, the 2.5 Speed SLA-RCA. For similar applications but having a rear exhaust, are the 2.5 Speed SPA-STD and 2.5 Speed SPA-RCA. These four models have standard exhaust timing, are intended for use without a tune exhaust system and are nominally rated at 0.65bhp at 23,000rpm. The remaining model is the 2.5 Speed SPA-VAE control-line speed engine, which has extended exhaust timing to make full use of a tuned pipe and, for this model, OPS are claiming the pretty phenomenal performance of

1.35bhp (1.33bhp if one wants to quibble about the difference between imperial and metric engineering units) at 33,000rpm. For this model, OPS are installing glow heads, with a choice of squish or bell-shaped combustion chambers, in place of the regular head with separate plug. There are also replacement ball-bearings with special high-speed cages and a nitro pipe for use in non-FAI speed events.

All engines use the same crankshaft, which, as already noted, has a 12mm main journal. The front journal is 7mm dia. and the 4.5mm crankpin is integral with the crankdisc which has peripheral counterbalancing slots. These slots were originally sealed but, notwithstanding the relatively large volume of the 3.5 size crankcase and the reduced pumping efficiency that this must mean, Piero Muzio of OPS tells us that the engine was found to rev faster without the sealing ring, so it is being omitted from the production model. Feeding a 7.5mm bore gas passage, the rectangular valve port is 13.4mm long and is open, according to our measurements, from 35deg. ABDC to 60deg. ATDC.

Cylinder port durations of the engine examined were: exhaust 145deg; transfers 124deg; third port 126deg. The combustion chamber volume checked out at 0.28ml, giving a compression ratio of 9.8:1 with the standard head and 0.2mm (8thou.) aluminium gasket fitted. The head is made in two parts and the combustion chamber shape is typically OPS, with a sloped squishband surrounding a deep, part-spherical central bowl.

The engine has a 12mm i.d. intake boss and the standard model is fitted with a machined venturi having six peripheral jets

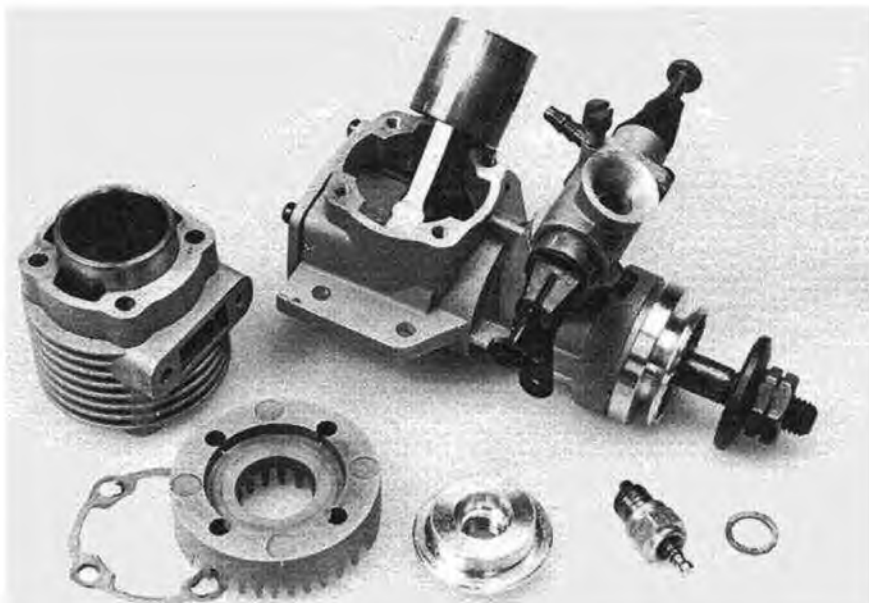
and a 4mm throat — i.e. a choke area of 12.6sq. mm. The throttled version is fitted with a Perry carburettor having a generous 6mm choke size.

The OPS 2.5 Speed needs a 30mm bearer spacing, is 56mm high (less plug) above the centre-line and weighs 207g (7.30oz.) in standard FF/CL trim or 225g (7.94oz.) with R/C carb.

1982 Fox 19BB

Back in 1974, we featured a standard model Fox 19 in the Engine Test series in AEROMODELLER. It turned out to have an unusually good power output for a plain-bearing, crossflow-scavenged motor, recording nearly 0.40bhp at 17,000rpm on ordinary five per cent nitro fuel, a level of performance which was subsequently confirmed by the engine's popularity and success in the early days of Club 20 pylon racing. An improved version of the crossflow Fox 19 is still in production, in both standard and throttle-equipped types, as is its companion model, the Fox 25. (The latest version of the latter was, in fact, the subject of our Engine Test report in the January AEROMODELLER this year.) Now, however, the Fox company has introduced the new model illustrated here, the 19BB.

The 19BB is an entirely new design and, unlike the older model, features both Schnuerle scavenging and a twin ball bearing shaft. It is also rather unusual in that it gives the customer the option of side or rear exhaust — not by his having to make a choice at the time of purchase, but by providing the engine with a detachable cylinder jacket that, complete with liner, can be rotated through 90 or 180 degrees. Four long screws tie the cylinder, complete



Fox 198B with cylinder assembly removed to show how cylinder jacket and liner can be located for side or rear-exhaust. Note also two-part head with generous squish area.

with two-component head, to the crankcase. According to our measurements, the combustion chamber volume is 0.34ml, giving a compression ratio of 10.6:1.

Cylinder porting follows the orthodox Schnuerle-plus-third port layout and is very conservative as regards timing with (according to our measurements) a 130 degree exhaust period, a 110 degree main transfer period and a 106 degree third port period. The engine is of the lapped type with a flat crown cast-iron piston running in a steel liner. The machined conrod is bronze bushed at both ends.

The crankshaft and bearing set-up is a little unusual in that the main journal runs in the same sized bearings (11 x 22 mm, 9-ball, steel caged) front and rear. The shaft has a 4.7mm (nominally 3/16in.) dia. crankpin on a 7/32in. thick crankweb, counterbalanced by cutaway web flanks. The valve port, 12mm long, is narrower than the intake aperture, which it uncovers at 40 deg. ABDC and closes at 52deg. ATDC. The intake boss is 7/16in. (11.1mm) bore and is fitted with a Fox two-needle carburettor with adjustable automatic mixture control.

In the past, when fuels containing

generous quantities of nitromethane were still relatively cheap in the United States, most Fox motors were intended to be run on such mixtures. Now that nitro is expensive in the US, as well as elsewhere. Duke Fox's newer motors are being set up to run on much lower nitro contents or even, in the case of the larger engines, on straight

methanol and oil mixtures. The new 198B will still give its best performance on a fuel containing around 25 per cent nitromethane but, for most purposes, a 5 or 10 per cent nitro content is entirely adequate and, in warm weather, a no-nitro mixture can be used.

The Fox 198B has a bore and stroke of 0.650 x 0.600in., which gives a swept volume of 0.1991cu. in. or 3.263cc. It calls for a 30mm bearer spacing, is 57.5mm high (less plug) above the centre line and weighs 230g (8.1oz.). Not available at the time when our test model was received, but expected soon, will be a pair of Fox expansion chamber silencers offering a choice of high or low mounting positions.

Four-Stroke News

The Enya company is bringing out a 10cc four-stroke, the 60-4C. It has valves operated from twin camshafts mounted side by side behind the crankcase like the 35-4C and 404C, but has enclosed rockers and pushrods like the O.S. FS-40. The 13cc Saito FA-80T flat twin has a new carburettor with separate chokes and needle-valves for each cylinder.

COLLECTORS' CORNER
These silhouettes are of diesels of the late-forties/early-fifties period. Identifying the one on the left should be easy; the one on the right a bit more difficult. (Answers on postcards as soon as possible, please, so that names of the knowledgeable can be published in the September issue.)

Continued from page 325

FREE FLIGHT CALENDAR

June 20

CROOKHAM CONTEST F/F GALA O/P, O/R, O/G, ALL IN FAI (live flights: no rounds) F1B Champagne Fly Off— weather permitting SMAE members only 10.00am start Venue: Old Airfield, Beaulieu, Hampshire Contact: P Uden, Tel: 0734 51366

June 26

2 EZB COMPS EXPERT/NOVICE PAIRS PLUS OPEN E2B INDIVIDUAL PLUS CO₂ DURATION AND MANHATTAN. Venue: Cardington. Contact: L. Barr Tel: 0628 26695

June 27

SMAE CENTRALISED F/F MINI EVENT 1/2 A POWER, C'DH A1, HLG & CO₂ Venue: Beaulieu Contact: Barbara Tyson, 19 Wilverly Avenue, Strodon Park, Bournemouth, BH8 0HT

July 4

2 EZB COMPS EXPERT/NOVICE PAIRS PLUS EZB INDIVIDUAL PLUS FAI MICROFILM. Venue: Verdington Contact: L. Barr Tel: 0628 25595.

July 25

SMAE CLUB CHAMPS — O/P, O/R, O/G. FOR CLUB CHAMPS CUP — also open to individuals. Venue: Everleigh. Contact: Pete Farrimond. Tel: 0942 34068.

July 25

2 EZB COMPS EXPERT/NOVICE PAIRS PLUS OPEN E2B INDIVIDUAL PLUS FAI MICROFILM AND NOVICE FAI MICROFILM TO STANDARD F1D RULES, except min weight 1.5gm, and experts will be attached to novices to help. Venue: Cardington. Contact: L. Barr Tel: 0628 25595.

August 1

SMAE CENTRALISED F/F MINI EVENT — 1/2 A POWER, C'DH, A1, HLG & CO₂. Venue: Driffield Contact: Peter Farrimond Tel: 0942 34068

August 8

2 EZB COMPS EXPERT/NOVICE PAIRS PLUS OPEN E2B INDIVIDUAL PLUS FAI MICROFILM. Venue: Cardington Contact: L. Barr Tel: 0628 25595

August 8

WOODBURY COMMON F/F RALLY — O/P, O/R, O/G, COMBINED MINI, VINTAGE AND HLG. Venue: Woodbury Common, nr Exmouth Contact: Chris Chapman, 14 Philipps Avenue, Exmouth, Devon

August 28/29

INDOOR NATIONAL CO₂ DURATION FINAL PLUS 35cm MICROFILM, EZB FINAL ROUND OF EXPERT/NOVICE PAIRS CONTEST, PLUS INDIVIDUAL CONTEST FOR HOULBERG SILVER TROPHY, FAI F1D MICROFILM (FLIGHTS FOR THIS AND ANY OTHER CONTEST ELIGIBLE FOR HUMBROL LONGEST FLIGHT SILVER PLATE). Venue: Cardington. Contact: L. Barr Tel: 0628 25595.

FROM THE HANDLE

Report from JIM WOODSIDE

Goodyear Teamrace

In the March edition of *Aeromodeller* I mentioned the growing use of expensive diesel engines in Goodyear TR — quote "hardly novice prices." My naive assumption that Goodyear is anything other than a full blown racing event brought a long and interesting letter from Graham Bryant.

Graham leaves us in no doubt as to his views — "there is no such thing as a beginners' event in competitive model flying. Beginners do not enter contests. Full stop!" The rapid progression from PAWS, through racing diesels to powerful 3.5 glows is thus natural as performance is the name of the game. In fact the sheer thrill of flying at 19.0/10 laps became the main attraction for the Bryant/Chilton team. The bonus was that all this fun was available from an 'over the counter' engine costing about £30. While Graham admits that such speeds did require above average piloting ability, he was very disappointed to learn of the 'diesel only' rule, predicting that the event would become a Nelson-to-win event. Cost and waiting time is thus now considered to be the major deterring factors to success. The move to diesels was "hastily taken, ill-advised and done with no thought to the consequences." Strong words! I might say in defence of the CL Subcommittee, of which I was a member at that time, that we were also mindful of the great number of mid-air collisions taking place and the very high level of noise being generated.

However Graham also offers advice as well as criticism. He feels there are easier ways to slow down 'hairy' airplanes — viz:

1. Class B line thickness and/or 60ft. lines.
2. Minimum wing thickness — $\frac{3}{4}$ in.
3. Minimum prop diameter — $7\frac{1}{2}$ in.
4. Increase model size to 1/7th scale.

Any application of all or some of the above, would slow down the speed of rotation while still allowing the use of (relatively) inexpensive engines that are easily available.

Graham is an avowed 'speed' addict and during his stay in the USA was much impressed by the AMA Big Goodyear rules — a class which has a growing following. It is felt that this event, whilst quick, would avoid the hassles of Class B and Rat.

Proposed rules

1. Model to current rules for 2.5s but built to 1/6th scale or minimum 36in. span.
2. Lines 60ft., 0.35mm diameter.
3. Fibre-glass props compulsory for safety.

4. No fuel restriction.
5. Engine capacity 0.40cu.in. — no extension of exhaust permitted.
6. Heats — 70 laps — one compulsory stop.
7. Finals — 140 laps — three compulsory stops.
8. Two up races for safety.
9. Race conduct to SMAE rules.

We really would like to know your opinions on these matters, so pick up that pen and let the magazine and the C/L Subcommittee have that view.

Finally Graham hopes to have a demonstration model ready to fly at the 1982 Nats.

The new record heat and final times — Class Goodyear

The October 1981 meeting of the SMAE Council ratified the following times established by John Catlow and Peter Jephcott of the Loughborough Club at the Northern Gala 1981.

Heat 4:7.8

Final 8:40.0

John and Peter have been active in Goodyear for only three and half years which means that they have spent most of their time in the 'diesel only' era. Having been Novices in 1980 they graduated through the 20 points barrier for '81 and promptly topped the Goodyear League Table. This they attribute to having consistent reliable equipment and being entry-holics in the number of contests attended. I might also add that their equipment and models have always had the appearance often associated with successful racing — clean, functional, well-made etc.



Above: Catlow-Jephcott model, APS OL' Blue design, Nelson 15 G/D 2.5 engine. Note: filler/shut-off between tank and engine. Few teams use regulation spinner nut as shown here, despite being demanded by the rules.



Record holders in Goodyear, John Catlow (left) and Peter Jephcott. Both are members of Loughborough MAC.

The team have done a lot of experimentation with engines — having started with the MVVS Schnuerle. Finding Rossis almost impossible to obtain, some time was spent with the Nelson TR engine. Whilst this was quite successful, it was felt that the engine did not function at its best in an uncowed situation.

When Henry Nelson announced his FI Glow last year, Peter Jephcott lost no time in ordering a diesel conversion. Spotting a likely motor before the rest can be as important as hours of tuning in the workshop.

The successful combination was:
Model: APS OL' Blue with $\frac{3}{8}$ in. wing and $\frac{3}{8}$ in. fuselage built up from selected strip balsa and spruce. Fuselage covered in lightweight ply. Model covered in 0.6oz glass cloth and Tuf-cote.

Engine: Nelson 15G/Diesel. ABC liner. Suction venturi of 0.235in. diameter.

Tank: 70cc front feeding uni-flow.

Filler and shut-off: High flow pressure re-fuel and combined shut-off, fuselage mounted between tank and engine.

Prop: FAI style prop in carbon/glass. 7in. diameter x 6in. pitch.

Fuel: Castor 7%, ether 31, paraffin 60, IPN 2.

Congratulations to both. It is heartening to know that despite all the effort expended, they still find time to actually enjoy their racing. Amazing!

Paul Schippers' team race equipment

About 18 months ago Paul Schippers very kindly adapted one of his tank mounted filler valves to make its overall length more in keeping with a $\frac{1}{2}$ A fuselage width. This was achieved by reducing the length of the aluminium adaptor which mates with the finger valve. As can be seen in the photograph, the 'ball end' is now right on the end of the silver steel slider. The item in the top right hand corner is an adjustable prime nipple for metering the flow to the exhaust stack. This item is supplied as part of the Metkemeijer style filling system but should be available upon request at an extra charge.

I have found my unit to be reliable and easy to use and I can recommend their use.

Certainly I have found that my pit-stops in 1/2 A have improved since the adoption of the Schippers system.

Items available

1. Multi-function valve — Metkemeijer style with adjustable venturi and exhaust prime..... 45Dfl.
 2. Matching finger valve .. 15Dfl.
 3. Tank valve for RV engines .. 18Dfl.
 4. Tank valve for F1 engines..... 18Dfl.
 5. 1/2 A size of either type 3 or 4 18Dfl.
 6. Matching finger valve 15Dfl.
 7. TR wheel..... 7.50Dfl.
 8. Circular bellcrank and housing FAI .. 10Dfl.
 9. Circular bellcrank and housing 1/2 A..... 10Dfl.
 10. Landing gear in dural 15Dfl.
- All prices quoted in Dutch guilders (Dfl.).

As my price list is over 12 months old, potential customers should check if there

has been any price change. Monies should be sent in International Money Orders to: Paul Schippers, PO Box 1355, 5200 BK Den Bosch, Netherlands. Incidentally, illustrations of items Nos. 1 and 3 can be found in the January 1981 Aeromodeller Racing column.

London area gala

The Feltham Club have resurrected the London Area Gala after a break of some years, to provide a contest in the south of the country.

Date: June 27.

Venue: North Weal Aerodrome, Harlow, Essex.

Events: 1/2 A, B, F2C, F2D.

Special attraction: a trophy and cash prize of £50 will be given to the winners of

Class B. It seems that John Horton's call to "keep B alive" has not fallen on deaf ears. Do not forget that if you have any proposals regarding the class, then you should contact your SMAE area committee to complete the appropriate proposal forms, which can then be forwarded to the CL sub-committee for action.

Northern area events

As usual the Northern area is running a wide selection of events. Haydn Sykes would like to draw attention to the following events.

August 15: 500 lap marathon event for GY and 1/2 A.

September 12: All Scale Day — an informal affair with prizes — anyone with a scale model is encouraged to enter.

Report from CHAS WINDOWS

First round 1982 British Diesel Combat Championships

The first round of the 1982 British Diesel Combat Championships was held on April 4 on the Embankment, Peterborough. On this occasion Peterborough MFC welcomed 25 entries from flyers from as far afield as Bath, Bolton, London, Wharfedale, Derby and Lincoln.

The weather was bright with a slight wind which increased in the afternoon to give that extra edge of speed to the flying.

To ensure there could be no rule misunderstandings, a pilots' briefing was held at 11.00am, just prior to the first bout.

In the first bout Brian Waterland (P'boro) met European FAI Combat Champion Ray Sibbald (Cosmo). Coincidentally both were flying models with elevators mounted on wire booms, Brian's torsion bar type mounted and Ray's plugged into tubes fixed to the ribs. Brian quickly took all his opponent's streamer and in a midair removed most of Ray's outboard wing. Ray's knot was then removed leaving a somewhat surprised Waterland the winner. Rob Roy (P'boro) flying an Oliver powered Blasta was helped in his win over

N. Meager (Sheffield) by his opponent's tank problems while Steve Turner (P'boro) and his Egress narrowly beat Hugh Jackson (Derby) and his PAW 19D powered model.

Two Oliver Tigres met in the excellent bout between Ernie Bures (Bath) and N. Thorpe (Feltham). Ernie won three cuts to one but indulged in a little time wasting. D. Heaton (Bolton) comfortably beat J. Barry (Derby) while R. Edwards (Cosmo) was given an easy win by Jeff Sizer's (Royston) engine trouble (Super Tigre G20D). Andy Cox (P'boro) beat John James (Sheffield) one cut to nine but sportingly withdrew since his only model (a Fifth Revolution) was unflyable. Two Oliver Tigres met again in the bout between M. Jones (Wharfedale) and Dave Benfield (P'boro), Jones winning

two cuts to one. Despite excellent flying, Dave Coe (Lincoln) was beaten 3-0 by Paul Vallins (Cosmo). Last year's champion Neil Gill met Tom Miller (Sheffield) in what must have been the shortest bout of the day. Seconds after the start there was an explosive midair crash in which Neil removed his opponent's streamer and whilst Tom tried to fly again, Neil with his MVVS powered model won 115 to 75 points. Chas Windows (P'boro) retired in his bout with Pete Tribe (Cosmo) while Mark Jarrett (P'boro) flying a Seventh Revolution drew one cut each with T. Heasman, Mark winning on ground time.

In the losers' round Jeff Sizer had sorted out his fuel problems but lost on ground time to Tom Miller. Dave Benfield took two cuts to J. Barry's nil and N. Thorpe beat T. Heasman 260 to 180 points. Both H. Jackson and Ray Sibald flew PAW 19D powered models. Ray's motor went rather well and he won two cuts to one. Chas Windows beat N. Meager but went out in an additional eliminator run to even up the numbers.

Ray Sibbald, N. Thorpe and D. Benfield got through this "additional hurdle" and Ray went on to beat Steve Turner three cuts to nil. Steve's model just couldn't turn as tight as Ray's. Steve really will have to build a new model! Paul Vallins (was he really inebriated?) beat Bob Goodlife (P'boro) in



Above: Neil Gill's seventh revolution model 15 seconds after start of bout with T. Miller.



Right: Neil Gill (centro) with pitcrew Andrew Cox and Mark Jarrett.



Left: T. Millor (Bolton) just prior to bout with Neil Gill.



Left: the winners! (left to right) 3rd P. Tribe (Cosmo), 1st M. Jones (Wharfedale), 2nd N. Gill (Peterborough). Above: D. Heaton (left) and T. Miller inspect remains of the latter's model.



a close bout (180 to 119 points). N. Jones came back from 2-0 down in his bout with Mark Jarrett to win 3-2 while Rob Roy used his upwind advantage to beat John James one cut to nil. With one cut each, Brian Waterland won on ground time over N. Thorpe while D. Heaton beat D. Benfield one cut to nil. Neil Gill flew R. Edwards and beat him two cuts to nil in two minutes,

since with two minutes to go, a midair pre-vented either from continuing. Pete Tribe beat Ernie Burles 2-0 and went on to win his quarter final bout with Rob Roy. For once Neil Gill managed to keep his plane intact in an excellent bout with Ray Sibbald, Neil finally winning two cuts to one. Brian Waterland totalled Paul Vallins model in their bout. The quick change elevator on

Waterland's Fifth Revolt finally came in useful and he struggled back into the air for a vital 24 seconds. To complete the quarter finals, M. Jones beat D. Heaton two cuts to one in an excellent bout.

Therefore in the semi-finals, Neil Gill met Pete Tribe (and beat him one cut to nil) whilst Brian Waterland lost to M. Jones (two cuts to nil).

Report from JOHN JAMES

Combat

Why do people fly Combat? This is the question most combat fliers ask themselves, after having spent many hours building a fleet of models only to go to a competition and spend a further four minutes reducing the models back to their original components. The majority of fliers repeat this exercise many times as there are competitions during the year, and return undaunted the following season to

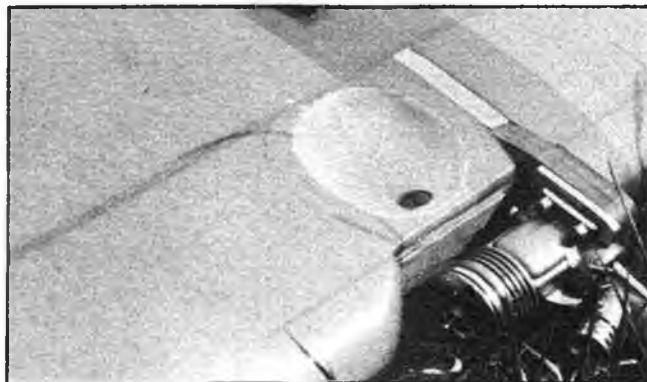
do the same again. It strikes any non-combat flier as a bit like the proverbial "banging one's head against a brick wall." However, to the combat flier, this is perfectly normal behaviour, and indeed, he regards anyone who does not follow this behaviour as sadly lacking in some faculty or other. To try and find out what makes this particular breed of the human race tick, this column will print an occasional series of articles consisting mainly of interviews with some of the top combat fliers in the country, which should prove to be of interest to both contest and sports flier alike.

There is a new newsletter now being written aimed mainly at the contest combat flier although there is no objection to anyone else receiving a copy. The main idea is to provide up to date competition information, competition reports and some technical information. It will also run a league chart based on advertised competitions during the year. If anyone wishes to receive copies of the newsletter, please send seven stamped addressed envelopes to: J. James, 22 Hooton Road, Kilnhurst, Rotherham, S. Yorkshire S62 5TA.

Left: D. Harrison from Cosmo with now and interesting model (as always).



Right: close up of Cosmo model showing the soft pacifier.



The first Combat Centralised held at Fulbeck on April 11

This was poorly attended mainly due, it seems, to people being behind in their building schedules and perhaps a bad weather report. However despite the low entry, the event was still very keenly contested. As is usual for the first competition of the season, the carnage rate was quite high as fliers once more got their eye in, although the wind was also partially to blame. 'Whacker' Whilliance managed to live up to his reputation by disposing of seven of his opponents' models in four bouts, damaging only two of his own models in the process. The cold weather produced problems with pacifiers not going down properly and the castor oil in the fuel thickening up, not to mention fingers and brains seizing up. The 'two life' system was used quite successfully once again with the only three fliers not to lose in the early rounds eventually placing first, second and third.

1st John James..... Sheffield Clams
2nd Mike Whilliance.....Urmston MAC
3rd Ernie Burles..... Bath MAC
3rd Pete WikeUrmston MAC

Free Flight Scene

Report from TOM CHAMBERS

Northern Area Pannet/Vintage/Kay Meeting — Church Fenton — 4th April 1982

Fine spring weather attracted many of the country's top power flyers to this major Open Power event. The oldest trophy, the Pannet, is now supported by another memorial event, that to Jack Kay for Glider and Vintage also has a trophy which was presented to the Northern Area by a past Commanding Officer of the RAF Topcliffe in 1966. Nearly 80 competitors entered the events and with the light variable winds and large patches of lift by mid-afternoon it became obvious that a high proportion

Report from JOHN O'DONNELL

Wigan Weekend 27/28th February, 1982

Those who study the Contest Calendars will have noticed that the weekend of 27/28th February saw both outdoor and indoor events scheduled at Wigan. This was hardly coincidence — but an attempt to make attendance more worthwhile for those living some distance away — in short, two contests for one lot of travel.

Saturday's events were held at the Three Sisters Recreation Area in Ashton-in-Makerfield, probably better known in aeromodelling circles for its C/L facility. However, the surrounding area permits free flight of a limited nature. On this occasion, the weather was kind with never more than a light breeze whilst a generally overcast sky gave quite mild ups and downs.

Wigan 70 was by far the most popular event, with the rubber entries demonstrating that their potential is way above the 1½ minute max. Nevertheless, in the prevailing conditions, glider was still competitive with

would fly-off. Fortunately wind directions had been favourable so that three minute maximums, which are not always possible at Church Fenton, could be used.

The first fly-off was Open Power and competitors moved out into the centre of the airfield. Consequently most flew from a small area and we were treated to the spectacle of all the models climbing and gliding in a comparatively small air-space. Only Tony Smith and Ken Faux had their power patterns take them into a different area where Tony's 'Super Nog' made good use of the air to out-glide Ken's FAI model and win.

By the time of the Vintage fly-off, the breeze had settled to a more southerly direction along the branch of the airfield which had been used all day. Two of the fliers flew from close to their cars while Dave Wolstenholme flew his 'Korda Wakefield' over the still warm runway. Winner — Phil Ball with his Ed. Ligard designed 'Hi-Ho' had a phenomenal initial rate of climb but suffered on the glide with a slight stall. The top four flyers this year all flew American rubber powered designs.

The glider fly-off saw one or two fliers going alone, Steve Philpott, now flying for Biggles, launched into fairly good air. Then

Tony Cordes, felt lift after his second tow circle and launched for what everyone who saw it said was a superb flight. A lot of competitors followed his example but failed to gain full advantage of the lift into which Tony was centered.

After the prize-giving, Phil Ball was asked if he could re-trim the bronze eagle on the trophy and a number of people thanked contest directors Ken Attiwell and Alan Nobbs for their work and the fine conditions they had provided.

Results

Tony Pannet Memorial Trophy (24 flew)			
Open Power			
1 A T Smith	B.A.MAC	9.00	8.17
2 J Hopper	Fræbirds	9.00	7.35
3 S Screen	Birmingham	9.00	6.50
4 R Peers	Falcons	9.00	6.23
5 T. W. Smith	B.A.MAC	9.00	6.00

Vintage Trophy (18 flew)

1 P Ball	Grantham (Hi-Ho)	9.00	4.08
2 D Davitt	Leeds (Lanza)	9.00	3.02
3 D. Wolstenholme	E. Lancs. (Korda)	9.00	3.00

Jack Kay Memorial Trophy (35 flew — 18 in fly-off) Open Glider

1 T. Cordes	Birmingham	9.00	9.40
2 J Bailey	Biggles	9.00	7.46
3 P Owens	Liverpool	9.00	5.52
4 D Barile	NYFFG	9.00	5.34
5 J Cuthbert	Grantham	9.00	3.56
6 S. Philpott	Biggles	9.00	3.45

Photography by John O'Donnell

John O'Donnell's winning Wigan 70 being held by Tracey Carton.

Below left: winning models were checkweighed at Wigan. Here Graham Davitt watches his model just tip the balance. Bottom right: Dennis Davitt has done well with this EZB, winning events at both Slaithwaite and Wigan. Low launch is reminiscent of French 'rog's'!



W. Murray maxing out, and Richard Sheen only failing by a single second. The eventual fly-off saw the writer (J.O'D.) beat Russell Peers by a clear half-minute — with the glider qualifier having to settle for third place.

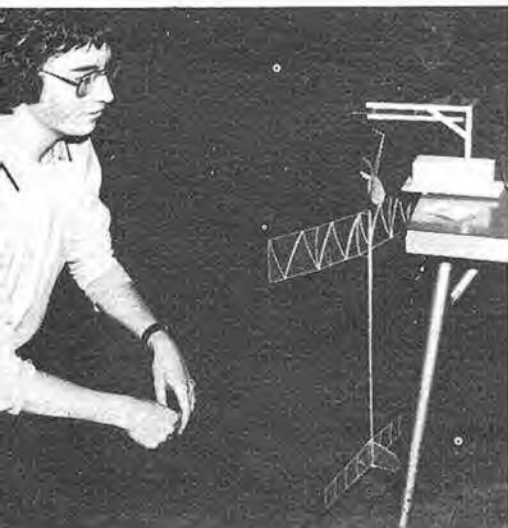
In comparison Coupe d'Hiver and Chuck Glider had very disappointing response — at least as regards numbers. Even so, Ian Davitt produced a perfect set of five (100 second) maxes to win Coupe, whilst Russell Peers didn't bother with his final flight after dropping score earlier. Mick Duce made a rare appearance to win Chuck Glider over Barry Kershaw (returning to this event, but not yet back 'on form').

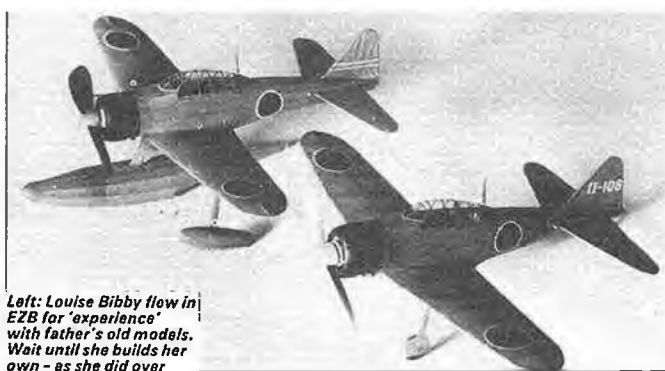
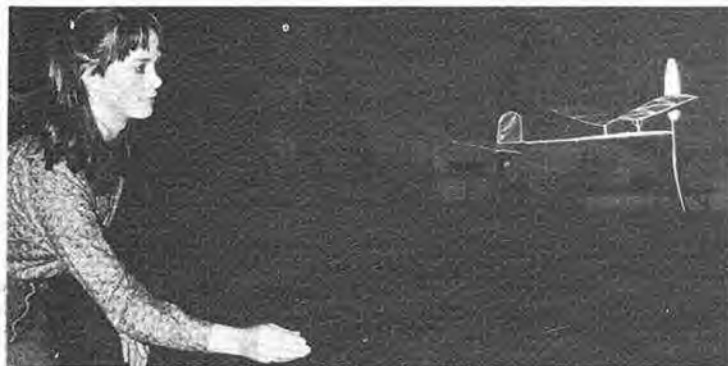
As is currently fashionable, the events were rounded off by a champagne fly-off — in which Ian Davitt proved a surprise winner (flying his C.d'H. in lift) against the W70 fly-off contenders.

The following day had the indoor events held in the Sports Hall of Wigan College of Technology — a welcome return to a site popular a few years ago. Events and rules matched those used in the rest of the Northern low ceiling Indoor Circuit — EZB (1.2g), Scale and HLG. As more-or-less inevitable in a small hall, the events were flown successively with glider and scale

having two sessions apiece, followed by a comparatively lengthy EZB period.

Chuck Glider saw Laurie Barr arrive just as the event started, and Ron Green after the first session was over (due to car troubles). Nevertheless they had the models for the conditions and both placed — with Ron having a very convincing lead over Graham Davitt and Bob Bailey. The





Left: Louise Bibby flow in EZB for 'experience' with father's old models. Wait until she builds her own - as she did over eight minutes at Wigan. Above: interesting pair of peanuts by Warren Potts. Nakajima 'Rufe' and 'Zero' (Zeke)!

American 'Upstart' design featuring much carbon-fibre, flexible wing flaps, and 'teeny' tail is much copied — but Ron's 'best' model certainly glides and sinks significantly slower than the opposition.

Scale had the static side judged in a less regimented fashion than used elsewhere — models being 'placed' in order on overall impression. This was combined with duration and flight-quality placings to give the overall results. Winner this time was Reg Boor's large DH 'Puss Moth' — built from an ancient Ray Booth plan — with my well-known 'Fike' as runner-up. These two models have dominated the low ceiling scale scene this winter. Third place saw a new name and model — junior Richard Waddington with a radial engine version of the Pobjoy Swift. He is new to the contest world and both he and his father looked very pleased!

EZB was well supported with 21 entrants — with the 'number-in-the-air' being limited by insisting on the use of official timekeepers. Even this did not prevent frequent mid-air collisions as models 'ceiling-scrubbed' in close proximity. Recent developments in this class have kept times high despite the weight rule and

the ban on V.P. props. Models have become longer, with large tailplanes, and with lighter covering permitting stronger and stiffer airframes.

Nevertheless Dennis Davitt repeated his Slaithwaite success with the same paper covered model, managing a 10 and 11 minute flight to end up well ahead of his son Graham and third placed Laurie Barr — both of whom flew microfilm covered models! Inspection of the scores, remembering the 25ft. ceiling and prohibition of steering, tends to indicate that the models are once again too good for the facilities!

Those present will know that the meeting was well attended and that prizes went down to fourth in all events. They may not anticipate that the contest 'broke even' without outright sponsorship! Moreover, the College Vice-Principal made an unheralded visit in mid-afternoon — and is more than happy to have us back again. Mind you — someone did say the meeting was 'over-organised' — an almost unprecedented remark in this day and age!

Richard Waddington - third in Scale at Wigan with Pobjoy Swift. Good balance between static and flying abilities.

Results

Saturday 27th — Wigan 70 (11 entries) 1. J. O'Donnell 4:30+2:25; 2. R. Peers 4:30+1/55; 3. W. Murray 4:30+0:49; 4. R. Sheen 4:29. **Coupe d'Hiver** (3 entries); 1. I. Davitt 6:20; 2. R. Peers 6:13; 3. M. Duce 4:23. **Chuck Glider** (3 entries); 1. M. Duce 1:53; 2. B. Kershaw 1:37; 3. D. Allman 1:22. **Champagne Fly-off** (8 entries); 1. I. Davitt 2:40; 2. R. Peers 1:56; 3. J. O'Donnell 1:47. **Sunday 28th — EZB** (21 entries); 1. D. Davitt 21:33; 2. G. Davitt 19:50; 3. L. Barr 19:25; 4. R. Bailey 19:17. **Chuck Glider** (17 entries); 1. R. Green 76.3 seconds; 2. G. Davitt 66.1 seconds; 3. R. Bailey 62.3 seconds; 4. L. Barr 59.1 seconds. **Keyhole Scale** (14 entries); 1. R. Boor — Puss Moth; 2. J. O'Donnell — Fike E; 3. R. Waddington — Pobjoy Swift; 4. B. Horsfield — Curtiss.



Report from IAN DAVITT

Midland Area Mini — Hemswell — Sunday 18th April

Following on from the previous weekends SMAE events at the same venue, Hemswell again provided winds, but this time with clear sunny skies and large thermals which led to many retrieval problems, since any model in lift tended to go high and far, with DT's not always coming to the rescue.

Best supported was A1 glider with 14 entries, won by Graham Brown with a perfect score flown late in the day. Vintage featured a confrontation between the 'Lanzo Sticks' of Dennis Davitt and Russell Peers. A fly-off seemed inevitable until Russell found bad air on his last flight and this after having blown £30 worth of rubber during the day! Dennis had the opposite problem picking three enormous thermals, and clearing 6 mins on each flight.

½₂A power with eight entries illustrated the domination that the Birmingham club have over this event, with Screen and Harris being separated by a mere second at the top.

Coupe d'Hiver was won by John Brookes with a full house — an excellent performance in the conditions — picking the air himself without any 'mechanical' assistance, and marking thermals for anyone who was in the right place at the right time. Second was Mick Chilton, who produced an interesting variation on the thermistor 'box' — a device which measured the temperature and gave a digital read-out accurate to 0.1 of a degree centigrade. It also showed the average temperature over the day to be a pleasant 14°C. Going only by these readings, Mick seemed to fly at odd times, usually when it was windiest, but the results speak for themselves. Third was

Ian Davitt who chose to re-enter late in the afternoon, and managed to rush in five flights thanks to assistance. Later calculations showed that his first score, although lower, would still have placed him third!

The only event to need a fly-off was Wigan 70, with the models of Peers, O'Donnell and Godden making easy work of the 1:30 max. While O'Donnell waited, Peers and Godden flew almost together, with the models landing only feet apart, but Godden being unfortunate in having the last few seconds of his flight lost behind downwind gas pipe. This left O'Donnell knowing what score was needed, but the model would not oblige.

Results

A1 Glider 5 × 2 mins. 13 entries. 1 re-entry	
1 G. Brown	10:00
2 D. Allman	9:46
3 G. Beal	9:40
Coupe d'Hiver. 5 × 2 mins. 7 entries. 1 re-entry	
1 J. Brookes	10:00
2 M. Chilton	9:57
3 I. Davitt	8:57
½₂A power. 5 × 2 mins. 13 entries.	
1 S. Screen	9:36
2 P. Harris	9:35
3 S. Fielding	9:14
Vintage. 3 × 2.30 min. 4 entries	
1 D. Davitt (Lanzo Stick)	7:30
2 R. Peers (Lanzo Stick)	6:59
3 M. Stones (Bazooka)	5:00

Wigan 70. Best 3 from 4. 1:30 max. 8 entries	
1 R. Peers	4:30 + 2:05
2 J. Godden	4:30 + 2:03
3 J. O'Donnell	4:30 + 1:28

HLG. Best 5 from 9. 1:00 min max. 4 entries	
1 M. Benns (Jnr)	4:46
2 S. Ellwood	4:15

P.30. 3 × 2 mins. 3 entries	
1 J. Godden	5:44
2 A. Wharrie	4:11

CO. 2 entries	
1 P. Sidal	4:37

DAVE HIPPERSON reports

FAI and Open Easter Meeting — Hemswell — 10/11/12 April

Photography by Dave Hipperson

The FAI events were run over the first two days and the atrocious Easter weather promised never really materialised although it remained breezy throughout. Almost immediately in trouble from a down-wind farmer who was waiting to pounce — CD Pete Farrimond — reduced the max to 2.30 after the first round. The breeze then eased steadily and fearful of what the next day might bring he added an extra round at the end of the day and returned to a max of 3 minutes. It was this fifth flight that settled it for many. Madelin dropped 39 secs. from an otherwise perfect total and Gregory, also in A2 suffered a similar fate. In Wake and Power those away early were treated to a wind shift induced patch of lift that had many models hundreds of feet high and dangerously close to cloud base in a couple of minutes. Those not so lucky had to be content with a wind direction immediately after the passage of this lift that took models over the infamous Hemswell escarpment and sucked them down and out of sight long before they landed. Thus it was really on this flight that Ball won F1B as although he had missed the early good patch still managed to max impressively despite the terrain. Well in contention also was Miller who really threw it away by picking a bad patch and was down in 1:38. Others tried various dodges to lessen the effect of the hill including walking up-wind along the flight line until well out of the drome before launching. Nothing compensated completely and times did not reflect scores.

By the start of the next day the wind had increased further and the 2:30 max seemed more appropriate although most flights went nowhere near the 'forbidden' fields. Owens and Gilmore who had been leading A2 dropped seriously here allowing Cooper, Crisp and Warren into the top three slots. Crisp's distinctive low aspect ratio layout was easy to spot and it was interesting to watch his model regularly out-glide more sophisticated looking machinery in the same air. He flew very steadily throughout as had Mike Warren who had been lucky to do his 2:27 when the max was 2:30 and therefore only drop 3 seconds. Before the last flight Mike knew he had only to do a little over 2 minutes to place. His winning flight seemed to play with edge of some lift and held aloft just long enough to pip Andy into 2nd.

Flights in F1B changed little although Cooper and Kaynes dropped from the leader board. Ball, Wells and Beaumont lost no time and therefore placed in that order but others were very close — so close in fact that there were two ties in the top six. Newham Beaumont had done particularly

Jubilant Mike Warren and Lindsey topped 42.

well having clawed his way back from a 2:23 on the first round with a string of maxes through both days including leading many into the tremendous lift on the fifth round. His and Ball's all sheet high aspect ratio layout were both climbing particularly well. Wells used his usual design and policy of avoiding flying with the pack which worked until a wayward hole that felt like a thermal brought him down in just over 2 on the fourth flight.

Up until the final round power had a five way tie. On the fateful 7th and going only for a 2:30 max Faux was clocked off at 2:29 into the top of a tree! He seemed to take this disaster more philosophically than one would have expected and probably as a consequence, a large band of variously equipped helpers were keen to assist him recover the model soon after. It is hard to lose like that and not stomp off in a huff — the next day he ran the Open event most cheerfully! This left Screen, Monks, Johnson and Jack to fly off and they did so to a 4 minute max. Screen first away and highest was followed quickly into the same good air by, on trim but lesser climbs, from Monks and Johnson. There was a slight delay before Jack released and his model wandered a little off pattern and stalled badly on the pull out and although he was still on the edge of the good air he was unable to make the four that the others managed easily. The three opted to go no further and leave it at a tie for 1st.

Open

This dawned very breezy and with the threat of rain both from the look of the sky and the forecast. Some started in earnest quite early but many were to regret it. O'Donnell was well on the way to his third max in Open Rubber before the wind began to ease in the afternoon but Peers, despite advice to the contrary, had insisted on flying early and dropped his first flight in Power and smashed a Rubber model as a consequence.

The 2:30 max although acceptable for Glider was rather too easy for Power and Rubber as the wind soon began to abate and as the weather warmed more and more flew to fill the flyoffs. By the time they were due to start the sky had cleared but there was still a steady cold drift of maybe 10mph. Faux — CD for the day — had flyoffs away promptly although not without a little



Stafford Screen prepares for winning F1C flyoff. Comparatively low aspect ratio windy weather model had the best climb on the field.



trouble finding timekeepers. It is amazing what excuses people will come up with to get out of this job.

Rubber was first away and in the air quickly was Hipperson who power stalled badly twice but got away with it. The next group a few minutes later flew in a reasonably good patch of air. Davitt landing at a little over 5 while Derl Morely dt'd down at even less when high enough for 6 plus. Young Anderson and Alan Gibbs had centred in this thermal and were both holding height when the former dt'd at 6 which *could* have cost him 2nd place but at least saved the model from clouting a distant line of trees. Gibbs flight carried on and on for well over 10 minutes so one can imagine his dismay when he discovered that the timekeepers had clocked it off at 4:43 having seen it dt! It would appear they became confused with the Morley model. O'Donnell had some winding trouble and got away late to the usual respectable climb and descending glide that picked up something at the edge of the drome and held on from then on. His model was seen for over 11½ minutes to take 1st and make some amends for a very frustrating day in F1B earlier in the weekend. Phil Ball flew last and in the rush muffed the launch and damaged a longeron which turned the

Easter Results

F1A (35 flew)

1 M. Warren	Richmond	18:20
2 A. Crisp	Biggles	18:17
3 J. Cooper	Biggles	18:08
4 C. Edge	Weiland Valley	18:00
5 M. Gregorie	Freebird	17:53

F1B (30 flew)

1 P. Ball	Grantham	18:17
2 A. Wells	Anglia	18:02
= N. Beaumont	Croydon	18:02
4 I. Dowsett	Croydon	17:45
5 D. Hipperson	Grantham	17:44
= L. Kaynes	Croydon	17:44

F1C (11 flew)

1 S. Screen	Birmingham	18:30 + 4:00
= R. Monks	Birmingham	18:30 + 4:00
= R. Johnson	St. Albans	18:00 + 4:00
4 A. Jack	Tynemouth	18:30 + 3:29
5 K. Faux	Freebird	18:29

Open Glider (17 flew)

1 M. Dilly	Croydon	7:30 + 2:52
2 C. Parry	Biggles	7:30 + 1:43
3 J. Cooper	Biggles	7:17

Open Rubber (13 flew)

1 J. O'Donnell	Whitefield	7:30 + 11:36
2 J. Anderson	Biggles	7:30 + 6:36
3 D. Hipperson	Grantham	7:30 + 6:33

Open Power (8 flew)

1 S. Screen	Birmingham	7:30 + 5:43
2 T. Payne	Biggles	7:30 + 5:01
3 R. Morre	Biggles	7:30 + 0:05

model in after 5 secs. of climb after a rather hurried time when his first choice — the Nats winner — had its fuselage collapse just before release. In the space of 15 minutes Phil had halved his stock of Open Rubber models and still only recorded an 8 second flight!

The glider flyoff saw a tidy win for Martin Dilly with a pretty floaty flight in a buoyant patch after Chris Parry had found nothing for 1:43. Power was a slight disappointment as although Screen and Payne got away — Moore had engine trouble and the eventual attempt cut at 1½ seconds and mashed on the peri-track. John Bailey whose model had been flying a very steady pattern all day despite a reluctant sounding engine couldn't get it running at all and was beaten by the hooter. Screens flight had been good enough to win by ¾ minute and took his tally of SMAE 1st to three out of three events flown this year. Not a bad start to the season.

SMAE 2nd Area Centralised — 25 April

Report from Dave Hipperson

Weather over the country was most flyable and much the same at all the nine venues. A 10mph breeze often variable in direction with patchy lift in some places some very calm spells and in others both calm and windy patches. Fly-offs were huge in both Glider and Rubber. FA1 power for the Halifax Trophy and Plugge points proved that club spirit can move the most unlikely people in the strangest of directions. An unusually healthy entry for this

event would have made a most spectacular and amusing centralised event with many scrambling for Plugge points using some extraordinary machinery. Credit must go to Ray Moore at North Luffenham who came on form at the right moment and took the flyoff with a 5 minute plus over Screens near 4 flown at Barkston in a poor patch of air. Also at Barkston Pete Harris was unlucky to go very flat on the climb then hold on in good air for a flight that would have placed 2nd had he not over-run!

The Midlands had 'the' thermal for the Glider fly-off and Odiham had it for the Rubber. Junior John Walker found the centre of the best of it at Barkston for a fly away flight that was clocked off just short of 8 over trees and John Cooper at Luffenham d't'd down for just under 7. Surprisingly quite a few d't'd including numerous glider flyers throughout the Country and Mike Chilton in Rubber from a height at Barkston that could have been enough for the Gamage — it was on the drome! Mike will be remembered for his consistent performance in the SMAE Coupe d'Hiver events of last year. He has many models now including FA1 Power and was in the Glider fly-off too — don't think he will be going back to Control Line now.

Taking a chance with the helicopter interruptions etc., at Odiham but presumably finding the terrain rather less hard work than their usually impossible home site of Ashdown Forest, East Grinstead flyers Howick and Lee topped the Gamage in fine style and considerable lift. Croydon's Marcus also at Odiham brought up third. Flights were 11, 10 and 9 respectively. Cur-

rent holder Ron Pollard flew a creditable 7 plus at Albemarle but this time it was only good enough for 9th place. There was a slight disaster at Odiham when a fine 6+ glider fly-off flight by Dilly was miss-timed at 2.35 by a club mate! Despite of the additional attractions of various Mini events at Odiham — which incidentally never materialised — Barkston still had the most entrants particularly in Rubber although a number of notable flyers in this class came to grief early in the tricky lift conditions that existed there before noon.

SMAE 2nd Area Centralised Free Flight Results

Open Glider (75 flew)

1 J Walker	Barkston	9 00 - 7 56
2 J Cooper	North Luffenham	9 00 - 6 57
3 S Darmon	Barkston	9 00 - 6 07
4 C Pudney	Beaulieu	9 00 - 5 42
5 C P Williams	Odiham	9 00 - 4 44
6 M Gilmore	Barkston	9 00 - 4 41
7 J Bailey	North Luffenham	9 00 - 4 34
8 C Abbey	Barkston	9 00 - 4 28
9 J O'Donnell	Barkston	9 00 - 3 58
10 R Staines	Barkston	9 00 - 3 21

Open Rubber — Gamage Cup (55 flew)

1 M Howick	Odiham	9 00 + 11 16
2 N Lee	Odiham	9 00 + 10 21
3 N Marcus	Odiham	9 00 + 9 07
4 J Bailey	North Luffenham	9 00 - 8 58
5 G Sharp	Odiham	9 00 - 7 55
6 M Chilton	Barkston	9 00 + 7 48
7 D Hipperson	Barkston	9 00 + 7 32

FA1 Power — Halifax Trophy (24 flew)

1 R Moore	North Luffenham	15 00 + 5 16
2 S Screen	Barkston	15 00 + 3 44
3 A Jack	Albemarle	15 00 + 2 48
4 P Harris	Barkston	15 00 + over run
5 D Scott	Driffield	14 36

(Centre column refers to venue, not clubs)

WINTER BLUES

Max Men Two Day FAI Report from MIKE FANTHAM

As you read these words, Great Britain should be enjoying summer conditions, but cast your mind back to those grey February days for a moment . . .

Great Britain in February can be a bit depressing for a free-flyer. Snow, wind, fog . . . the conditions are not very suitable for flying and I never really feel like building anything either. Traditionally I should be

creating some new technological wonder that will strike fear into the hearts of glider flyers as far away as Russia and California but I never feel inspired until I see the first calmish days of the new year. You know . . . that day in March when the wind drops to around 15mph and the hail eases off a bit! Still I bet even Andres Lepp spends the winter looking out at some pretty bleak weather and those Californians I bet they . . . wait a moment, I bet they are out at Taft circle-towing in a flat calm — lucky blighters.

On February 12th, two weeks after I had the above thoughts, I was listening to some records, sitting in an arm-chair and relaxing. I had just eaten a reasonable meal and washed it down with the right amount of wine. Outside the feeble February sunshine was making the snow and ice look quite decorative but the temperature on the other side of the glass was below

zero and the wind was blowing at almost 600mph. Surprising? . . . well not if you're at 35,000ft. over Greenland on a 747 flight bound for Los Angeles! Well there's no point sitting at home feeling envious of the Taft flyers is there . . . you just have to go there.

In case you are thinking that I was just off for a bit of rather extravagant trimming, I ought to point out that the Max Men FAI 14 Round International contest was held at Taft on February 13/14. I arrived at the field, about 120 miles north of Los Angeles, late on the Friday evening, before the weekend contest. I wasn't expected and really enjoyed the surprised looks on the faces of the old friends who were assembled for the meeting.

"Holy Toledo," said Walt Ghio . . . "What are you doing here?"

"Well I heard there was a contest and I wasn't doing anything else this week-end." . . . You don't have to be crazy but . . .

Saturday dawned bright and clear, calm and dead.

The order of the day: Eight o'clock start and seven one-hour rounds with an hour for lunch at noon.

Test flights before the start showed the air to be very slightly buoyant in patches but this died out as the contest started. In round one, there were only six maxes from the eighteen glider flyers but 17 of the 26 Wakefield entrants and all but one of the 14 power flyers had three minute scores. The weather picked up at the end of round two and 15 of the 18 gliders maxed. The rest of the day was equally good with a very light breeze — never above seven mph — and



Photography by Mike Fantham

Wakefield winners at the Max Men FAI contest. Walt Ghio (left) won from Joe Foster (right). They had help from Joe Bilgri, who is standing between them with the recording thermistor.



Left: second placed Roger Simpson ready to fire up in the first FIC fly-off. Right: Bill Morgan was the power winner at the Max Men FAI contest. Here, he waits for good air in the first fly-off.



weak sunshine. There were spots of rain at times but it was warm, around 65-70 degrees and there was no need to shelter. It was very pleasant to get into shorts and a tee shirt and relax on a sun lounger between flights . . . in February.

Martyn Cowley, ex-editor of Aero-modeller now living in California, was flying glider with his Future Shock design — this will be familiar to some readers. Martyn has fitted the low aspect ratio model with a Ken Bauer electronic DT timer but is still using the offset hook circle-towing system, which has earned him the nickname 'Combat Cowley' at Taft.

Every other glider flyer was using a Russian style hook for circle-tow. Tam Thompson of Canada broke the circle-towing monopoly after he dropped badly flying his 'new' model, the one described by Martyn Cowley in his World Champs write-up, that has the super-stiff 160g wing. Tam went on with an experimental straight tow model. This model is a flying test bed using the 'new' wing and tail on a spruce stick fuselage with clay nose weight and an adjustable moment arm. He was trying out a new, longer, configuration.

A Champagne fly-off was held at 4.30 in the afternoon but there was still some lift around because Mike McKeever won glider with a 262 second flight and the next nine all did over three minutes. Wakefield had ten flyers over three minutes too, Bob White won with 266 seconds. All nine power flyers cleared the max and six made over five minutes. Roger Simpson came out top with 354 seconds. Both Roger and Canada's Dave Sugden were using models fitted with a 'bunt' recovery system. This technique has the tailplane going positive for a spell as the engine cuts to push the model over a quarter outside loop into the glide.

After the flying, there was plenty of champagne to drink and a small buffet — it soon turned into a pleasant little garden party.

Sunday's flying started at seven, an hour earlier than the previous day, and there was no break during the seven one hour rounds. This time the buoyant air, which was available from sunrise for an hour or so, lasted through round one. Doug Galbreath dropped with a 179 second flight, leaving five with full scores in power. Of these, Ed Carroll was to drop the last flight giving a four way fly-off. Fifteen of the Wakefields made the max. The second round was a shock to the glider flyers. Only Hines, Diez and Bauer were to max and these all in very weak lift as the round opened. After that conditions went very strange indeed. I towed for more than half an hour and eventually did the two minute flight which put me out of the money. There was no wind, it was hot (70°F) and very very dead. At one point there were about eight people circle-towing all over the square flying area, shouting complaints to each other about the lack of lift. Isaacson's 176 was the best flight during that period.

The rest of the day was normal. The thermals turned on a little after nine, about the same time as the day before. The overnight total of nine full houses in Wake reduced to seven as Dodds and Critchlow dropped. Lee Hines blew his perfect score in glider in the 'easy' tenth round, having been the only one of the three overnight perfect scores to survive the two difficult early rounds.

The wind got up from the north in the last round and this caused some embarrassment in glider. There were some flyers who were uncomfortable in the breeze, which must have been around 10-15 mph. I was able to circle-tow fairly easily and Martyn Cowley looked very much at home. One person even came up to me afterwards to apologise for the inclement weather. Jim Wilson lost hold of his towline and the model got away downwind. Jim is one of many Taft flyers flying without a winch, perhaps this is why it isn't popular in the UK yet? He returned later with a broken fuselage, the model must have been towed in by a bush. The first power fly-off only eliminated one flyer when Dave Sugden d'd early. Five Wake flyers made the four minutes. Those eliminated were '79 team member Bob Piserchio and Les De Witt, flying his straight dihedral model that won the NFFS model of the year award a few years ago. The second power fly-off decided the event — a win for Bill Morgan flying a

slightly dated looking model with an exposed engine. Simpson and Oliver had near identical cowed models of a higher aspect ratio. The second Wakefield fly-off brought five minute maxes for three flyers but Walt Ghio made sure in the next round leaving Joe Foster second and Bill Gibbons third. Glider was won by Dennis Mihora who dropped 58 seconds in three flights over the fourteen rounds. The top places were very close, Peter Allnutt of Canada dropped two minutes and placed eighth. Mihora's win qualifies him for the US team finals in September. The trophies were handed out on the field and there was engraved glassware down to fifth. (I was sixth . . .)

This was a very enjoyable contest with a high standard of flying in excellent conditions. I believe that the best of the British flyers are of a similar standard to the best Americans except perhaps in Wake where the Californians have greater strength in depth. This skill is mostly manifest in the older flyers. I wonder if the regular good weather encourages model development or if the retrieving demands put people off in the UK, especially the less fit. Is the fitness aspect putting people off flying glider at Taft? The American glider flyers are certainly very keen on that aspect and it's pretty tough circle-towing for half an hour on a baking hot day. The Taft Wake/glider entry ratio is certainly the opposite of that found in the UK.

Finally, I must say thank you to my hosts for a great week-end it certainly cleared my winter blues.

Earl Boteler took fourth in the Wakefield fly-off with this shoulder wing, swept Tee tail design. The model uses a fuse DT. Jim Quinn is helping, having missed the fly-off himself. . . he dropped four seconds in 14 flights.



Max Men Two Day FAI

Champagne Fly-off

Glider FIA	(sec)
1. M. McKeever	262
2. J. Wilson	207
3. M. Cowley (GB)	206
4. M. Fantham (GB)	189

FIC Power

1. W. Morgan	2520 + 240 + 272
2. R. Simpson	2520 + 240 + 251
3. K. Oliver	2520 + 240 + 237

FIA GLIDER

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	T
1. D. Mihora	164	M	M	M	M	M	M	158	160	M	M	M	M	M	2462
2. D. Zink	151	M	M	M	M	M	M	M	141	M	M	M	M	M	2452
3. R. Isaacson	M	M	164	M	M	M	M	M	176	M	M	M	M	130	2450
4. M. Fantham (GB)	164	M	M	M	M	M	M	M	120	M	M	M	M	155	2419
16. M. Cowley (GB)	157	M	114	M	M	M	M	M	141	100	M	M	74	M	2131

FIB Wakefield

1. W. Ghio	2520 + 240 + 300 + 234
2. J. Foster	2520 + 240 + 300 + 177
3. W. Gibbons	2520 + 240 + 300 + 127

Power FIC

	(sec)
1. R. Simpson	354
2. D. Sugden	349
3. D. Galbreath	330

Wakefield FIB

	(sec)
1. R. White	266
2. R. Piserchio	261
3. J. Foster	230

SHOP TALK

The latest in products for the modelling scene

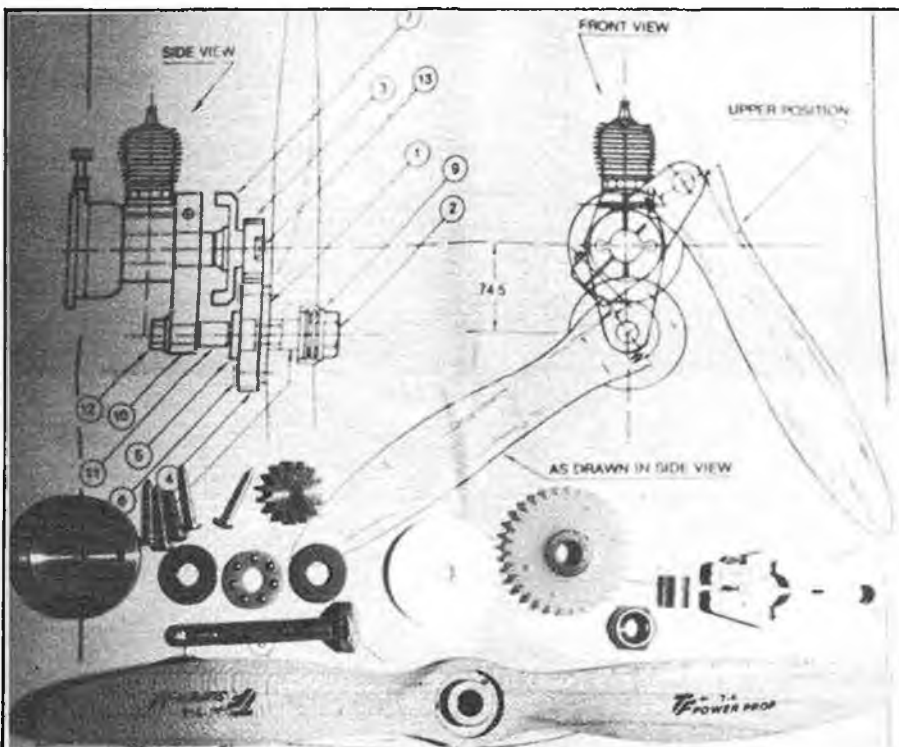
CONTEST Balsa

The Balsa Cabin, The Street, Little Totham, Maldon, Essex, have introduced a range of balsa with a density of approximately 6lb. per cu. ft. It is available only in 3in. x 36in. lengths and 'C' grain sheets are also available.

Typical prices for a pack of five sheets are: $\frac{1}{32}$ in., £1.30; $\frac{1}{16}$ in., £1.40; $\frac{1}{8}$ in., £1.70; $\frac{3}{16}$ in., £1.90; $\frac{1}{4}$ in., £2.40; $\frac{3}{8}$ in., £2.80; $\frac{1}{2}$ in., £3.70 and $\frac{3}{4}$ in., £4.65 or 93p per sheet. A full list is available from the above address.

ADJUSTABLE LEAD OUT GUIDE

This simple and light adjustable control line lead-out is available in a two or three line version. The unit is made from glass filled nylon and consists of a slotted frame with adjustable moulded line guide tubes that can be locked in any position of the slot by means of a self-tapping screw. This allows for each line to be individually adjusted. Installation is simply a matter of epoxying the unit into the tip rib. It is recommended that two strands of single light Laystrate lead-outs be used, or one strand of heavyweight/solid wire. Available from Maples Models, Maple Road East, Luton, Beds. LU4 8AE, price: two wire output, £1.50; three wire, £1.90 plus postage.



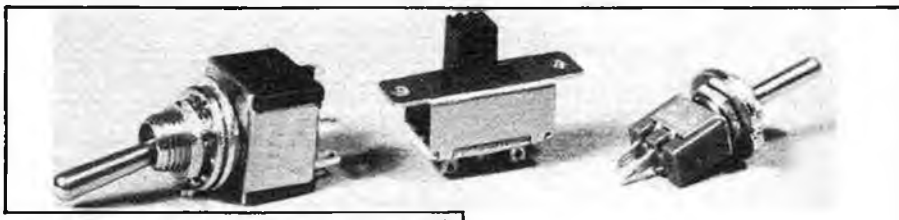
GEARED PROP DRIVE

Irvine Engines Limited are distributing a new reduction drive unit for the Cox 020 Pee Wee made by Kress Technology Inc. USA. It is a well engineered system consisting of an aluminium mounting plate that clamps onto the crankcase front bearing of the Cox engine, brass flywheel, one brass and one nylon gear giving 2.13:1 drive, shaft, ball thrust bearing, washers, nuts etc. and a wooden 7 x 4 TF power prop. All this weighs 50 gms but the makers claim a 60% static thrust increase which

obviously offsets the extra weight.

There is a considerable advantage if installed in a scale model apart from being able to swing almost scale size propellers, the centre line of the propeller can be positioned around a $\frac{3}{8}$ in. radius from the engine crankshaft.

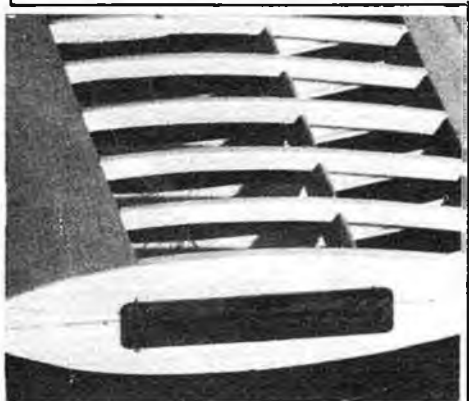
We will publish a more detailed report when we have tested the outfit in a model, but it does seem to offer fuel economy and possibly a quieter power unit for a model that would otherwise require a larger motor. Price £15.95 inc. VAT.



SMALL SWITCHES

Proops, the well-known suppliers of useful surplus gear, of 52 Tottenham Court Road, London W1P 0BA, have begun to carry small switches as a stock line. They have a range of over 200 devices and it is intended to supply model shops with a selected range.

The double pole toggle, double pole slide and single pole toggle switch shown here are all ideal for model use as are many others in the range which includes micro switches, reed switches and many others to suit most applications. Obtainable from Proops Shop at the above address or at selected model shops.



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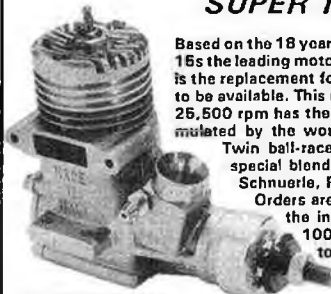
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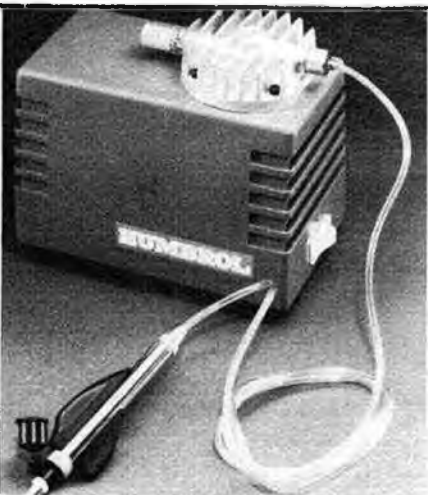
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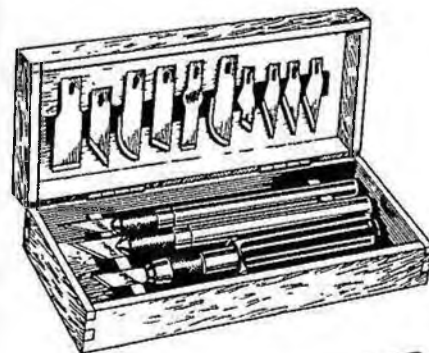
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More Shop Talk! Continued from Page 357



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